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FINAL REPORT:

Between green words and green deeds …: overview of results and practical implications (Project HL/DD/24).

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In the present project, we investigated one very important aspect of sustainable consumption, namely domestic sorting of garbage for separate collection and recycling.   For households and individual consumers, sorting waste has higher energy and time costs than non-sustainable ways of garbage disposal. Every citizen experiences a social dilemma, between an easy solution that minimizes personal costs but harms society, and a sustainable solution that is more expensive for oneself but minimizes the societal cost. The government acts as a social marketer with the difficult task of making citizens choose for the collective sustainable interest and against strict self-interest.

To encourage domestic waste sorting, the government can use two types of marketing instruments: communication-instruments and instruments for direct behavioral manipulation. Among the direct instruments to encourage waste sorting are 'obliging citizens to sort their waste in several waste fractions' and 'introducing a pricing system that promotes better waste sorting by making bags for recyclable materials cheap and bags for nonrecyclable rest materials expensive'. Programs that used these direct instruments have been induced in Belgium during the 1990s. By using these mandatory programs, government can achieve a change in behavior without achieving a change in mentality. However, this may cause long-term problems, because mandatory participation to sustainable consumption requires airtight control on citizens' behavior, which may be unaffordable over time. Moreover, in a democratic order, government policy needs the support of a majority of the population (which is often not the case). Therefore, the government complement carrot and stick approaches with communication-based social marketing, which strives to achieve a real change in mentality of citizens (which is also an explicit objective of Agenda 21 of the United Nations, 1992). To achieve a change in mentality, authorities may use classic advertising channels, but may also use messages that can be posted on product packaging, on garbage containers, etc.

Previous research on waste sorting behavior was solely oriented on evaluating voluntary recycling programs (for an overview see **Part 1**, Smeesters, Warlop, & Vanden Abeele, 1998a). Hitherto, no research has focused on the reality of mandatory programs and some very important questions are still unanswered. In the

present research project, we raised three specific questions: (1) how do citizens experience mandatory recycling programs? (2) which motives underlie people's waste sorting behavior; can we subdivide citizens in different groups with different motives?, and (3) are there any appropriate ways to promote desirable waste sorting behavior? These three important questions structure our research project in three main parts. Our answers to these questions are reported in seven papers, consisting of two 'overview papers' (see Part 1 and Part 6), two qualitative research papers (see Part 2 and Part 3), two quantitative research papers (see Part 4 and Part 5) and one experimental behavioral paper (Part 7). This summary provides an overview of our work and briefly outlines the most important results and implications of our studies. The reader can find a more extensive description of our studies in the respective papers of this research report.

A. How do citizens experience mandatory recycling programs?: qualitative research.

A first step in our OSTC-research project comprised the creation of a database containing the relevant academic literature on recycling behavior. Based on this literature we wrote a review, summarizing and integrating more than 70 academic papers (see **Part 1**, Smeesters, Warlop, & Vanden Abeele, 1998a). Almost all of that research has been carried out in the context of voluntary recycling programs. There was one general finding common to all these studies, namely that environmental values are people's major motive to sort their domestic waste. This is related to the 'voluntary' character of the investigated recycling programs. It is not really surprising that only citizens for whom ecological goals were salient and important recognized the usefulness of these voluntary recycling programs sorted their domestic waste. Nowadays, recycling programs in Belgium (and increasingly throughout Europe) are mandatory. Consumers are requested to follow the rules of the current recycling programs and to sort their domestic waste in a nonrecyclable waste fraction and into several recyclable waste fractions. Research on domestic waste sorting in a context of mandatory recycling programs is lacking in the academic literature. Our research project was one of the first attempts to study mandatory recycling behavior and we hoped to make a significant contribution to the academic literature on recycling behavior.

Our empirical research started with a qualitative study in which several citizens were asked to tell about their experiences in mandatory recycling programs. We conducted focus groups interviews and individual depth interviews. The results of this study are reported in **Part 2**, Smeesters, Warlop, & Vanden Abeele, 1998b, and also partially in **Part 3**, Smeesters, Warlop, Vanden Abeele, & Ratneshwar, 1999). The analyses of these interviews are based on narrative data of 71 respondents, coming from rural regions (Zoutleeuw), suburban regions (Machelen and Deurne), and urban regions (city of Antwerp). We conducted semi-structured interviews, trying to leave as much room as possible for each respondent to tell his/her story. Afterwards, recycling themes were labeled in all interviews according to the grounded theory approach.

Our results can be summarized into three major themes. One of the central themes in citizens' stories was the habitual nature of their waste sorting behavior. This was especially striking in Zoutleeuw and Machelen where mandatory recycling programs were initiated several years before. In Antwerp, mandatory recycling programs were initiated shortly before we collected our data. Although Antwerp citizens reported more difficulties in their recycling activities compared to citizens in regions where mandatory recycling programs had been operational for several years, most of them had also developed routines in all their waste sorting tasks. As a result of these routines, daily waste sorting activities (like gathering waste, sorting waste, disposing waste) require less problem-solving thinking. Despite the routine nature of waste sorting activities, almost all respondents also reported on practical difficulties (lack of space, odor, insufficient frequency of curbside collecting…), on insufficient recycling information, and on a number of unfair situations (see further). Apparently, our respondents experienced these 'obstacles' as stable over time and had incorporated them in their waste sorting routines. We concluded that domestic waste sorting is a 'habit under pressure'. Citizens develop waste sorting habits, but at the same time are still sensitive for events that may disturb their behavior. Most of these disturbances are only temporarily: they do not affect people's recycling motivations, but they can result in a decrease of people's waste sorting accuracy.

Some of our interviewed respondents in Antwerp lived in city quarters (Schelde left bank, 'Seefhoek') with a lot of garbage problems (littering, waste dumping). Even the Belgian press has been reporting on these issues. In these

quarters we found some incidence of strong negative motivations for participation in mandatory recycling programs: these citizens only sorted their waste in order to avoid fines, and looked for ways to evade the recycling rules. But even in this neighborhood, only a minority had these negative motivations. Most of the other citizens reported positive motivations.

A new factor that has never been reported in the context of voluntary recycling programs is the omnipresence of 'civic duties' in mandatory recycling programs. About half of our respondents thought it is their civic duty to sort their waste accurately. These citizens assume that the government asks them to sort their waste for good (collective benefiting) reasons and they find that every good citizen should take his responsibility. Typically, these 'civic duty' respondents do not spontaneously report environmental reasons to sort their domestic waste. The other half of our respondents did spontaneously report environmental values as their major driving force, and possibly (but not always) civic values as a secondary (but less important) motivation. Obviously, the voluntary participants in our interviews are not necessarily representative for the Belgian population. We will investigate this issue in the second part of our research.

Positive motivations do not imply that people always sort their waste very accurately. Almost all our respondents spontaneously reported events that interfered their self-imposed recycling routines. These events can be categorized into three themes. A first interfering factor is a lack of recycling information. Doubting about where (i.e., in which waste bag) to throw a specific waste fraction may interrupt people's routines. Our respondents clearly indicated that they were not willing to inform themselves better. They do not consider searching for information a personal responsibility; they hold the government and producers responsible. Apparently, their sense of civic duty is restricted to implementing clear instructions that require no further elaboration. A second source of interference is the perception of successful defection by other citizens. Perceiving other people's successful dodging of the rules of the mandatory recycling system might temporarily disturb the personal motivation. Examples are perceptions of illegal waste dumping (in city or suburbs) and waste burning (in rural regions). Our respondents' reactions to these perceptions of defection were often very emotional. Finally, almost everybody evaluates the own recycling system as more difficult and more expensive than the recycling system in

neighboring regions or municipalities. People always pretended to know all the rules of the 'neighboring' recycling systems, compared the own system with the neighboring systems, to finally conclude that their own system made them worse off compared to citizens living in the neighboring regions or municipalities.

Implications: The most important implications can be found in the several disturbances of habitual waste sorting behavior. Interviews with communication managers from two garbage collection agencies (e.g., Interleuven , Incovo) indicated that these organisations hope and wish that citizens take their own responsibility in acquiring appropriate knowledge for accurate waste sorting. The agencies consider it as their task to provide citizens with recycling knowledge, which citizens have to learn and memorize. To us this looks like a very optimistic attitude. In our opinion one has to strive for solutions that require less cognitive effort. Several essential changes may help citizens to sort their domestic waste more accurately. Standardization of recycling programs across Belgium can reduce perceptions of unfair situations. The introduction of a coding system (a color code on the packaging that matches an identical color code on the waste bags, e.g., a red code for rest waste, a blue code for PMD-waste) that indicates in which waste bags specific waste fractions have to be thrown may facilitate accurate waste sorting. These changes imply standardization of recycling programs and a commitment by producers to introduce color codes. Both implications appear feasible in the long run.

A second implication is that the government should remove every source of subjectively justifiable infraction (e.g., "if other people burn their waste in the backyard, I am allowed to do that too"). Initiatives like the 'white tornadoes' in Antwerp may be very helpful. Littering garbage may be interpreted as a free-for-all and, therefore, litter should be removed as fast as possible. The most important motive for recycling efforts may be the perception of a clean environment. Very few people will be the first to disturb this clean environment.

B. Motives/goals underlying citizens' waste sorting behavior and segmentation on basis of these motives/goals

We found evidence for three qualitatively different motives underlying our respondents' waste sorting behavior, one negative motive (saving money) and two positive motives (civic duty and environmental values). In the second phase of our research we wanted to use more quantitative methods to segment the population in different groups, with groups differing in motivational patterns.

The construction of the second research phase of this research project used the findings of the first phase. We used the narrative data of the first phase to construct 'motivational ladders' (see Laddering research in **Part 3**, Smeesters, Warlop, Vanden Abeele, & Ratneshwar, 1999). We pre-tested these ladders with a sample of administrative and technical personnel of the KULeuven. Later on we also applied a more structured classification technique (HICLAS) (see **Part 4**, Nys, Smeesters & Warlop, 2000).

Laddering searches for maximal variation, and therefore probably overestimates the amount and the importance of motives underlying waste sorting behavior (Cohen & Warlop, 2001). HICLAS searches for maximal overlap between the model and the raw data, and because of that may exaggerate the scope of the underlying motives. Nevertheless, both methods find the same three initial motives: avoiding fines and penalties, civic duty and environmental values.

In the second phase the laddering-elements from **Part 3**, Smeesters, Warlop, Vanden Abeele, & Ratneshwar (1999), were used as statements, e.g., "I sort garbage to fulfill my social duty", or "I want to fulfill my social duty because I want to be a good citizen". These statements were submitted to a sample (N=317) of the Flemish population (+18). Respondents were personally interviewed and were asked to indicate for each statement whether it could be applied to them. Besides the statements, the survey also included several standard scales of relevant personality variables, an extensive self-report of waste sorting behavior, and several socio-demographic variables.

We applied standard data reduction techniques (factor analysis and cluster analysis) to discover our final solution. The best solution for the data reduction problem represents a threefold segmentation (see **Part 5**, Smeesters, Novoseltsev, &

Warlop, 2001).   A first group was mostly oriented by environmental values. This group is relatively small (24% of all respondents) but is the most accurate waste sorting group. A priori one might have thought that the ecologically oriented citizens would be younger and higher educated. Somewhat surprisingly, the members of this group are relatively older and lower educated. They have a smaller family load and a relatively high income. A second group (34% of all respondents) is characterized by negative motivations and inaccurate waste sorting. Citizens in this group display a proself value orientation, which means that they are only concerned about their own outcomes and pay no attention to outcomes of others. Members in this group are younger, higher educated and predominantly male. Families in this group are rather small and the available space per family member is rather large. This means that this group's inaccurate waste sorting is not a consequence of practical restrictions. The remaining 42% of respondents formed a third group in our sample. Compared to the other two groups, this group scored medium on waste sorting accuracy and on the several motivational measures. Especially civic duty differentiates this group from the 'proself' group. In our complete sample, we never found any differences between citizens living in rural and urban regions, which is not surprising because it is largely known that socio-demographic characteristics are very weak predictors of recycling behavior.

Implications: Our survey-research confirms but also shades the findings of our qualitative research. We found three qualitatively different groups in terms of psychographic and demographic variables. Most of our predictions were obtained, although not all relations were expected. First of all, we expected citizens in the proself group to be lower educated and short of waste storage space. However, these predictions were not confirmed. Our three different groups were also not localisable in rural or urban regions. This finding hampers the practical use of these segmentation schemes. In order to conduct differentiated campaigns one should be able to distinguish these groups more easily. What remains is a more varied image of different recycling motives than has been found in previous research. In previous research, conducted in the context of voluntary programs, it turned out that primarily environmental values predicted accurate waste sorting. Our research, conducted in the context of mandatory recycling programs, found that also civic duty and punishment-avoidance motives can stimulate citizens to sort their domestic waste.

Together, citizens driven by civic duty or by punishment avoidance constitute about 75% of the population. Both groups of people react, both in their own manner, to the societal requirement to sort waste. Probably only citizens driven by environmental values would sort their waste in a context of voluntary recycling programs. These findings confirm the need for mandatory systems as one of the only possibilities to stimulate everybody to sort their domestic waste. Furthermore, our findings also suggest that, besides ecological themes, civic duty themes should be developedt in contemporary recycling communication campaigns.

C. Subtle influences to promote desirable waste sorting behavior?

In the third phase of our project we investigated the effect of an alternative communication strategy to introduce more sustainable behavior for citizens that have selfish alternatives to behave. The government's role has always been that of an advocate, trying to <u>convince</u> the consumer to take the collective interest into consideration instead of their self-interest. Convictions can only be changed by offering convincing arguments. For example, in April 2001 a traditional TV-campaign tried to make citizens conscious of the negative consequences of not accurately sorting your waste for future generations. In our opinion, we think that this strategy is probably not the best strategy. Reflecting about several behavioral options activates not only the pros of a behavioral option but also the cons, and consequently also the pros and the cons of selfish behavioral options. This strategy may be effective for radical decisions (e.g., deciding to use alternative energy to heat the house). However, we suppose that this strategy may be very ineffective for simple waste sorting behaviors, which have to be carried out several times per day and which occur in a context of time pressure and mental load. Consumers and citizens probably will not extensively consider these decisions, and <u>if</u> they think about them they will probably come up very easily with counter-arguments. The self-interest (e.g., saving money) will always be more salient than the collective sustainable interest.

Therefore, we proposed an alternative, rather subtle form of communication. We assume that most people have knowledge and latent motives at their disposal to behave in a durable manner, although these motives and knowledge do not always become activated. This alternative strategy does not urge citizens to think about arguments but instead uses simple situational cues that may promote durable prosocial behavior. These cues may 'command' habitual decisions, without the consumer actively thinking about these decisions. 'Priming' or subtle activation is capable of activating latent motives, which may be incorporated in the simple decision processes of habitual waste sorting behavior (see **Part 6**, Warlop, Smeesters, & Vanden Abeele, 2000). Practically, this implies placing of simple pro-sustainable messages on packaging, in stores, on garbage containers, … which do not try to persuade, but instead try to activate some simple concepts in citizens' minds. In a series of four experiments we tested the hypothesis that priming can influence cooperative behavior in a social dilemma. We succeeded to make people behaving more prosocially in prisoner's dilemma game, even

if they were unaware of the influence of simple cues on their behavior (see **Part 7** Smeesters, Warlop, Van Avermaet, Corneille, & Yzerbyt, 2001).

However, we found one group of people for whom this strategy did not work. A classic typology (and accompanying test; Liebrand, 1984) divides the population into people with a 'prosocial' or a 'proself' value orientation. People can also behave very consistent or rather inconsistent with their own value orientation. We found that consistent proselfs acted very selfishly towards prosocial primes. We replicated our findings in several experiments and we could also demonstrate that the effects of primes on behavior are mediated by expectations of other people's cooperative behavior (people that were also involved in the game). Thus, for most citizens the spontaneous expectation that other people will act in a cooperative sustainable manner is a stimulation to behave in the same cooperative sustainable manner. However, the expectation that other people will cooperate stimulates consistent proselfs to free ride on the cooperative efforts of other people. This means that for a limited number of people prosocial communication has a contradictory effect!

Implications: Our experimental results have been obtained in a laboratory setting, using a social dilemma task that only conceptually corresponds to a domestic sorting task. Future research should investigate whether our results are applicable to real-life waste sorting behavior. However, our results are very consistent with the findings in the first two phases of our research project. Our research findings indicated that improvement in accuracy of waste sorting behavior of motivated citizens is possible. Nevertheless, even motivated people make mistakes and even sometimes they prefer the self-interest over the collective durable interest. In some cases, this is inevitable, but in most case we attribute these incidents of suboptimality to thoughtlessness, or to the absence of situational cues capable of promoting prosocial behavior. Using pro-waste sorting cues (e.g., on packaging or on garbage boxes or containers) should realize a stronger consistency in citizen's waste sorting behavior.

However, every form of pro-waste sorting communication is a double-edged knife, and has positive and negative consequences. It has positive consequences for people with a (latent) pro-waste sorting motivation but a small group of consistent proselfs will react against these messages. Our own field research has indicated that about 30% of the population has negative motivations (saving money, avoiding fines). These citizens are characterized by proself value orientations (see **Part 5**, Smeesters,

Novoseltsev, & Warlop, 2001). Probably not all these citizens are consistent proselfs but even a small group of people can disrupt the behavior of larger group of people. Consistent proselfs react very individualistically towards prosocial primes and their selfish behavior can urge other (prosocial) people to also behave in a negative selfish way (a rot apple effect). Our qualitative research has also demonstrated that even cooperative citizens are very sensitive to defective behavior of other citizens in their environment. Some people will try to beat the system (by littering, illegal waste dumping, waste burning, etc…) and their environment will notice that these people's behavior will not be punished. Prosocials are very sensitive to feelings of injustice and may probably react by behaving less prosocially.

If these results can be confirmed for real-life waste sorting behavior, implications are not really optimistic. In social psychology, it is generally known that people may react negatively towards explicit attempts to persuade them. In these cases, people react against the content of the message, and especially if the content of the message does not match their own conviction (as is the case for people with more punishment avoidance motives). Our research indicated that some people might also react very negatively towards subtle messages. Moreover, the findings of our experiments indicated that people's reactions are automatic and mediated by perceptions of an ambiguous environment. At this present moment, our research team is trying to find ways and strategies to eliminate these negative reactions.

D. References

Cohen, J.B., & Warlop, L. (2001). A motivational perspective on means-end chains". In T.J. Reynolds & J.C. Olson (Eds.), <u>Understanding your customers: Means-End Chain theory and practice</u>. Hillsdale, NJ: Lawrence Erlbaum, *in press*.

Liebrand, W.B.G. (1984). The effect of social motives, communication and group size on behavior in an N-person multi-stage, mixed-motive game. <u>European Journal of Social Psychology</u>, <u>14</u>, 239-246.

Nys, K., Smeesters,D., & Warlop, L. (2000). <u>A HICLAS analysis of recycling motivations</u>. OSTC Research Report. OSTC: Brussels.

Smeesters, D., Novoseltsev, A., & Warlop, L. (2001). <u>Heterogeneity in sustainable consumption: a value segmentation analysis of waste sorting behavior</u>. OSTC Research Report. OSTC: Brussels.

Smeesters, D., Warlop, L., Van Avermaet, E., Corneille, O., & Yzerbyt, V. (2001). <u>Subtle influences on cooperative behavior</u>. OSTC Research Report. OSTC: Brussels.

Smeesters, D., Warlop, L., & P. Vanden Abeele, P. (1998a). <u>The state-of-the art on domestic recycling research</u>. OSTC Research Report. OSTC: Brussels.

Smeesters, D., Warlop, L., & Vanden Abeele, P. (1998b). <u>A qualitative analysis of household garbage recycling behavior</u>. OSTC Research Report. OSTC: Brussels

Smeesters, D., Warlop, L., Vanden Abeele, P., & Ratneshwar, S. (1999). <u>Exploring the recycling dilemma: Consumer motivation and experiences in mandatory garbage recycling programs</u>. OSTC Research Rapport. OSTC: Brussels.

Warlop, L., Smeesters, D., & Vanden Abeele, P. (2000). <u>Selling brotherhood like soap</u>. In C. Huffman, S. Ratneshwar, & D. Mick (Eds.), The Why of Consumption (pp. 197-215). New York: Routledge.

Plan voor wetenschappelijke ondersteuning van een beleid gericht
op duurzame ontwikkeling (1996-2001)

Hefbomen voor een beleid gericht op duurzame ontwikkeling

LUIK A

Part 1: **The state-of-the art on domestic recycling research**

Part 2: **A qualitative analysis of household garbage recycling behavior**

Part 3: **Exploring the recycling dilemma: Consumer motivation and experiences in mandatory garbage recycling programs**

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Hefbomen voor een beleid gericht op duurzame ontwikkeling:

Tussen groene woorden en groene daden …: De relatie tussen milieubesef en milieuzorg bij

individuele consumenten (HL/DD/24)

Part 1

The state-of-the art on domestic recycling research

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INTRODUCTION

Sustainable economic development implies that a community is able to manage its production and disposal of waste. One way to realize efficient control is to bring as much as possible of the waste back into the economic circuit. Recycling and reuse have the additional advantage that the strain on the scarce spare capacity of landfills and incinerators is reduced. Belgium, for example, annually produces approximately 400 kilograms of waste per capita ('*Mens*' 1997), while spare incineration and landfill capacity is severely limited and under increased public scrutiny. Other industrialized societies throughout the world face similar problems. It comes as no surprise, then, that over the last few years household waste management has emerged as one of the key areas of debate in the public policy arena.

Governments try to manage individual household waste management in three different ways.

First, **motivational strategies** try to increase environmental concern in individual citizens by running media campaigns to increase consumers' willingness to actively participate in efforts to manage the environment. Some of these campaigns aim at increasing general environmental consciousness and concern. Others will try to influence the consumer's intrinsic motivation to participate in specific recycling programs.

Second, **informational strategies** try to increase procedural knowledge about source separation behaviors. Governments communicate through media or by direct mail with individual households, and explain the do's and don'ts of accurate waste handling.

Finally, governments can apply **direct behavioral control strategies**. Increasingly, comprehensive municipal source separation programs are set up that intend to influence individual consumers' behavior directly towards more environmentally conscious behavior. These programs may differ in the ways in which they appeal to intrinsic and extrinsic motivational factors to recycle. In some places, the government offers citizens containers at central locations where people can bring their recyclables and separate them on the spot. Citizens are asked to participate but the nonparticipants' waste is indiscriminately collected

without penalty. Such programs appeal to pure intrinsic motivations. Other programs use a system that relies mainly on extrinsic motivation. Consumers are required to buy and use specific bags or containers for different categories of waste and to separate at the source in their own homes. Separation behavior is managed by differentially pricing the recipients for different kinds of waste. The relative purchase price or rental fee of nonrecyclable waste recipients is made higher than that for recyclable waste.

The chosen combination of motivational, informational, and pricing approaches reveals the implicit or explicit theory held by governments about the determinants of its citizens' behavior. Most programs rely on a combination of intrinsic and extrinsic motivation, with the emphasis on one or the other. Governments that believe in intrinsic motivation will provide citizens with the opportunity and information necessary for accurate sorting, but will not enforce a particular course of action. The recent trend, however, is to intervene more directly, and to combine information campaigns with curbside recycling programs in which pricing and regulation are emphasized.

But even with the most externally controlled of strategies, intrinsic motivation remains important. Pure extrinsic control would require that the behavior is perfectly transparent. Sanitation workers only have limited opportunity to inspect the garbage before collection. The opportunity to sort inaccurately without detection allows for free riding. Only intrinsically motivated consumers will forgo that opportunity.

The success of these combined policy efforts ultimately depends on the consistency and accuracy with which consumers separate and sort domestic waste materials. To help policy makers decide among policy alternatives an understanding is needed of the determinants of participation rates and accuracy of domestic source separation. Much research has been conducted over the last 20 years, but the efforts have been ad-hoc and empiricist in nature. Only recently have attempts been made to develop a theoretical foundation for source separation behavior. Our goal in this paper is to summarize and review these past research efforts, on the basis of which we seek to identify gaps in our current understanding and to point out corresponding areas for future investigation. The remainder of this paper consists of three parts. In Section 1, we start with a detailed review of the existing literature. Then, in Section 2, we briefly review the theoretical models that have been proposed to account

for recycling data. Finally, we offer our assessment of the current state of the art, and we suggest how we think our research should proceed.

1. EMPIRICAL FINDINGS

For our review, we scanned all major behavioral science and environmental science journals for articles and reports about recycling and source-separation research. Through computer-searches, we also obtained articles published as book chapters, as parts of conference proceedings, and a few reports published by non-academic research institutes. We found 85 studies, spanning 25 years of research. The studies are summarized in Table 1. They are classified by the major type of determinant of recycling behavior that was investigated in each study. The three major determinants are socio-demographic variables, psychological individual difference variables, and situational determinants. Within each category of studies, articles are listed alphabetically by researcher(s) and further, if necessary, chronically by ascending order of year. The key-concepts include (a) the authors, (b) the independent variable(s), (c) the dependent variable(s), (d) the nature of the sample and (e) the most important findings. In the following sections we will describe, for each concept, the findings and specifically reference to the summarized studies in Table 1.

1.1. Socio-demographic characteristics

Recyclers may differ from nonrecyclers with regard to socio-demographic characteristics (e.g., income, age, educational level, gender, political stance, standard of living). Policy makers often use these characteristics for socio-demographic segmentation, the assumption being that consumers belonging to one demographic group differ in recycling behaviors or attitudes from other consumers.   Typically, these academic reports are the by-products of practitioner-oriented research. The studies have been conducted in isolation; not linked to a cumulative stream of research.

The results are often inconsistent across studies. For example, Vining and Ebreo (1980) demonstrated that individuals with higher income and education were more likely to recycle, because they had better access to information or because they had relatively more materials to recycle than those with lower incomes. Also, Weigel (1977) reported that participation in recycling was related to liberal social philosophies, higher education, higher incomes and younger people. This finding that young, well-educated people with higher

Table 1 - Characteristics and empirical findings of source separation studies (1972 - 1997)

Authors	Independent variable	Dependent variable	Sample	Findings
SOCIO-DEMOGRAPHICS				
Arbuthnot (1977)	Age, education, income	Frequency of using a recycling centre (self-report)	Residents	Recyclers were younger, better educated, more liberal, less traditionally oriented than nonrecyclers.
Buttel (1979)	Age	Environmental concern	Residents	There was a negative effect of age on environmental concern
Buttel & Flinn (1974)	Age and education	Environmental concern	Residents	Individuals who express most concern were younger and well-educated
Grossman and Potter (1977)	Age, education	Environmental concern	Residents	The authors found a negative correlation between EC and age, and a positive relationship between EC and education
Hines et al. (1987)	Education, income, age and gender	Pro-environmental behavior	Meta-analysis of pro-environmental behaviors	The authors found a positive correlation between education/income and pro-environmental behavior, but they found a nonsignificant correlation between age/gender and pro-environmental behavior
Kinnear et al. (1974)	Tolerance	Environmental concern	Residents	Those who were more open to new ideas were more environmentally concerned than the average
	Income, age and education	Environmental concern	Residents	No effect for income, age and education
Lansana (1992)	Age, education and income	Actual participation rates in a recycling program and self-reported measures	Residents	Recyclers were older and had better education than nonrecyclers. There was no effect for income.
Mohai and Twight (1986)	Age, place of living	Environmental concern	Residents	Individuals who express most concern are young and urban.
Samdahl & Robertson (1989)	Age, education, ideology	Environmental concern	Residents	Environmentally concerned residents were older, less educated and liberal

Authors	Independent variable	Dependent variable	Sample	Findings
Swenson and Wells (1997)	Education and income	Pro-environmental behavior	DDB Needham data	A positive correlation between education/income and pro-environmental behavior was found
Tognacci et al. (1972)	Age and education	Environmental concern	Residents	Environmentally concerned individuals were younger and had a better education than non-environmentally concerned individuals
Van Liere and Dunlap (1980)	Age, education, ideology	Environmental concern	Residents	Environmentallly concerned people are youger, more liberal and have received a higher education than non-environmentally concerned people
Vining and Ebreo (1990)	Age, education and income	Self-indication of recycling activity in the past year	Residents	Recyclers were older, had a better income and a lower education than nonrecyclers
Weigel (1977)	Age, education, income and ideology	Participation in a recycling program	Residents	Participation was related to liberal philosophies, higher education, higher incomes and younger people

MOTIVATIONAL DETERMINANTS

<u>Values</u>

Batson et al. (1986)	Values of helpfulness and accomplishment	Questions about environmentally related behavior	Students	Those who behave environmentally responsible tend to put more emphasis on values like accomplishment and helpfulness
De Young (1985 - 1986)	Values of frugal living Values of comfort	Items that measured recycling, reuse and saving materials	Residents	There was a positive relationship between a high score on the value of frugal living and recycling behavior and a negative relationship between a high score on the value of comfort and the recycling behavior.

Authors	Independent variable	Dependent variable	Sample	Findings
De Young (1986)	Questions about possible intrinsic incentives (e.g. satisfaction)	Self-reports on recycling, reuse and saving material	Residents	People derive satisfaction from frugal activities. They might carry out conservation behavior for the personal satisfaction associated with the activity
De Young (1988-1989)	Questions about motivation, frugality and attitude	Participation rate in a recycling program during three months: differentiating recyclers and nonrecyclers	Residents	The most important finding was that helping to conserve natural resources is very important for recycling
De Young (1990)	Questions about motives for recycling	Self-reports of actual recycling behavior	Residents, government officials	Respondents are most inclined toward the non-monetary (intrinsic) motive of recycling Important is to help support a charity and recycling because it is the right thing to do
Dunlap et al. (1983)	Values of self-actualization and respect	Participation in a recycling programs	Residents	Individuals were more inclined to participate when they scored high on self-actualization and low on respect
Lee and De Young (1993)	Questions about frugality and motivations	Participation in a recycling program at the office	Employees	Employees derive intrinsic satisfaction associated with frugality from participation at the office
McCarty and Shrum (1993)	Kahle List of Values (LOV)	Frequency of recycling cans, jars and bottles (self-report on five-points scale)	Students	The more people valued security the less one thought recycling was important and the less recycling was undertaken. The more individuals valued respect, fulfilment and enjoyment the less one thought recycling was inconvenient and the less recycling was undertaken. The effects were mediated through beliefs.

Authors	Independent variable	Dependent variable	Sample	Findings
McCarty & Shrum (1994)	Collectivistic value orientation Self-gratification value factor	Recycling questions about how frequently participants recycle newspapers, cans and jars/bottles (self-report on five-points scale)	Students	Values have an indirect relationship with recycling behavior through beliefs about recycling. The main results were the more people are collectivistic and the less important an individual considers self-gratification, the more likely they want to participate recycling programs.
Oskamp et al. (1991)	Questions about frugality	Questions about past and present household recycling and other environmentally responsible behaviors	Residents	Internal incentives such as satisfaction with conservation and frugality strongly influence recycling
Swenson and Wells (1997)	Frugality scale	Pro-environmental behavior	DDB Needham data	This investigation lends support for the finding that participants in environmental activities derive satisfaction from a 'frugal' life
Thøgersen and Grunert (1997)	Schwartz's value indicator	Frequency of source separating glass and bottles (self-report)	Residents	Biospheric values (e.g. unity with the nature) are critical for the willingness to undertake recycling behavior.

Costs and benefits

Grunert (1996)	Belief-related statements regarding environmental benefits and personal costs and benefits of source separation Difference between a volume-dependent collection fee and a weight-dependent collection fee	Self-reports on source separation behavior and on beliefs about source separation behavior	Residents	In the volume-dependent program, personal benefits mediate the effect of environmental concern on beliefs about volume dependent recycling behavior. In the weight-dependent program, only personal costs considerations mediate between environmental concern and beliefs, but not benefit considerations.

Authors	Independent variable	Dependent variable	Sample	Findings
Pieters (1991)	Costs and benefits of recycling behavior	Participation in a recycling program	Overview of recycling programs in the Netherlands	Research before and after the start of waste separation programs indicates that consumers may expect higher costs prior to participation than are actually experienced. The higher the specific costs were, the less positive the intention. During the program, the perceived benefits remained high, and the association between benefits and intention to participate remained significant
Pieters and Verhallen (1986)	Costs/benefits analysis and behavioral intention (short-term and long-term)	Participation-rate in a recycling program	Residents	In evaluating the participation of private households in source separation projects, a close analysis of the personal costs and benefits resulting from the key dimensions of the separation rule, storage system will by performed. Especially, when collective benefits are perceived, the intention to participate in source separation is high
Sondergaard and Jensen (1990)	Costs and benefits of source separation programs	Source separation activities	Residents	Few people experience noticeable private benefits from source separation activites. The most frequently chosen reason to recycle is public benefits
Thøgersen (1994b)	Cost and benefits of recycling	Participation in a recycling program	Overview of recycling programs in Denmark	Most people seem to value recycling for its own sake also after the implementation of a program. However, the effect of perceived private benefits of recycling on the attitude has also increased (e.g. an empty waste bin)
Uusitalo (1989)	Costs and benefits of recycling	Conservation behavior	Residents	Public benefits related to conservation are typically chose by 90-100% of the respondents, whereas private benefits are referred to by up to a third

Authors	Independent variable	Dependent variable	Sample	Findings
Attitude				
Arbuthnot (1977)	General environmental attitude	Frequency of using a recycling centre (self-report)	Residents	Recyclers scored higher on pro-ecological attitudes than nonrecyclers
Balderjahn (1988)	Attitude toward ecologically conscious living	Environmental concern	Residents	A positive attitude towards environmentally conscious living leads to a more conscious behavior towards the environment
Guagnano et al. (1995)	Attitude toward recycling	Self-reported recycling activities	Residents	Their model predicts that behavior is a monotonic function of attitudes and external conditions and the strength of the attitude-behavior relationship is dependent of the strength of the external conditions
Hines et al. (1987)	Attitude toward recycling Attitude toward environment	Pro-environmental behavior	Meta-analysis of pro-environmental behaviors	Attitude toward the environment did correlate with the behavior, but results were stronger when attitude was measured toward a specific action
Humphrey et al. (1977)	Attitude about separation of waste paper for paper recycling	Quality of wastepaper separation by weighing the proportion of nonrecyclable material found in containers (marked for recyclable material only)	Employees	There is a positive relationship between the attitude about recycling and the recycling behavior. However, there are some factors which make it possible to obtain a better attitude-behavior correspondence: less personal effort and better encouragement.
Lansana (1992)	Attitudes toward the recycling program	Actual participation rates in a recycling program and self-reported measures	Residents	The attitudes of residents toward the recycling program were significant predictors of willing to participate

Authors	Independent variable	Dependent variable	Sample	Findings
Lansana et al. (1990)	Measures of environmental attitude, economic constraints and awareness of the proposed program	Intention to recycle and participation in a recycling program	Residents	The results indicate that both environmental attitudes and economic constraints predict the household's intentions. Intention is also a direct predictor of actual participation. Awareness influences the environmental attitudes and activates them toward the environment.
McCarty and Shrum (1993)	Attitude about importance and inconvenience of recycling	Frequency of recycling cans, jars and bottles (self-report on five-points scale)	Students	Attitudes about importance of recycling showed no significant relationship with recycling behavior while the authors found a negative relation between the inconvenience of recycling and the recycling behavior
McCarty and Shrum (1994)	Attitude about importance and inconvenience of recycling	Recycling questions about how frequently participants recycle newspapers, cans as jars/bottles (self-report on five-points scale)	Students	Same results as McCarty and Shrum (1993)
McGuinnes et al. (1977)	Attitudes about ecologically related behavior and attitudes specifically related to recycling	Level of participation in a recycling program during a 7-week period	Residents	Attitudinal measures were significantly related to participation in a recycling program
Oskamp et al. (1991)	Environmental attitude and attitudes about curbside recycling	Questions about past and present household recycling	Residents	Environmental attitudes were not strongly related to the recycling behavior while the more specific attitudes were significantly related to curbside recycling participation
Pieters (1989)	Attitude toward recycling behavior	Percentage of participants and purity of the target waste	Residents	There is positive relationship between attitude and behavior but only a) when there is a short time interval between the measurement of the attitude and of the behavior and b) when the attitude is a measured at the same level of specificity as the behavior

Authors	Independent variable	Dependent variable	Sample	Findings
Smith et al. (1994)	Attitudes toward recycling Affective reactions	Frequency of source separating aluminium, paper glass and plastics (on a 9-points scale)	Students	Attitude is an important mediating link between affect and recycling behavior. The results supported the hypotheses that affects is more important for weak than for strong attitudes
Thøgersen and Grunert (1997)	Attitudes toward source separation	Frequency of source separating glass and bottles (self-report)	Residents	Attitudes are strongly related to recycling behavior. Especially, beliefs about personal costs contribute significantly to the explanation of recycling behavior.

SITUATIONAL DETERMINANTS

Knowledge and information

Authors	Independent variable	Dependent variable	Sample	Findings
Arbuthnot (1977)	Assessment of subjects' relative information level concerning environmental issues and personalities	Frequency of using a recycling centre (self-report)	Residents	Recyclers are better informed generally and more knowledgeable about specific environmental issues than nonrecyclers
Arbuthnot and Lingg (1975)	General environmental knowledge	Questions about environmentally concerned behavior	Residents	There was only a moderate relationship between environmentally concerned behavior and environmental knowledge
Boerschig and De Young (1993)	Knowledge of action strategies (reduce, reuse and recycle), knowledge of action skills (how to carry out the exact behavior) and knowledge of the issue (recognition of the problem)	Solid waste curricula (recycling, littering …)	Students	Solid waste curricula focus mainly on knowledge of issues and strategy and less on knowledge of skills and on attitudes
Corral-Verdugo (1996)	Knowledge of reusable and recyclable material	Frequency of items found in storage of reused and recycled products	Residents	The knowledge of reusables/recyclables produced a significant positive effect on the levels of skill and abilities regarding recycling practices and, consequently, recycling behavior.

Authors	Independent variable	Dependent variable	Sample	Findings
De Young (1989)	Information and knowledge about recycling	Participation rate in a recycling program during three months: differentiating recyclers and nonrecyclers	Residents	Nonrecyclers indicated a lack of information about recycling. Recyclers perceived less problems about recycling and said there was nothing complicated about the activity
Gamba and Oskamp (1994)	Specific knowledge of past and present recycling procedures	Self-reports about participation in a recycling program	Residents	Having high specific knowledge was an important predictor of observed recycling behavior
Hopper and Nielson (1991)	Information strategy: providing each household a flier describing the curbside recycling program	A recycling score: a count of how many times each household recycled out of seven opportunities	Residents	Informing residents increased recycling behavior but didn't affect attitudes
Humphrey et al. (1977)	Task knowledge	Quality of wastepaper separation by weighing the proportion of nonrecyclable material found in containers (marked for recyclable material only)	Residents	Deficient task knowledge often lead to the withdrawal from participation in a recycling program
Luyben and Bailey (1979)	Prompts (flyers with information), prizes (rewards) or proximity of containers	Weight of recycled paper at a central recycling unit	Residents	Information is a relatively weak modifier of recycling behavior when used alone, but has been shown to be more effective in combination with other factors
Oskamp et al. (1991)	Knowledge about environmental conservation	Questions about past and present household recycling and other environmentally responsible behaviors	Residents	General conservation knowledge was significantly higher among curbside recyclers as compared with nonrecyclers
Reid et al. (1976)	Proximity of containers and information	Frequency of newspaper recycling at a central recycling unit	Apartment residents	Information was a weak modifier of recycling, the proximity of newspaper containers resulted in increases in newspaper recycling

Authors	Independent variable	Dependent variable	Sample	Findings
Schnelle et al. (1980)	A weekly report of the volume of litter	The amount of littering	Residents	The amount of litter in streets was significantly reduced when those weekly reports were published
Sia et al. (1985-1986)	Perceived knowledge of environmental action strategies	Questions about all kinds of environmental behavior	Residents	Knowledge is a strong predictor in using environmental action strategies
Simmons and Widmar (1988)	Perceived level of knowledge about recycling	Questions about recycling behavior	Residents	Those who felt confident of their knowledge engaged in recycling significantly more often than those who felt that they lacked knowledge A lack of knowledge formed a barrier to perform
Vining and Ebreo (1990)	Knowledge about recycling	Recycling activity during the past year	Residents	Recyclers' knowledge about locally recyclable materials was more accurate and they were more familiar with more local programs and sources of information than nonrecyclers

Public commitment

Arbuthnot et al. (1977)	The-foot-in-the-door technique	Self-reported use of the city's recycling centre	Residents	This technique was successful in increasing recycling
Burn and Oskamp (1986)	Public commitment: people had to make a statement supportive of recycling	Each week a dichotomous score was assigned indicating whether or not there were recyclables at the curb (frequency of recycling)	Residents	Public commitment groups recycled significantly more than the control group

Authors	Independent variable	Dependent variable	Sample	Findings
DeLeon and Fuqua (1995)	Three types of community interventions: 1) public commitment 2) behavioral feedback 3) commitment + feedback	Number of pounds of recyclable material	Residents	The most effective strategy was program 1. The feedback only group also produced a significant, though weaker, increase in paper recycling. There was no difference in recycling between the commitment-only group and a control group
Katzev and Pardini (1987)	Commitment to participate in a recycling project	Frequency of putting recyclables at the curb	Residents	The commitment technique had a considerable impact in motivating individuals to recycle. Recycling was greater in the commitment group than in another group which didn't made a commitment
McGaul and Kopp (1982)	Public commitment vs private commitment	Total number of cans recycled during a 2-week period	Students	No support was found for the effectiveness of public commitment in increasing recycling
Pardini and Katzev (1983-1984)	Commitment to participate in a recycling project	Frequency of source separation	Residents	Commitment had as effect: an increased newspaper recycling
Reams and Ray (1992-1993)	The effect of three different programs: 1) commitment + information + direct contact 2) commitment + information 3) information only	Participation rate: indication of putting recyclable materials on the curbside	Residents	Program 1 led to significantly higher rates of recycling than the other two programs. There was almost no difference between program 2 and 3.
Wang and Katzev (1990)	Effectiveness of commitment in promoting recycling	Amount of recycled paper in a central room (in a retirement home or in a student house)	Pensioners and students	Individuals in the 'commitment' conditions recycled 3 to 5 times more paper than those in the control group. After the project, the commitment' individuals continued to recycle significantly more paper than the controls

Authors	Independent variable	Dependent variable	Sample	Findings
Werner et al. (1995)	Commitment to participate in a recycling project (through telephone / face-to-face / face-to-face plus signature)	Participation in a weekly curbside pick-up service of glass, paper and cans	Residents	Commitment leads to higher recycling frequencies than in other groups. Moreover, in contrast to earlier research, this study supported the view that commitment and subsequent behavior can lead to attitude change

Extrinsic incentives

Waste disposal fees:

Reschovsky and Stone (1994)	A quantity-based pricing of waste disposal: fees were based on volume or weight of rest waste disposal	Self-reports on the frequency of bringing waste to dropp-off units and total waste generation	Residents	In this project, curbside pickup was found to have a substantial on the reduction of total waste generation. Higher waste disposal might alter these conclusions and can have detremental effects on the obtained reduction

Rewards:

Couch et al. (1978-1979)	Earning lottery tickets	Weight of paper recycled	Residents	By gradually increasing the amount of paper necessary to receive a lottery ticket, the authors could influence the recycling behavior
Diamond and Loewy (1991)	Individual or group reward	Frequency of bringing paper or nondeposit glass to recycling unit	Residents	Individual rewards produced more recycling than did group rewards
Geller et al. (1982) Jacobs and Bailey (1982-1983) Reid et al. (1976)	Monetary rewards	Frequency of source separation	Residents	All these studies had the same effect: economic incentives can prompt individuals to recycle. But when these incentives ended, the motivation felt off and consequently recycling behavior
Luyben and Bailey (1979)	Reward: toys for children were handed over when parents brought newspapers to a recycling centre	Weight of recycled paper at a central recycling unit	Residents	When the toys-procedure was implemented the mean number of pounds collected per week increased with 154 %

Authors	Independent variable	Dependent variable	Sample	Findings
Luyben and Cummings (1981)	Lottery tickets, a contest and a prompt	Amount of recycled cans at a central recycling unit in a residence	Students.	These three different components increased beverage can recycling, but the raffle was the most efficient
Thøgersen (1994b)	Attitude towards differentiated garbage fee	Attitude towards recycling	Residents	Most important determinant of attitudes toward recycling is the expected environmental and public benefits. The small incentive is not enough to convert people from valuing recycling to doing recycling only because it pays. Most people seem to value recycling for its own sake also after implementation of an 'incentive' scheme.
Witmer and Geller (1976)	Monetary rewards	Frequency of source separation	Residents	The extrinsic incentives promoted short term incremental effects in recycling behavior, as after removal of these incentives the behavior returned to baseline levels.
Social influence:				
McGuinnes et al. (1977)	Social and normative pressure	Participation in a recycling program	Residents	Social support was positively related to recycling participation
Nielson and Ellington (1983)	Block leader effect: individuals promoted recycling in their own neighborhood	Participation in a recycling program	Residents	Participation rates were significantly higher in blocks with leaders than without
Oskamp et al. (1991)	Recycling by one's friends and neighbors	Questions about past and present household recycling and other environmentally responsible behaviors	Residents	Recycling by one's friends and neighbors was predictive of the respondents' own recycling
Sia et al. (1985-1986)	Social influence: presence or absence of social support for recycling	Questions about all kinds of environmental behavior	Residents	Commitment to recycle was strongly affected by the environment to recycle (family, friends and neighbors)

Authors	Independent variable	Dependent variable	Sample	Findings
Vining and Ebreo (1988)	Social influence: modelling recycling behavior by one's peers	Participation in a recycling program	Residents	Social pressure was an important reason to recycle
Vining and Ebreo (1990)	Social influence: pressure from friends and family members	Self-indication of recycling activity in the past year	Residents	Social influences on recycling behavior were not reported as important factors by either the recyclers or the nonrecyclers

THEORETICAL MODELS

<u>The Theory of Reasoned Action (TRA)</u>

Allen et al. (1993)	Attitude toward recycling and subjective norms	Behavioral intention to recycle	Residents	Attitude and subjective norms were both weak predictors of the intention to recycle
Bagozzi and Dabholkar (1994)	Attitude toward recycling, subjective norms and past behavior	Behavioral intention to recycle	Residents	Intentions are under the direct control of attitudes and past behavior; attitudes, subjective norms and past behavior are, in turn, functions of higher goals.
Dahab et al. (1995)	Measures of attitudes (belief about importance of recycling), recycling norm (perception of an informal rule to engage in recycling), past recycling behavior and perceived effort	The intent to recycle: respondents had to indicate for each recycling activity whether they intend to do it	Residents	Prior behavior enhances the predictive power of the model of Reasoned Action with regard to behavioral intentions. Attitudes and perceived effort also have a strong influence on the intent to recycle. Subjective norms appeared to have little influence on behavioral intentions. The recycling program was a single drop-off system (and no curbside system); recycling was, here, not a visible activity.
Glenn (1988)	Measures of attitudes and peer pressure	Participation in a curbside recycling project	Residents	The importance of attitudes and peer pressure for participation are both often stressed

Authors	Independent variable	Dependent variable	Sample	Findings
Goldenhar and Connell (1993)	Measures of attitudes (feelings about participating), subjective norms (perceived belief of participating individuals), behavioral intent and past (self-reported) recycling behavior	Self-reported frequency of daily recycling	Students	The impact of attitudes and norms on recycling behavior was mediated by the intentions to recycle. Past experience with recycling was directly related to recycling behavior
Kok and Siero (1985)	Attitude towards participation in a recycling program, recycling norms and behavioral intention (respondents were asked if they intended to participate the program in the future)	Self-report about participation in a recycling program	Residents	Attitudes influence the intention to participate more than social norms do. Besides attitudes and social norms there exists an influence of perceived difficulties on intentions (e.g. distance to the container)
Pieters (1989, study 2)	Social norms (family, neighbors and the city government), attitudes (costs/benefits) and ascription of responsibility	Behavioral intentions with respect to participating in a source separation program	Residents	Intentions are mainly determined by attitudes and not by social norms nor by ascription of responsibility. Participants and non-participants differ considerably in the perceived costs and benefits of participation
Pieters (1989, study 3)	Questions about behavioral intention (intention to participate and intention to continue after the end of the recycling program). Also questions about past recycling behavior	Unobtrusive measure of the quality of the separated waste (separation quality)	Residents	Both behavioral intention and past behavior/habit direct future behavior. But: attitudes and behavioral intention with respect to recycling do not lead to the attitude/intention consistent behavior if people lack knowledge about the single recycling act.
Thøgersen (1994a)	Attitudes, social norms and habit	Behavioral intention	Meta-analysis based on evidence from Danish recycling program	Thøgersen's global finding is that the behavioral intention can be captured as a motivational factor on base of attitude and social norms. But he argues that this intention is not enough to explain the recycling behavior. Other factors like habit and task knowledge can also have an significant effect

Authors	Independent variable	Dependent variable	Sample	Findings
The Theory of Planned Behavior (TPB):				
Taylor and Todd (1995)	Measures of attitude, subjective norm and perceived behavioral control	Behavioral intention to recycle	Residents	The intention to recycle was positively influenced by attitude and perceived behavioral control but was negatively influenced by subjective norm
Boldero J. (1995)	Questions about attitude, normative beliefs, motivation to comply and, subjective norms about recycling newspapers; the intention to recycle; perceived behavioral control over recycling	Recycling behavior: indication whether a member of the household had actually recycled during a 2-week period	Residents	Although attitudes and predictions predict recycling behavior, TPB does not adequately account for this behavior. Perceived behavioral control and subjective norms were not significant predictors.However, factors associated with the inconvenience of recycling and with past behavior were significant predictors
Applications of Schwartz's altruism model				
Allen et al. (1993)	Measures of attitude and social norms (extrinsic motivation program - monetary rewards)	Behavioral intention and recycling behavior	Residents	In the study of Allen et al. (1993) recycling intention and behavior is independent of attitudes and social norms.
Oskamp et al. (1991)	Measures of attitude and social norms (no extrinsic motivation)	Questions about past and present household recycling and other environmentally responsible behaviors	Residents	Oskamp (1991) found that curbside recycling was highly dependent on intrinsic motivations and social norms. It seems that curbside recycling (with no extrinsic motivations) is perceived in the domain of morality', whereas extrinsic motivated programs belong to the domain of 'economy'.
Guagnano et al. (1995)	Measures of the concepts in the Schwartz model	Participation in a recycling program	Residents	The Schwartz model was very effective in predicting behavior for households without bins, but had virtually no predictive value for households with bins. Providing bins is to remove a major barrier to action consistent with pre-existing attitudes

Authors	Independent variable	Dependent variable	Sample	Findings
Hopper and Nielsen (1991)	Measures of attitude, social norms, personal norms and awareness of consequences. Effect of block leaders, prompting and information strategies.	A recycling score: a count of how many times each household recycled out of seven opportunities	Residents	Recycling is consistent with Schwartz's altruism model, according to which behavior is influenced by social norms, personal norms and awareness of consequences A block-leader program influenced altruistic norms and increased recycling behavior.
Thøgersen (1996)	Attitudes, social norms, personal norms, behavioral intention.	Recycling behavior	Overview of recycling articles	Schwartz's model of altruistic behavior offers a satisfying starting point for understanding recycling behavior in industrial societies. Participation in a recycling program depends on social norms in the introductory phase and on personal norms after the program has been in effect for a while. But only for programs which do not depend on extrinsic motivations.
Other models:				
Hornik et al. (1995)	Extrinsic incentives (monetary rewards, social influence, laws) Intrinsic incentives (frugality, conservation, self-sufficiency) External facilitators (social costs, collection frequency, container proximity) Internal facilitators (knowledge, awareness, commitment)	Recycling behavior	Meta-analysis based on relevant recycling articles	Internal facilitators have the highest predictive power towards recycling behavior. External facilitators reflect the lowest predictive power towards recycling. External incentives and internal incentives occupy the spot between the two types of facilitators. To induce short-term recycling, external economic incentives are the most useful. To induce long-term recycling, internal incentives are much better

Authors	Independent variable	Dependent variable	Sample	Findings
Pieters (1991)	Motivation and ability	Recycling behavior	Overview of recycling programs in the Netherlands	The intention and attitude (based on perceived costs and benefits) to recycle capture the motivational factors that impact on a behavior. and benefits related to recycling. The other important factor is ability (task knowledge and habit). Pieters doesn't emphasize the opportunities' factor. Correct performance is influenced by motivational factors and by ability factors During performance in the recycling program consumers receive feedback from their behavior and this might affect the task knowledge by doing the task and the costs/benefits they experience
Thøgersen (1994a)	Motivation, ability and opportunity	Recycling behavior	Meta-analysis based on evidence from Danish recycling program	He captures motivation by the 'Theory of Reasoned Action' 's concepts attitude and. social norm. The second important factor is ability which exists of habit (routines in recycling behavior) and task knowledge (about the recycling taks). Besides motivation and ability the execution of intended behavior depends also on external conditions which facilitates or hamper the activity (e.g. proximity of containers, frequency of waste-collection)

incomes are more environmentally concerned is documented in many studies (Arbuthnot and Lingg 1975; Buttel and Flinn 1974; 1976; Dunlap 1975; Grossman and Potter 1977; Mohai and Twight 1987; Murdock and Schriner 1977; Swenson and Wells 1992; Tognacci, Wiegel, Wideen, and Vernon 1972; Van Liere and Dunlap 1980).

But other studies found little or no relationship (Kinnear et al 1974; Lansana 1992). Oskamp et al. (1991) only found evidence for "type of housing" (e.g., a single house) as a predictor. Vining and Ebreo (1990) and Samdahl and Robertson (1989) found that older people are more likely to recycle.

The inconsistencies between the separate studies are hard to explain. The surprising finding that older studies found younger people to be more prone to recycling, whereas more recent studies found that older people are, may be explained by a cohort effect (Shrum, Lowrey, and McCarthy 1994). The young people of the seventies are older now, and are still recycling. But this hypothesis can not be tested for lack of longitudinal data, and by itself does not explain why today's young people would be less prone to recycle. Relationships between other demographic characteristics and recycling are often ambiguous as well. A recent Belgian study (OVAM 1997) found occasional effects for age, income, family size, and gender, but the results were sharply different across recyclable materials.

The inconsistencies make the results hard to interpret. The mere observation that a demographic characteristic differentiates between recyclers and nonrecyclers does not explain why the two groups are behaving differently. If the "true" underlying differences are not directly measured, the interpretation of the results remains pure guess work. Demographic characteristics remain poor candidates for theoretically integrated research. It comes as no surprise, then, that research has shifted towards more proximal explanatory constructs.

1.2. Motivational determinants

Most of the research investigating influences on source separation and recycling has looked at reasons why some individuals recycle, while others do not. These studies start from the assumption that the difference between the two group is due to underlying differences in intrinsic motivation: recyclers do receive some form of satisfaction from recycling behaviors that nonrecyclers are lacking. The motivational constructs that have been studied are values, beliefs, and attitudes.

1.2.1 Values

The most intuitive determinants op recycling behavior are a person's values: individuals are intrinsically rewarded by behavior that is consistent with their value orientations. Values are considered to be enduring beliefs about the self, abstract in nature, which serve to guide both attitudes and behavior (Rokeach 1973). Because of their stability and centrality in a person's cognitive structure, values are functional in focusing attention to what is important in a situation and thus assisting the person in making more efficient decisions (Dietz and Stern 1995).

While several studies have shown that certain value orientations tend to be related to measures of recycling, the research efforts have been scattered and non-cumulative. It is often difficult to compare the various value labels used by the different authors. In addition, many studies attribute recycling behavior to intrinsic value orientations, without specifying the specific value that must underlie the behavior (De Young 1985; 1990; De Young and Kaplan 1985 - 1986; Pardini and Katsev 1983-1984)

We propose a prudent classification scheme, which recognizes three classes of values that have been documented as influences on recycling behavior. First, a number of studies find that recyclers are more likely to hold 'environmental values' (Crow 1977; De Young 1986; 1988-1989; Hopper and Nielsen 1991; Krebs 1970; Nielsen and Ellington 1983; Oskamp et al. 1991). Second, several studies document the importance of 'experienced civil and social duty' as a value driving recycling behavior. Respondents in several studies mention the importance of "doing the right thing" as a driver of their recycling behavior, be it for social reasons (Batson et al. 1986; De Young 1986), or as a means of preserving self respect (Batson et al. 1986; Dunlap et al. 1983; McCarthy and Schrum 1993). Finally, a

number of studies find that '<u>frugality in consumption</u>' is a value important to people engaging in recycling (De Young 1985-1986; Lee and De Young 1993; Oskamp et al. 1991; Swenson and Wells 1997). Only one study examined the nature of the influence of values on behavior. Schrum et al. (1994) found that the influence of values on recycling behavior is mediated by beliefs about costs and benefits of the behavior, or by attitudes about recycling. This study indicates that it is necessary to consider more complex models than those implied by simple bi-serial correlations.

Several questions are raised by these initial findings on the impact of value orientation. First, the value-orientation studies may have implications for segmentation. Policy makers may want to develop different communication or persuasion campaigns, trying to increase participation in recycling by appealing to the dominant value orientation of each group. Yet, the reported results are not very helpful for segmentation purposes. Measures of values were typically researcher defined, and researcher-selected. No study included more than one or two value orientations, prompting the question to which extent values are correlated. More elaborate motivational research would leave it to the respondent to generate the values that are the important driving forces of his behavior. The laddering methodology from means-end chain research would be an appropriate means to do so (Reynolds and Gutman 1984; 1988). Currently, only one study has used the means-end chain approach, and only as a pretest for survey type research (Bagozzi and Dabholkar 1994).

Second, research in different domains suggests that rather than held values per se, the salience and perceived relevance of these values may be responsible for the effect. Only when they are made salient in the situation, values will drive behavior (Huffman, Ratneshwar and Mick 1994). The lack of attention to these situational variables has been lamented in other places (Cohen and Warlop 1995). From an applied perspective, consideration of these, manageable, situational factors would allow policy makers to shift attention from mere segmentation to policies in which values are made salient in the decision context.

Third, the current studies only allow for a snapshot of how values might affect recycling behavior. Most of these studies were conducted in environments where recycling programs had just been introduced. Some authors have suggested that values may only be important when a task is new, and a person has to engage in active problem solving to infer the most

appropriate course of action (Stern et al. 1995). We know very little on how the influence of values evolves with experience and familiarity with the recycling task. On the one hand, values may lose salience, as habits and behavioral routines are formed. On the other hand, through experience citizens may learn why the values they hold are relevant to the recycling behavior, resulting in a stronger relationship.

1.2.2. <u>Perceived costs and benefits</u>

Most theories of behavioral decision making assume that choice alternatives are decomposed into bundles of perceived costs and benefits associated with each alternative (e.g., Antonides and Van Raaij 1994). Costs refer to the expected and experienced sacrifices involved in striving to attain a goal, while benefits refer to the expected or experienced positive consequences of goal striving. The decision maker will favor the alternative with the most favorable benefit/cost ratio. Recycling behavior involves a dilemma between a cooperative (recycling) option and a noncooperative (non recycling) option. Costs and benefits associated with both options should be taken into account.

In social dilemmas costs and benefits can be public (apply to the society as a whole) or private (apply only to the actor of the behavior). Some recycling studies have addressed the private costs associated with the cooperative recycling option. Even if a resident believes that recycling will have favorable environmental results, perceived private costs may discourage such behavior. Prior authors have distinguished between financial costs, behavioral costs, and investment costs.

First, participation in a recycling program involves some perceived <u>financial costs</u>. Participants usually have to pay for the bags and boxes that are used in the program. In the Belgian perspective, these costs are especially important because they have been the recently most preferred policy instrument to manage citizens' recycling behavior. Internationally, hardly any research has addressed the impact of financial costs. Thøgersen (1994a) reviews policy-oriented research conducted in Denmark, and concludes that financial costs have a very limited impact on recycling behavior. More important seem to be the <u>behavioral costs</u> associated with participation. Participation in a recycling program involves the expenditure of time, and mental and physical effort McCarthy and Schrum (1993) and Boldero (1995) report that the perceived inconvenience of recycling is the most

common reason for not participating. Balch et al. (1991) found that storage of waste materials in house was problematic because of space limitations and pest issues. In a study by Eriksen (1985), 70% of non-participants (vs. only 17% of participants) believed that source separation results in more work and in more hygienic problems. Pieters (1989) suggested that a part of the difference in beliefs between the two groups may be caused by people becoming more positive towards participating in a source separation program when they gain experience ('experience effect'). As he acquires personal experience with a source separation program, the consumer discovers ways to reduce the time expenditure and discomfort associated with participation. In addition, strong adaptive processes may be in operation. The initially discomforting situation may become to be perceived as the standard, and be evaluated more neutrally as time progresses (Kahneman and Miller 1986).

Pieters and Verhallen (1986) further pointed to the importance of investment costs, of a material as well as a psychological nature. Even before actual participation in a program, a household has to free up space in the house. This involves planning activities with a potentially high cost of thinking. Anticipating these thinking costs may discourage individuals and households from participating.

A few studies have addressed the perceived benefits associated with recycling. Søndergaard and Jensen (1990) found that only a few people experience noticeable private benefits from source separation activities. The most frequently chosen reasons to recycle concern public benefits (e.g. a healthy environment, resource recovery, waste reduction). Public benefits related to conservation are typically chosen by 90 to 100% of the respondents, whereas private benefits are referred to by only a third (Uusitalo 1989; 1990). In an other study, many respondents referred to public benefits as an answer to a question about 'what is good about a recycling program?', whereas only a few mentioned personal benefits (Vilstrup Ks 1989). However, Pieters (1986) argues that resource recovery and waste reduction indirectly constitute a personal benefit to people striving to be energy and ecology conscious.

When costs and benefits are investigated jointly, the dominant finding is that the attitude toward recycling is determined by perceived benefits, whereas perceived costs have a small or inconsistent influence (Pieters 1989; Pieters and Verhallen 1986). There is one exception in a sample from a Danish municipality using monetary incentives to stimulate recycling

(Thøgersen 1994b). In this case, perceived costs exert a stronger influence than perceived benefits on the attitude toward recycling.

The empirical results on perceived costs and benefits are scarce, but suggestive. Generally, in a social dilemma, private costs are very salient, while the public benefits are not (Antonides and Van Raaij 1994). Actually, the very cause of the dilemma is that an individual who would only consider private costs and benefits, would have to prefer the non-cooperative (non recycling) option. This is exactly the reason why local governments often try to manage citizens' recycling behavior by manipulating the financial cost differential between recycling and non-recycling options. In this light, two empirical results are remarkable: (1) the finding that perceived costs are less important as determinants of recycling behavior than perceived benefits, and (2) that among cost factors perceived financial costs are less impactful than perceived behavioral costs. Both findings suggest that the policy to increase the financial costs of nonrecycling may be less effective. Because of these important policy implications, future research needs to investigate the cause of this inconsistency.

A few potential reasons can already be put forward. First, most of the reported studies do not test for the direct impact of cost and benefit beliefs on recycling behavior, but on attitudes towards recycling. It is possible that these attitudes are constructed by the respondents on the basis of public benefits and values alone. Costs may be used as a direct input in the behavioral decision, and traded off against attitudes. Second, the reported studies were all about recycling programs in which participation was a matter of free choice. Perceived (public) benefits may only discriminate between participants and nonparticipants when participation is voluntary. When participation is more or less obligatory, as currently in most Belgian communities, and when the focus shifts from mere participation to recycling accuracy, perceived costs may play a much more important role.

1.2.3. Attitudes

In general terms, an attitude is a positive or negative feeling towards a given class of behaviors. Attitudes toward source separation behavior are believed to be the result of a thinking process; they are believed to be constructed on the basis of salient beliefs about the

costs and benefits of the behavior (Pieters 1989). In turn, attitudes are believed to have a direct impact on the intention to participate in a recycling program. The reported results suggest, however, that the impact of attitudes will depend on the level of abstraction at which they are measured. General pro-environmental attitudes may not be particularly powerful predictors of recycling (Arbuthnot 1977; Humphrey et al. 1977; Lansana 1992; McGuinness et al. 1977; Oskamp et al. 1991; Samdahl and Robertson 1989; Vining and Ebreo 1990). Hines, Hungerford and Tomera (1987) found that attitudes toward the environment did correlate with recycling behaviors, but the relationship was stronger when the attitude was measured toward a specific source separation action. However, studies using more specific measures of attitudes towards recycling (Guagnano, Stern and Dietz 1995; Kok and Siero 1985; McCarthy and Shrum 1993; Schrum et al. 1994; Pieters 1989) generally also found moderate to weak links.

Ajzen and Fishbein (1977) have argued more generally that attitudes and behavior should be measured at the same level of specificity, for attitudes to be predictive of behavior. More general attitudes may simply not be considered relevant for the specific behavior (e.g., recycling) under study. Pieters (1989; see also Fishbein and Middlestadt 1995) mentions two additional limitations. First, attitudes and behavior need to be measured in close temporal proximity: the longer the time interval between the measurement of attitude and the measurement of behavior, the higher the probability that the attitude can change for some reason. Second, failures to find attitude-behavior consistency can be due to the fact that attitude is only one of the factors that influence behavior. Some of the suggested other determinants of behavior are social norms, prior behavior, and situational influences. Theoretically, finally, attitudes are thought to influence intentions rather than the behavior itself. Other, situational, constraints may intervene between the formulation of an intention and its realization in behavior (Ajzen and Fishbein 1977).

From an applied perspective, these constraints on the predictiveness of attitudes are less than fortunate. From a theoretical and methodological perspective, the relevant attitude for predicting a specific recycling act may be the attitude toward that specific act, measured immediately before the act will be performed. From a pragmatic perspective, however, it is

relevant to ask whether these attitudes exist independent of their measurement. In practice, attitudes will tend to be more general and less time specific. A more useful approach would be to examine the causes of the weak relationship between general attitudes and specific behavior, and to formulate hypotheses about policy interventions that may help strengthen that relationship.

1.3. Situational determinants

While most of the research has concentrated on individual differences in motivation, any behavior is both individually and situationally determined. Individual differences research may help the policy maker in segmenting the 'market' in different groups of consumers requiring different policy approaches, but it does not lead to actionable guidelines about what to do. Policy makers try to influence the consumer's recycling behavior using communication, pricing or other means. From the perspective of the consumer, these interventions constitute situational determinants of the behavior. We structure the research on situational determinants in three subsections: knowledge and information, public commitment, and extrinsic incentives.

1.3.1. Knowledge and information

Some studies have examined how recyclers and nonrecyclers differ in what they know about recycling and how they acquired that knowledge. De Young (1989) found that recyclers and nonrecyclers were similar in their pro-recycling attitudes but that nonrecyclers lacked knowledge concerning how to recycle. Vining and Ebreo (1990) found that recyclers were more knowledgeable about materials that were recyclable in their municipality, and that they were more aware of the means for recycling these materials than were nonrecyclers. Similar results were recently obtained by Hornik et al (1995). General environmental knowledge seems to have less impact (Arbuthnot 1974; Arbuthnot and Lingg 1975; Dispoto 1977; Oskamp et al. 1991).

Pieters (1989) argues that procedural knowledge is the most important knowledge-based determinant of recycling behavior. Participants are often uncertain about the sorting rules that needed to be applied for recycling different categories of waste. Deficient task

knowledge may in some cases lead to the withdrawal from participation in a source separation program (De Young 1988-1989), but more generally it leads to sorting failures (Humphrey et al. 1977), especially because participants often do not know and never learn that they are making mistakes (Pieters 1989).

A number of studies have investigated whether attempts to increase recycling knowledge through the provision of information increase participation rates. Schnelle et al. (1980) studied the effect of a weekly report about the amount of litter in city streets. They found that the amount of litter in streets significantly reduced when weekly reports of the volume of litter were published in local newspapers. With regard to source separation, Hopper and Nielsen (1991) showed that informing residents about a recycling program increased recycling behavior. Several studies reported effects of comprehensive public information campaigns (Hines, Hungerford and Tomera 1986 - 1987; Marcinkowski 1987; Kok and Siero 1985; Sia, Hungerford and Tomera 1985 – 1986). However, other studies suggested that information is a relatively weak modifier of behavior when used alone (Arbuthnot et al. 1977): information combined with convenient containers and/or personal contact has been shown to be more effective in gaining compliance with recycling than information alone (Reid et al. 1976; Luyben and Bailey 1979).

The effect of information provision is ambiguous as long as it is not clear what exactly was changed by the information. On the one hand, information might increase consumers' knowledge about the recyclable materials, and the recycling rules. In this sense, it would help consumers to behave in closer correspondence to their own values and beliefs. Before receiving the relevant information they might have given up on recycling, because they did not know how to do it. In other instances, the information might be the necessary feedback to a recycler that he is making mistakes (Pieters 1989). On the other hand, information provision might serve as a reminder to the citizen of his own values, beliefs and attitudes. Elaboration on this information might convince the consumer that the recycling activity is relevant to these values, beliefs and attitudes. Maybe even the mere salience of one's own values could increase the likelihood that they are used in the decision process (see infra).

Overall, the current results obtained by Pieters (1989) and others indicate that 'knowledge' is an important aspect of recycling decision making. The several functions knowledge and information can have in this process, need to be further specified.

1.3.2. <u>Public Commitment</u>

A number of studies have investigated the effect of public commitment techniques. These techniques involve a verbal or written commitment from the individual to recycle. Research has shown that commitment produces both high rates of immediate participation and long-term follow-through. Katzev and Pardini (1987) argue that "commitment techniques have considerable impact in motivating individuals to recycle and that they may be able to overcome some of the limitations often encountered by incentive-based programs in promoting resource conservation". They asked experimental subjects to commit to a recycling program. These subjects were significantly more likely to participate during the project week and during the weeks thereafter than subjects in information-only control groups. Burn and Oskamp (1986) obtained similar findings: participation rates following commitment are high in an absolute sense (42% to 67%) and also in comparison to other kinds of intervention. Furthermore, commitment groups tend to continue to recycle at higher rates after the program ends than other treatment groups. Geller (1989) presents guidelines for larger-scale behavioral interventions and notes that interventions should be delivered through "indigenous personnel" in order to enhance credibility and increase the probability of program maintenance.

Cialdini (1985) has offered three possible explanations why commitment has this effect. First, commitment might engage 'automatic consistency'. 'Once a stand is taken, there is a natural tendency to behave in ways that are stubbornly consistent with that stand'. Second, to the extent that people 'own' or feel responsible for their behaviors, they may change their self-concepts. Finally, people seek out and even independently generated new beliefs to strengthen their new self-image; their attitudes change to be consistent with their actions and self-concept. The view of Katzev and Pardini (1987 - 1988) is quite similar: they concluded that when commitment was perceived as voluntary, it leads individuals to develop internal mechanisms of behavioral control 'which would lead them to value recycling waste products permanently and in turn, encourage them to continue to recycle'.

A well-known and well-documented version of the public commitment technique is the-foot-in-the-door technique (Freedman and Frazier 1966). The individual is first asked to perform an easy, "low-cost" behavior, and is later asked to perform larger, related behaviors. Compliance with an initial request results in a perception of the self which is consistent with the subject's actions. The subject attributes the cause of his behavior to an internal disposition and subsequent behaviors would then be consistent with the new self-perception. Arbuthnot et al. (1977) found that this technique was successful in increasing recycling. From a pragmatic perspective, this finding raises the question to which extent a baseline level of intrinsic motivation is necessary to produce the effect. The current results also allow no conclusive statements about the persistence of the effect in the long run, whether it is necessary that the commitment be stated publicly, or whether it requires that an individual consumer's behavior is socially transparent.

1.3.3. Extrinsic Incentives

Extrinsic incentives affect the perceived personal costs and benefits of the recycling behavior relative to its alternatives. According to Hornik et al. (1995) there are three types of extrinsic incentives: monetary rewards, social influence, and policy interventions.

Governments and municipalities often use monetary rewards to increase incidence of a desired behavior. Some studies (Hornik et al. 1995; Geller et al. 1982; Jacobs and Bailey 1982 - 1983; Reid et al. 1976) found that economic incentives can prompt individuals to recycle. After removal of these incentives, however, there is an immediate return to baseline levels (Katzev and Johnson 1983; Witmer and Geller 1976). A second problem with monetary rewards is that they are sometimes not cost-effective. Jacobs and Bailey (1982 - 1983) reported that none of their incentive programs generated sufficient revenues from the recycled materials to pay for the total cost of providing incentives and administering the program.

Another type of extrinsic incentive for recycling is social influence. This could be defined as concern for neighbors' or family's perception or as the presence or lack of social support among members of one's household or community for conservation behaviors (Burn 1991; Vining and Ebreo 1990). In some studies of curbside recycling programs, social pressure was reported to be an important reason for recycling (Glenn 1988; Hornik et al.

1995; McGuiness et al. 1977; Vining and Ebreo 1990). Interestingly, the effect of social influence seems to depend on whether a person's participation in such programs is clearly visible to friends and neighbors (Sia, Hungerford, and Tomera 1985 – 1986; Thøgersen 1991).

Policy interventions are a third type of extrinsic incentive, but they have received surprisingly research attention. Folz (1991) and Lanza (1983) conducted comparative studies of local American source separation programs, but with many inconsistencies in the few results reported; . Furthermore, research designs seemed to be of dubious quality and there's no elaborate quantitative mode of analysis.

Extrinsic incentives change the balance between personal costs and benefits associated with the recycling option and its behavioral alternatives. Providing the incentive makes the recycling option more attractive to consumers, without appealing to their 'higher' values or environmental attitudes. There are no studies available using pricing as a means to manipulate personal costs and benefits, although this is now the most common policy instrument in the domain of domestic source separation.

2. THEORETICAL MODELS

Values, beliefs and attitudes are dispositional constructs that are relatively stable within individuals. Consequently, they have been the core constructs in a number of theories that try to explain and predict differences between individuals in recycling behavior. Some of these theories have been ad-hoc (Kok and Siero 1985; McCarthy and Schrum 1993), based on recycling data only. Others, such as the Theory of Reasoned Action, the Theory of Planned Behavior, and Schwartz' Altruism Model, have been developed as more general theories of volitional behavior, and applied to recycling data.

Only recently, a number of other theories have emerged that include knowledge and some situational determinants as explanatory constructs (e.g., Hornik et al. 1995). In this section, we discuss each of these theories and add a brief evaluation of each. We will evaluate each theory with respect to its usefulness from a pragmatic point of view. How does the theory help the policy maker make decisions about the management of domestic waste recycling programs?

2.1. The Theory of Reasoned Action

The Theory of Reasoned Action (Ajzen and Fishbein 1980; Fishbein and Ajzen 1975) states that the performance of a volitional behavior is affected directly by a person's intention to perform the behavior. Behavioral intention is hypothesized to be a direct function of attitudes ('how one feels about an act') and social norms ('how one perceives significant others to view the behavior'). Attitudes are determined by beliefs about the consequences of the behavior (costs and benefits) and their rated importance. Social norms are determined by beliefs about the norms of significant others and the individual's motivation to comply.

In the domain of recycling, several studies have assessed the validity of the model using measures of recycling intentions, recycling attitudes, cost and benefit beliefs, and perceived social norms. Most of these studies (Allen et al. 1993; Goldenhar and Connell 1992 - 1993; Jones 1990; Kok and Siero 1985; Pieters 1989; Pieters and Verhallen 1986; Thøgersen 1994a) find that the intention to recycle depends on the attitude toward recycling, whereas the social norm in most cases is either not significant or has substantially less influence than the attitude.

Most of the contributions in the Theory of Reasoned Action tradition also analyze the determinants of the attitude. They generally use the approach recommended by Ajzen and Fishbein (1980), uncovering the relevant beliefs regarding the behavioral object in the population by means of open-ended questions and a separate sample, prior to the main investigation (Thøgersen 1996). In the main instrument, Likert-type belief items are produced using the most important beliefs from the pre-investigation as an input. A recent contribution by Bagozzi and Dabholkar (1994) uses a 'laddering'-procedure and telephone interviewing to uncover the beliefs behind the attitude toward recycling.

2.2. The Theory of Planned Behavior

The Theory of Planned Behavior (Ajzen 1985; 1991) is an extension of the Theory of Reasoned Action. It assumes the same determinants of behavioral intentions, but adds 'perceived behavioral control', which reflects beliefs about one's own ability to perform the desired behavior (Ajzen 1985; 1991; Ajzen and Madden 1986). Perceived behavioral

control depends on the perceived availability of resources necessary to perform the behavior (Triandis 1979), and on feelings of self-, that is, an individual's self-confidence in his or her ability to perform a behavior (Bandura 1977).

Taylor and Todd (1995) applied the Theory of Planned Behavior in the domain of recycling. They found that intention to recycle was positively influenced by attitude and perceived behavioral control, but was negatively by subjective norms. This suggests a negative relation to the influence of others which causes the individual to 'rebel' against these influences. The authors think that this effect was due to the relative maturity of the recycling program. People have had wide exposure to recycling and have had the opportunity to develop strongly held attitudes. They did not provide a satisfactory explanation for the negative effect of subjective norms.

Perceived behavioral control was also positively related to recycling. This variable was strongly influenced by self-efficacy and resource facilitating conditions. Higher levels of self-efficacy, that is the perceived ability to carry out the behavior, lead to stronger perceived behavioral control and subsequent intention to recycle. Resource-facilitating conditions include access to recycling programs. The more readily accessible the resources are, the stronger perceived behavioral control and subsequent intention to recycling will be. Boldero (1995), however, obtained no support for the predictive role of perceived behavioral control. In his study, attitudes and intentions predict recycling behavior. Other significant predictive factors were the inconvenience of recycling and past behavior.

2.3. Schwartz' altruism model

Several ecological behaviors have been conceptualized as altruism: energy conservation (Black et al. 1985; Stern et al. 1982), littering (Heberlein 1975), purchasing lead-free gasoline (Heberlein 1975) have all been shown to conform to a social-psychological model of altruistic behavior, developed by Schwartz (1968a; 1968b; 1970; 1973; 1977). According to Schwartz, social norms regarding moral behavior exist which people generally agree upon. These norms represent the values and attitudes of significant others; we expect others to act in the morally proper way, and they in turn expect the same of us. However, these norms will only begin to influence actual behavior when they are internalized and become "personal norms". The consequences of violating or upholding personal norms are

tied to one's self-concept. Further, unless the personal norms are defined as relevant and applicable to a situation, they will not be activated. Schwartz identifies two variables that influence whether or not personal norms translate into behavior: the awareness of the consequences that action will have, and the ascription of responsibility for those consequences. When these two are high, personal norms will guide subsequent behavior.

Recently, Schwartz' altruism model has been applied to recycling behavior (Guagnano et al. 1995; Hopper and Nielsen 1991; Lee et al. 1995; Nielsen and Ellington 1983; Vining and Ebreo 1992). Somewhat contrary to Schwartz, these studies find that either only social norms, or both social norms and personal norms influence recycling behavior. In a reaction to these results, Thøgersen (1996) suggests that the motivational basis for participation in a recycling program for general waste (which involves performing recycling behaviors several times a day) will differ between the introductory phase and the more 'mature' phase of a program. Initially, participation will depend on social norms or on personal norms derived from related activities. As the program matures, the behavior will be solely dependent on personal norms. Consistent with Schwartz, Thøgersen (1996) argues that personal norms will only drive the behavior to the extent that there are no extrinsic incentives for the behavior. Allen et al. (1993) and Oskamp et al. (1991) found that participation in a program including extrinsic incentives, depended only on these incentives and not on personal norms. Thøgersen (1996) concludes that curbside recycling programs without associated extrinsic rewards belong to the "domain of morality", whereas the inclusion of rewards makes it part of "the domain of economy" (Thøgersen 1996).

Personal norms are close to values, in that they may serve as the ultimate justification for the choice of one behavioral option over the other. Thøgersen's (1996) observation that personal standards only influence behavior when no extrinsic incentives are available, is an important finding in the Belgian context where recycling programs use some form of incentive (usually, differential pricing) for virtually all recyclable materials. In most Belgian communities, only the recycling of glass can be considered free of extrinsic incentives. The finding may have two underlying causes. First, it may still imply that in the face of extrinsic incentives, intrinsically motivated consumers continue to base their participation on their values, but participation rates due to the incentives only have already reached a ceiling. Less

comforting is the possibility that due to the presence of the incentives, consumers become less likely to rely on their values or personal norms. We are not aware of studies, also not in other domains, demonstrating that incentives reduce the intrinsic motivation of participants in a voluntary program, but this is an intriguing possibility. The theoretical explanation for such an effect may be found in the social psychological literature on attribution processes. Individuals typically need only one reason for the justification of their own behavior. If they start attributing their recycling actions to personal gain or the reduction of personal costs, there may be no reason to continue to attribute the behavior to internal driving forces. Interesting and pragmatically relevant research questions are whether these attribution processes prevent a return to intrinsically motivated behavior once the incentives are dropped or reduced, and whether the presence of incentives for recycling of one type of waste material reduces the intrinsic motivation for other material.

2.4. Thøgersen's (1994a) model

A number of authors have developed more ad hoc models about recycling behavior. These models are based on the conceptualizations by Fishbein, Ajzen, and Schwartz, but they also add explanatory constructs that are not included in these more general models. A first of these ad-hoc models was developed by Thøgersen (1994a). In Thøgersen's view the *motivation* of the actor to choose one or the other of alternative acts toward the target object is one of three determinants to be considered . Thøgersen (1994a) uses Fishbein and Ajzen's extended 'expectancy value' attitude theory as a conceptualization for the concept motivation. In the Theory of Reasoned Action, attitudes and subjective norms concerning source separation are based on salient beliefs about outcomes of the activity and on the opinions of relevant reference persons. The weights of these beliefs depend on the subjective evaluation of the outcomes and the motivation to comply with the norms of referents. Relevant referents concerning source separation could be family members, neighbors, friends, authorities, opinion leaders, or experts.

Thøgersen (1994a) describes two dimensions of the consumer's *ability* to source separate in accordance with the rules: habit and task knowledge. Habit is important

because we learn routines which make us capable of performing the task in a nearly automatic fashion, employing a minimum of conscious attention. Until the habits of source separation are well ingrained, there is a high risk of sorting failures as a consequence of the force of (old) habit. Secondly, the person's knowledge about how to reach a goal (e.g. to separate the waste correctly) may be faulty. It is possible that some people may lack sufficient information, be unable to understand the message, or forget important information. For example, as a result of deficient task knowledge, alien materials may be placed in containers for recyclables, or recyclable materials in containers for garbage.

Besides depending on personal abilities, the execution of intended behavior depends on *conditions external to the actor which facilitate or hamper the activity* (Triandis 1977; Van Raaij 1981). Opportunities may be of an absolute nature (e.g., the absence or presence of a recycling system for plastics), but generally they are of a relative nature (e.g., distance to the nearest glass container or frequency of garbage collection). This means that individual consumers may perceive the same conditions very differently. The structural conditions created by a municipal source separation program may be more or less facilitating for the execution of intentions about source separation. For example, the fewer the delays, diversions and obstacles between the formation of an intention and the performance of the specific behavior, the more facilitating the conditions. The less facilitating a design is, the more vulnerable is the source separation program to events and unforeseen circumstances which may make people act against their behavioral intentions.

2.5. Pieters' (1991) goal setting and goal striving model

Gollwitzer (1990) distinguishes two phases in goal attainment through behavioral change. In the goal setting-phase, the desirability of attaining the goal, e.g. source separation, relative to the desirability of other goals, e.g. personal comfort, is central. After a goal has been set, consumers move to the goal-striving phase, where the specific behavioral means of attaining the goal and the difficulty of performing the task at hand became more important. In general, in this model, motivation leads to task performance if ability to perform is present. Ability moderates the relationship between motivation and performance.

Correct performance of the consumer's task is influenced by motivational factors, such as intention, and by ability factors, such as the extent to which the behavior is under volitional control. Intentions capture the motivational factors that impact on a behavior (Ajzen 1989). They are indications of how hard people are willing to try, and of how much effort they are planning to exert, in order to perform a behavior (Bagozzi and Warshaw 1990). An important ability factor is task knowledge of consumers: knowledge about the specific means of attaining a goal (Verhallen and Pieters 1984). A person who intends to participate in a waste separation program but does not know how, or who has an incorrect knowledge of the rules, will not participate properly. A second ability factor is habit (Bagozzi 1982). In a waste separation program, existing waste disposal patterns have to be discontinued, and new patterns have to be formed and maintained. But the force of habit is considerable. Consumers may forget the new behaviors or may fall back into the old patterns because those are less costly to maintain (Pieters 1991).

Structurally, this model looks like Thøgersen's (1994a) model of recycling behavior. Both authors use the Theory of Reasoned Action to conceptualize the 'motivation' factor. Both conceive of the Theory of Reasoned Action as a workable model of goal setting, but as less suited to explain goal striving (Ajzen 1985 1988; Bagozzi and Warshaw 1990; Pieters 1991). Pieters (1991) puts the emphasis less on the 'opportunities' factor and more on the consumers' procedural knowledge.

2.6. Hornik's (1995) model of consumer recycling behavior

According to Hornik et al. (1995), four variables are important to recycling behavior. They distinguish between extrinsic incentives (prizes, monetary rewards, social influence, social pressures, laws and regulations), and intrinsic incentives (locus of control, self-sufficiency, frugality, identification and conservation) as motivators for recycling. They further recognize the existence of external (social costs, time required, transportation, transport frequency and container proximity) and internal facilitators or barriers (knowledge, awareness, commitment, poor image and ignorance) for the behavior. They borrowed this fourfold distinction from a more general social marketing scheme proposed by Kotler and Andreasen (1987).

They argue that internal facilitators have the highest predictive power for recycling behavior. These variables are characterized by a relatively enduring effect on recycling. External facilitators reflect a lower predictive power and a short-lived effect on recycling. External incentives and internal incentives occupy intermediate positions between the two groups of facilitators, reflecting their respective predictive abilities and duration of effect of recycling.

The authors argue that, before making a long-term commitment, the consumer is assumed to: a) be aware / have knowledge of a recycling program, b) have a salient reason to move toward a desired state of participation in a source separation program, c) be in a social environment that is conducive to recycling behavior, and d) have no major barriers and have sufficient facilitators for, recycling. They propose that to induce short-term recycling, the best variables are external economic incentives such as money. For inducing long-term recycling behavior these external incentives may be impractical; it seems that is better in the long term to appeal to internal incentives and increase facilitators. Perhaps external incentives can be deployed as a Foot-in-the-Door technique (Arbuthnot 1977) to get the consumer started with recycling. Later, internal incentives can nurture a more enduring recycling behavior.

3. AN ASSESSMENT OF THE STATE-OF-THE-ART

3.1. Recycling as intentional and volitional behavior

Most of the more comprehensive work on recycling was inspired by the Theory of Reasoned Action (Fishbein and Ajzen 1975) and its successors. These theories explain how behavioral intentions are formed. Intentions are based on attitudes, which in turn are grounded in beliefs about the costs and benefits of the behavior, and on the perceived importance of these costs. Variants of the model include habits, social norms, and/or the perception of behavioral control as additional predictors of behavioral intentions.

The only source of variability in behavior, according to these models, is when a consumer changes intentions: a nonrecycler decides to become a recycler, or vice versa. Intentions can only change if the consumers' beliefs are changed. These beliefs can be about the costs and benefits of behavior, about the norms of the social environments, or

about one's own ability to perform the behavior. The model assumes, again, that changing these beliefs is an all-or-nothing process. It is a volitional and voluntary act on the part of the consumer, who has to be convinced that his previous conviction was wrong. Once a consumer has adapted a belief, the changed belief will always be active and influence each subsequent recycling act, unless it is changed again by a new, successful, communication effort.

Recycling research has adapted to the constraints imposed by this model. Criterion variables in most of the studies have been measures of intention, or self-reports of past behavior. The model has been fairly successful in predicting whether an individual, based on his beliefs, will report to be a recycler or not. Only recently has attention shifted to questions about the consistency between intentions and actual recycling behavior. Pieters (1991), Thøgersen (1994a), and Hornik et al. (1995) have called attention to the role of ability-related and opportunity-related determinants of recycling behavior. Intentions to recycle may or may not translate into behavior, depending on the consumer's recycling knowledge and on the situational context. From a pragmatic point of view, these nonmotivational determinants deserve more attention, and should be investigated for their value as potential policy instruments.

3.2 Purposive behavior and the role of values

The problem solving perspective on consumer behavior sees behavior as goal-striving, and calls attention to the way in which goals are translated into immediate behavioral objectives and actual behavior. Consumers' actions need to be understood as means to achieve the goal as an end (Warlop and Ratneshwar 1993). Theory of Reasoned Action-based models of recycling assume that a consumer's values are not end-goals, but that they influence the weight to be put on each belief. An other series of studies (McCarthy and Schrum 1993; Shrum et al. 1994) has suggested that the effect of values is reflected entirely in the beliefs consumers hold about the costs and benefits of recycling. In neither case, there is a discussion on how goals conflict or on how conflicting values are balanced in day to day activities. This omission calls attention to some ignored aspects of recycling behavior.

A first of these aspects is the role of qualitative differences between values. Scattered research results suggest a number of values that seem to be important in recycling decision

making, but the research does not tell us to which extent these values are related to each other.   Moreover, the value research has only investigated values that might motivate the choice for recycling. However, recycling is not an isolated act in one's life. It is embedded in other household tasks and plans (keeping the house clean, minimize housekeeping effort…), the associated goals and values of which may conflict with recycling goals.   The full motivational background of recycling as embedded in housekeeping behavior has never been charted. We intend to use the Means-End Chain Framework to obtain a more complete picture (Warlop, Smeesters and Vanden Abeele, in progress)

Second, prior research has largely ignored the way in which values are incorporated in decisions. The dominant theoretical suggestion is that values will motivate new behavior which still involves considerable problem solving thought, but that later on values are entirely reflected in beliefs or weights put on these beliefs (Allport 1955; Cohen and Warlop 1995). We do not question this assumption per se. However, by itself it does not explain why recyclers are not always consistent in their recycling activities. Bettman (1979) has suggested that ongoing routine behavior may revert to a new problem solving stage when interrupts are provided that make the actor reconsider the appropriateness of his current behavior to reaching his goals. From a pragmatic public policy perspective, we intend to investigate whether values or lower level motivational constructs (attitudes or perceived costs and benefits) should be emphasized in such reminder messages (Warlop, Mitra, and Smeesters, in progress)

Third, how do people react when they perceive their own behavior as inconsistent with their values? If goals are really important, such self-observations should create a state of psychological imbalance or dissonance that has to be dealt with. Few researchers have attempted to look at recyclers' reasons and attributions for not complying with recycling programs.   Pieters (1989) hints at a study, in progress, investigating consumers' attributions of who is responsible for the environment (Rik Pieters, personal communication, 1998). The same theme has emerged in our ongoing qualitative research on recycling experiences (Warlop, Smeesters and Ratneshwar, in progress), and will be explored further.

3.3. Recycling as stable, predictable behavior or repeated decision making

All hitherto published studies have investigated recycling at a fairly high level of abstraction. Professed or observed recycling behavior is a summary measure of a series of consecutive discarding decisions over a specified or unspecified stretch of time.   By definition this is true for intention measures or self-reports of past behavior. Even the few studies that used observational measures (e.g., Pieters' (1989) garbology studies) could only observe the extent to which garbage bags or containers reflect a consumer's recycling decisions over the previous week or weeks. The research questions in prior studies have adapted to these limitations. The bulk of the research is about individual differences in motivation and knowledge, or about situational factors which can be assumed to remain constant over the period implied by the level of aggregation of the dependent measures, such as the nature of the garbage collection policies (Folz 1991). This has important consequences for theory formation.

Current theories of recycling behavior adhere to what Wilson, Lisle and Kraft (1990) have called the 'file drawer analogy' of behavior. Like in a file drawer, a person's values, attitudes, beliefs, and relevant knowledge about a target object or act are stored in a systematic fashion. The 'file' with all these potential decision inputs is opened when it is called for by an impending decision involving the target object or behavior. Its entire content is then available for use in the decision, and <u>will</u> be used in the decision. The contents of the file drawer may change over time, through learning and experience, but this learning process is slow and gradual. Stored beliefs, attitudes, and values are accessed and combined on the basis of some implicit calculation about their weighted relevance to the target object or behavior; this calculation rule itself is assumed to be stable. Therefore, in the short term the consumer's recycling behavior is highly predictable from the contents of his 'file' only.

This model must be contrasted with what Cohen, March and Olson (1972) called the 'garbage can model' of behavior (pun not intended). Their model was developed in the context of organizational decision making where many decision situations show a marked lack of consistency over time in terms of the information that is available, or even considered important. Clore (1992) argued that this model applies equally well and maybe even better to individual behavior and decision making.   The model assumes that decision making is like the 'art of found objects' (Clore 1992): one tends to make the best composition one can

with whatever is at hand. The resulting evaluation of decision alternatives and the ultimate choice are therefore heavily dependent on what is cognitively salient at any particular time.

The 'garbage can' hypothesis has important theoretical and methodological implications. First, it puts a lot of weight to situational determinants of thought processes. Values, beliefs, attitudes and intentions to recycle not only have to be traded off against competing concerns in housekeeping tasks; they may not even come to mind at all during ongoing housekeeping tasks. Whether or not they are used in any discarding/recycling decision will depend to a large extent to whether they are accessible for the behavior at the time of the decision. Communication policies to facilitate recycling behavior should be evaluated on the basis of their ability to bring relevant thought to the consumer's mind, while s/he is engaging in the specific household tasks that involve the discarding of garbage. No empirical research has investigated these issues. Only Heckler (1994), in a conceptual paper, has drawn attention to the role of forgetting intentions in recycling. We will follow her lead, and extend her call in systematic laboratory investigations of singular discarding decisions (Smeesters, Warlop and Vanden Abeele, in progress).

3.4. Recycling as a social dilemma

We have emphasized a shift in emphasis from recycling as a volitional activity to recycling as one option in decision tasks associated with housekeeping behavior. The decisional conflict that may arise in such tasks can also be characterized as a social dilemma (Dawes 1980; Hardin 1968; Liebrand et al. 1992; Pieters, Bijmolt, Van Raaij and de Kruik 1998). One is faced with a social dilemma when the needs and desires of the individual (self-interest) conflict with the needs and desires of human beings in general (collective interest). In a dilemma situation, actions which are beneficial for the individual are, if performed by most people, harmful for everybody.

Source separation behavior is a good example of a conflict between a propensity to act in his own interest and a propensity to act in the interest of the environment. Our world is a public good and the goal, here, is to reduce the disposal of waste materials produced by households and to recuperate raw material as much as possible. By participating in a recycling program, members of a community are making a contribution to the public good. If every individual contributes by sorting his domestic garbage in an accurate way, the whole

community will benefit. However, in the short run 'not sorting' is the most profitable behavior for most people. It saves them discomfort, costs and time.

The analogy with Hardin's (1968) description of the 'Tragedy of the Commons' is striking. In Hardin's original example, the 'common good' was a public pasture, where cowherds could graze their cows freely. If each cowherd, trying to maximize his own profit, increases his herd size and adds one or two more animals, the common good will not be very negatively affected, as long as he is the only 'free rider'. However, if a large number of herdsmen increase their herd, the common pasture cannot be sustained because the amount of grazing will exceed the replenishment rate of the pasture. The commons is ultimately destroyed by overgrazing, resulting in the loss of the entire herd that grazed on it. So, the essential property of a 'commons' dilemma is that every individual continues to do something which yields an individual advantage, but which collectively damages the social group as a whole (Platt 1973). More abstractly, 'the defective choice is to obtain gratification, while the cooperative choice is to refrain from seeking the immediate positive outcome, and thus avoid the long term negative consequence (Komorita and Parks 1994).

Consistent with our prior conceptualization we argue that a consumer's behavior in this commons dilemma will depend on the momentary salience and relevance of the respective public and private costs and benefits associated with the recycling option in housekeeping tasks. Private costs and benefits are experienced by the decision maker only; public costs and benefits pertain to society as a whole. Typically private costs and benefits are salient while public costs and benefits are not. Table 2 presents the consequences for source separation behavior. The private benefits of noncompliance with a recycling program outweigh the public costs, which are fairly abstract and nonsalient. For example, not participating a source separation program or not sorting properly saves you energy and time. The costs (e.g. environmental pollution) are very abstract because people typically do not see the long-term collective effects of their individual behavior. On the other hand, the costs of complying with the program are very salient, while its public benefits are fairly abstract. Failures to comply can therefore be understood as the result of decisions in which private costs and benefits are very salient, while public costs and benefits are not.

Table 2 - Costs and benefits of pro- and anti-environmental behavior

	BENEFITS	COSTS
Pro-environmental behavior	public, abstract and non-salient benefits healthy environment	private, concrete and salient costs demands time, physical and mental effort
Non pro-environmental behavior	public, abstract and non-salient costs environmental pollution	private, concrete and salient benefits saves time, physical and mental effort

4. TOWARD A NEW MODEL

In this project we take an intervention-oriented social marketing perspective. We want to develop a theory which emphasizes how domestic source separation behavior can be managed. Our approach starts form the pragmatic observation that source separation and recycling programs have shifted from entirely voluntary programs without any extrinsic component to more a managerially guided approach in which every citizen is more or less forced to participate, and in which accuracy of recycling is the main criterion of compliance.

The rudiments of our theory are summarized in Figure 1. We consider recycling behavior as the result of the traditional interaction between individual and situational factors. New in our approach is the emphasis on singular decisions. Accuracy of recycling behavior, as assessed through self report or garbology measures, is the result of a sequence of singular decisions made in the context of housekeeping tasks. Individual consumers are seen as purposive decision makers who maximize utility with each decision. Available inputs in the judgment of the utility of each behavioral option are the persons values, beliefs and attitudes associated with recycling and with the housekeeping task in which the recycling is embedded. The combination of these available inputs constitutes a person's motivational 'means-end' make-up regarding garbage discarding tasks.

The utility of each decision alternative, including the recycling alternative, is 'computed' by the decision maker each time he decides to discard an item. The utility of the recycling option, relative to other available options, depends on the accessibility or salience of each of these potential inputs at the time of each decision, which in turn will heavily depend on the nature (e.g., time- and task-pressure) of the housekeeping task in which the discarding decisions are embedded. If the individual decides to recycle, accuracy will further depend on the individual's procedural knowledge of sorting rules. Policy interventions can only affect behavior through either their effect on the relative accessibility of decision inputs

(values, beliefs and attitudes) or through their influence on procedural sorting knowledge.

From a methodological angle, our emphasis on singular discarding decisions implies qualitative research into the experiential aspects of these decisions, and experimental research documenting the causal impact of situational constraints. We are currently working on both fronts.
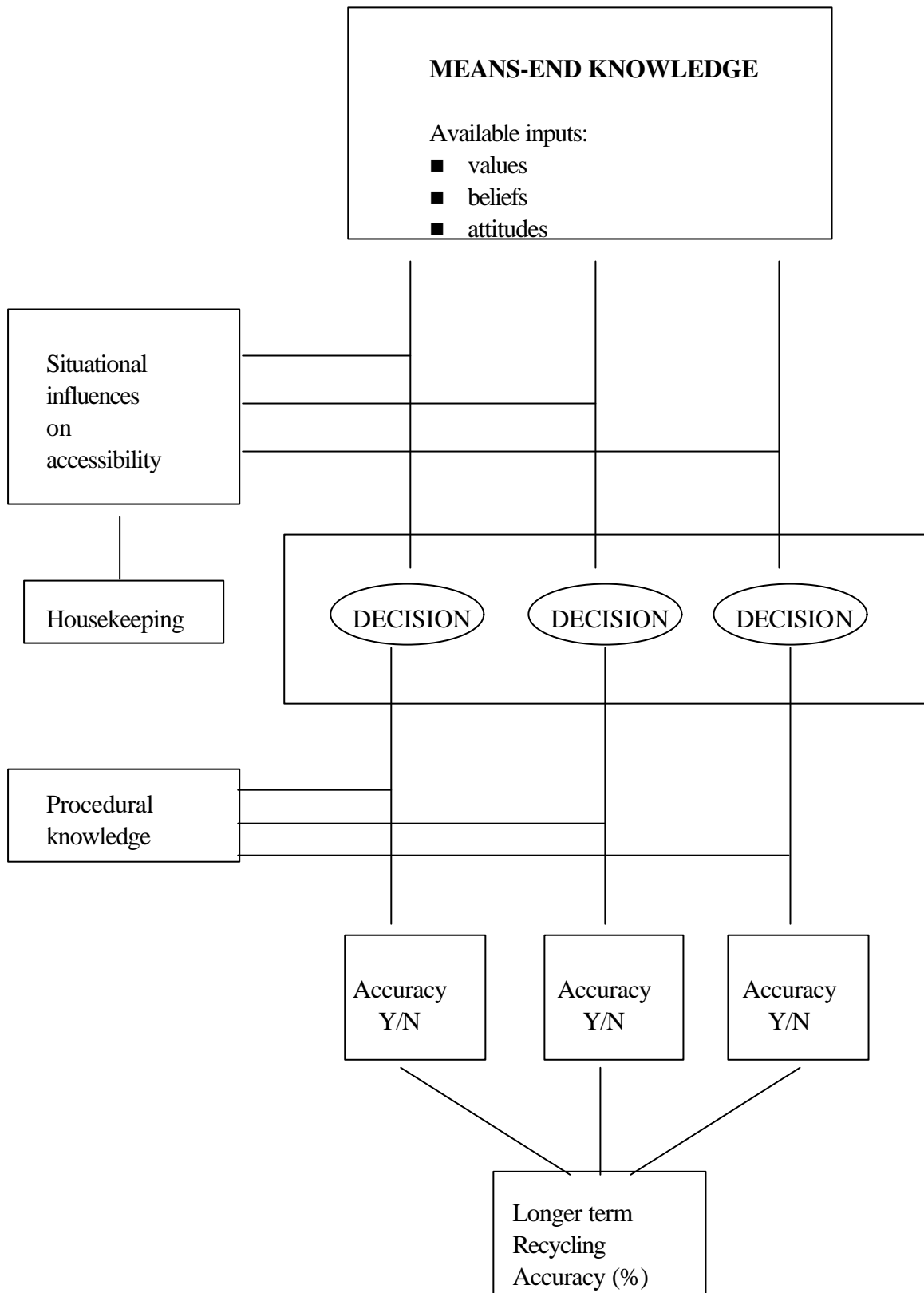
Figure 1 - Rudimentary schema of our theory

REFERENCES

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.), <u>Action control: From cognition to behavior</u> (pp. 11 - 39). New York: Springer Verlag.

Ajzen, I. (1988). <u>Attitudes, personality and behavior</u>. Milton Keynes: Open University Press.

Ajzen, I. (1989). Attitude structure and behavior. In A.J. Pratkanis, S.J. Breckler, & A.G. Greenwald (Eds.), <u>Attitude structure and function</u>. Hillsdale, N.J.: Lawrence Erlbaum.

Ajzen, I. (1991). The theory of planned behavior. <u>Organizational Behavior and Human Decision Processes, 50</u>, 179 - 211.

Ajzen, I, & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. <u>Psychological Bulletin, 84</u>, 888 - 918.

Ajzen, I., & Fishbein, M. (1980). <u>Understanding attitudes and predicting social behavior</u>. Englewood Cliffs, NJ: Prentice-Hall.

Ajzen, I., & Madden, T.J. (1986). Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavioral control. <u>Journal of Experimental Social Psychology, 22</u>, 453 - 474.

Allen, J., Davis, D., & Soskin, M. (1993). Using coupon incentives in recycling aluminum: A market approach to energy conservation policy. <u>Journal of Consumer Affairs, 27</u>(2), 300 - 318.

Allport, G.W. (1955). <u>Becoming: Basic considerations for a psychology of personality</u>. New Haven: Yale University Press.

Arbuthnot, J. (1977). The roles of attitudinal and personality variables in the prediction of environmental behavior and knowledge. <u>Environment and Behavior</u>, <u>4</u>, 217 - 232.

Arbuthnot, J., & Lingg, S. (1975). A comparison of French and American environmental behaviors, knowledge and attitudes. <u>International Journal of Psychology</u>, <u>10</u>, 257 - 281.

Arbuthnot, J., Tedeschi, R., Wayner, M., Turner, J., Kressel, S., & Rush, R. (1977). The induction of sustained recycling behavior through the foot-in-the-door technique. <u>Journal of Environmental Systems</u>, <u>6I</u>, 353 - 366.

Bagozzi, R.P. (1982). A field investigation of causal relations among cognitions, affect, intentions and behavior. <u>Journal of Marketing Research</u>, <u>19</u>, 562 - 584.

Bagozzi, R.P., & Dabholkar, P.A. (1994). Consumer recycling goals and their effect on decisions to recycle: A means-end chain analysis. <u>Psychology and Marketing</u>, <u>11</u>(5), 313 - 340.

Bagozzi, R.P., & Warshaw, P.R. (1990). Trying to consume. <u>Journal of Consumer Research</u>, <u>17</u>, 127 - 140.

Balch, G., Leeks, C.L., Oh, K., & Gardiner, J. (1991). <u>Citizen participation in recycling in Chicago: Some early results</u>. Paper presented to the 1991 Conference on Solid Waste Research and Technology, Oct. 15 - 16, Oak Brook, IL.

Balderjahn, I. (1988). Personality variables and environmental attitudes as predictors of ecologically responsible consumption patterns. <u>Journal of Business Research</u>, <u>17</u>, 51 - 56.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. Psychological Review, 84(2), 191 - 215.

Batson, C.D., Bolen, M.H., Cross, J.A., & Neuringer-Benefiel, H.E. (1986). Where is the altruism in the altruistic personality? Journal of Personality and Social Psychology, 50, 212 - 220.

Bem, D. (1972). Self-perception theory. In L. Berkowitz (Ed.), Advances in Experimental Social Psychology. New York: Academic Press.

Bettman, J.R. (1979). An information-processing theory of consumer choice. Reading, MA: Addison-Wesley.

Black, J.S., Stern, P.C., & Elworth, J.T. (1985). Personal and contextual influences on household energy adaptations. Journal of Applied Psychology, 70, 3 - 21.

Boerschig, S., & De Young, R. (1993). Evaluation of selected recycling curricula: Educating the green citizen. Journal of Environmental Education, 24(3), 17 - 22.

Boldero, J. (1995). The prediction of household recycling of newspapers: The role of attitudes, intention and situational factors. Journal of Applied Social Psychology, 25(5), 440 - 462.

Burn, S.M. (1991). Social psychology and the stimulation of recycling behaviors: The block leader approach. Journal of Applied Social Psychology, 21(8), 611 - 629.

Burn, S.M., & Oskamp, S. (1986). Increasing community recycling with persuasive communication and public commitment. Journal of Applied Social Psychology, 16, 29 - 41.

Buttel, F.H. (1979). Age and environmental concern: A multivariate analysis. <u>Youth & Society</u>, <u>10</u>(3), 237 - 256.

Buttel, F.H., & Flinn, W.L. (1974). The structure of support for the environmental movement, 1968 - 1970. <u>Rural Sociology</u>, 39, 56 - 69.

Buttel, F.H., & Flinn, W.L. (1976). Environmental politics: The structuring of partisan   and ideological cleavages in mass environmental attitudes. <u>Sociological Quarterly</u>,   <u>17</u>, 477 - 490.

Cialdini, R.B. (1985). <u>Influence: Science and practice</u>. Glenview, IL: Scott-Foresman.

Cialdini, R.B. (1988). <u>Influence: Science and practice</u> (2nd Ed.). Boston: Scott-Foresman.

Cialdini, R.B., Cacioppo, J.T., Bassett, R., & Miller, J.A. (1978). Low-ball procedure for producing compliance: commitment then cost. <u>Journal of Personality and</u>   <u>Social Psychology</u>, <u>36</u>, 463 - 476.

Cohen, D., March, J.G., & Olsen, J.P. (1972). A garbage can model of organizational choice. <u>Administrative Science Quarterly</u>, <u>17</u>, 1- 25.

Clore, G.L. (1992). Cognitive phenomenology: Feelings and the construction of Judgment. In L.L. Martin & A. Tesser (Eds.), <u>The construction of social</u>   <u>judgments</u> (pp. 133 - 164). Hillsdale, New Jersey: Lawrence Erlbaum Associates,   Publishers.

Cohen, J.B., & Warlop, L. (1995). <u>A motivational perspective on Means-End Chains</u>. Bedrijfseconomische verhandeling Nr. 9501., Department of Applied Economics, KULeuven.

Cook, S.W., & Berrenberg, J.L. (1981). Approaches to encouraging conservation

behavior: A review and conceptual framework. Journal of Social Issues, 37, 73 - 107.

Corral-Verdugo, V. (1996). A structural model of reuse and recycling in Mexico. Environment and behavior, 28(5), 665 - 696.

Couch, J.V., Garber, T., & Karpus, L. (1978 - 1979). Response maintenance and paper recycling. Journal of Environmental Systems, 8(1), 127 - 137.

Crow, R. (1977). Energy conservation: Behavioral considerations. EPRI Journal, 2, 20 - 25.

Dahab, D.J., Gentry, J.W., & Su, W. (1995). New ways to reach non-recyclers: An extension of the Model of Reasoned Action to recycling behavior. Advances in Consumer Research, 22, 251 - 256.

Dawes, R.M. (1980). Social dilemmas. Annual Review of Psychology, 31, 169 - 193.

DeLeon, I.G., & Fuqua, R.W. (1995). The effect of public commitment and group feedback on curbside recycling. Environment and Behavior, 27(2), 233 - 250.

De Young, R. (1985). Satisfaction from conservation activities in North America. Environmental Conservation, 12(3), 259 - 260.

De Young, (1985 - 1986). Encouraging environmentally appropriate behavior: The role of intrinsic motivation. Journal of Environmental Systems, 14(4), 281-291.

De Young, R. (1986). Some psychological aspects of recycling. Environment and Behavior, 18, 435 - 449.

De Young, R. (1988 - 1989). Exploring the difference between recyclers and nonrecyclers: The role of information. <u>Journal of Environmental Systems</u>, <u>18</u>, 435 - 449.

De Young, R. (1990). Recycling as appropriate behavior: A review of survey data from recycling education programs in Michigan. <u>Resources, Conservation and Recycling</u>, <u>3</u>, 1 - 13.

De Young, R., & Kaplan, S. (1985 - 1986). Conservation behavior and the structure of satisfactions. <u>Journal of Environmental Systems</u>, <u>15</u>(3), 223 - 292.

Diamond, W.D., & Loewy, B.Z. (1991). Effects of probabilistic rewards on recycling attitudes and behavior. <u>Journal of Applied Social Psychology</u>, <u>21</u>(19), 1590 - 1607.

Dietz, T., & Stern, P.C. (1995). Toward a theory of choice: Socially embedded preference construction. <u>Journal of Socio-economics</u>, <u>24</u>, 261 - 279.

Dispoto, R.G. (1977). Interrelationships among measures of environmental activity, emotionality and knowledge. <u>Educational and Psychological Measurement</u>, <u>37</u>, 451 - 459.

Dunlap, R.E. (1975). The impact of political orientation on environmental attitudes and actions. <u>Environment and Behavior</u>, <u>7</u>, 428 - 454.

Dunlap, R.E., Grieneeks, J.K., & Rokeach, M. (1983). Human values and pro-environmental behavior. In W.D. Conn (Ed.), <u>Energy and material resources: Attitudes, values and public policy</u> (pp. 145 - 168). Boulder, CO: Westview Press.

Eriksen, R. (1985). <u>Spørgeskemaundersøgelse: Genbrug I Tarup 1984 - 1985</u> (Questionnaire analysis: Recycling in Tarup 1984 - 1985). Odense: Danish Data

Archive, Odense University.

Fazio, R.H. (1986). How do attitudes guide behavior? In R.M. Sorrentino & E.T. Higgins (Eds.), <u>The handbook of motivation and cognition: Foundations of social behavior</u> (pp. 204 - 243). New York: Guilford Press.

Fishbein, M., & Ajzen, I. (1975). <u>Belief, attitude, intention and behavior: An introduction to theory and research</u>. Reading, Mass.: Addison-Wesley.

Fishbein, M., & Middlestadt, S. (1995). Noncognitive effects on attitude formation and change: Fact or artifact? <u>Journal of Consumer Psychology</u>, <u>4</u>(2), 181 - 202.

Folz, D.H. (1991). Recycling program design, management and participation: A national survey of municipal experience. <u>Public Administration Review</u>, <u>51</u>, 222 - 231.

Freedman, J.L., & Fraser, S.C. (1966). Compliance without pressure: Some further data on the-foot-in-the-door technique. <u>Journal of Personality and Social Psychology</u>, <u>4</u>, 195 - 202.

Gamba, R.J., & Oskamp, S. (1994). Factors influencing community residents' participation in commingled curbside recycling programs. <u>Environment and Behavior</u>, <u>26</u>(5), 587 - 612.

Geller, E.S. (1989). Applied behavior analysis and social marketing: An integration for environmental preservation. <u>Journal of Social Issues</u>, <u>45</u>, 17 - 36.

Geller, E.S., Winett, R.A., & Everett, P.B. (1982). <u>Preserving the environment: New strategies for behavior change</u>. New York: Pergamon Press.

Glenn, J. (1988). Containers at curbside. Boost to participations. <u>BioCycle</u>, <u>29</u>(3), 26 - 28.

Goldenhar, L.M., & Connell, C.M. (1992 - 1993). Understanding and predicting recycling behavior: An application of the Theory of Reasoned Action. <u>Journal of Environmental Systems</u>, <u>22</u>(1), 91 - 103.

Gollwitzer, P.M. (1990). Action phases and mind-sets. In R.M. Sorrentino & E.T. Higgins (Eds.), <u>Handbook of Motivation and Cognition</u> (Vol. 2). New York: The Guilford Press.

Grossman, G.M., & Potter, H.R. (1977). <u>A trend analysis of competing models of environmental attitudes</u> (working paper no. 127). Purdue University: Institute for the Study of Social Change.

Grunert, S. (1996). Antecedents of source separation behavior: A comparison of two Danish municipalities. In: J. Berács, A. Bauer & J. Simon (Eds.), <u>Marketing for an expanding Europe. Proceedings of the 25th Annual Conference of the European Marketing Academy</u>, <u>Vol. 1</u>, pp. 525-538. Budapest: Budapest University of Economic Sciences. Grunert, S. (1996).

Guagnano, G.A., Stern, P.C., & Dietz, T. (1995). Influences on attitude-behavior relationships: A natural experiment with curbside recycling. <u>Environment and Behavior</u>, <u>27</u>(5), 699-718.

Hardin, R.G. (1968). The tragedy of the commons. <u>Science</u>, <u>162</u>, 1243 - 1248.

Heberlein, T.A. (1975). <u>Social norms and environmental quality</u>. Paper presented at the annual meeting of the American Association for the Advancement of Science, New York.

Heckler, S.E., (1994). The role of memory in understanding and encouraging recycling behavior. <u>Psychology and Marketing</u>, <u>11</u>(4), 375 - 392

Hines, J., Hungerford, H., & Tomera, A. (1986 - 1987). Analysis and synthesis of
research on responsible environmental behavior. <u>Journal of Environmental   Education,</u>
<u>18</u>(2), 1 - 8.

Homer, P., & Kahle, L.R. (1988). A structural equation test of the Values-Attitude-
Behavior hierarchy. <u>Journal of Personality and Social Psychology, 54</u>, 638 - 646.

Hopper, J., & Nielsen, J.M. (1991). Recycling as altruistic behavior: Normative and
behavioral strategies to expand participation in a community recycling program.
<u>Environment and Behavior, 23</u>(2), 195 - 220.

Hornik, J., Cherian, J., Madansky, M., & Narayana, C. (1995). Determinants of
recycling behavior: A synthesis of research results. <u>The Journal of Socio -   Economics,</u>
<u>24</u>(1), 105 - 127.

Huffman, C., Ratneshwar, S., Mick D.G., (1996). <u>An integrative framework of consumer</u>
<u>goals: Structure, goal determination processes and applications</u>.   Working paper,
University of Pennsylvania, Wharton School.

Humphrey, C.R., Bord, R.J., Hammond, M.M., & Mann, S.H. (1977). Attitudes and
conditions for cooperation in a paper recycling program. <u>Environment and   Behavior, 9</u>,
107 - 124.

Jacobs, H.E., & Bailey, J.S. (1982 - 1983). Evaluating participation in a residential
recycling program. <u>Journal of Environmental Systems, 12</u>, 141 - 152.

Jones, R.E. (1990). Understanding paper recycling in an institutionally supportive
setting: An   application of the Theory of Reasoned Action. <u>Journal of</u>
<u>Environmental Systems, 19</u>(4), 307 - 321.

Kahneman, D., & Miller, D. (1986). Norm theory: comparing reality to its alternatives.
<u>Psychological Review, 93</u>, 136 - 153.

Katzev, R.D., & Johnson, T.R. (1982). A social-psychological analysis of residential

electricity consumption: The impact of minimal justification techniques. Journal of

Economic Psychology, 3, 267 - 284.

Katzev, R.D., & Pardini, A.U. (1987 - 1988). The comparative effectiveness of reward

and commitment approaches in motivating community recycling. Journal of

Environmental Systems, 17, 93 - 113.

Kiesler, C.M. (1971). The psychology of commitment: Experiments linking behavior   to

belief. New York, NY: Academic Press

Kinnear, T.C., Taylor, J.R., Ahmed, S.A. (1974). Ecologically concerned consumers:

Who are they? Journal of Marketing, 38, 20 - 24.

Komorita, S.S., & Parks, C.D. (1994). Social dilemmas. Madison, Wisconsin -

Dubesque, Iowa: Brown & Benchmark Publishers.

Kok, G., Siero, S. (1985). Tin recycling: Awareness, comprehension, attitude, intention and

behavior. Journal of Economic Psychology, 6, 157 - 173.

Kotler, P., & Andreasen, A. (1987). Strategic marketing for nonprofit organizations.

Englewood Cliffs, NJ: Practice Hall.

Krebs, D.L. (1970). Altruism: An examination of the concept and a review of   literature.

Psychological Bulletin, 73, 258 - 302.

Lansana, F.M. (1992). Distinguishing potential recyclers from nonrecyclers: A basis   for

developing recycling strategies. Journal of Environmental Education, 23, 16 -   23.

Lansana, F.M., Harvey, M.E., & Frazier, J.W. (1991). Recycling behavior: the causal role of demographic, communication and attitudinal factors. In McKee, D.L. (Ed.), Energy, the environment and public policy (pp. 78 - 88). New York and London: Greenwood, Praeger.

Lanza, D.R. (1983). Municipal solid waste regulations: An ineffective solution to a national problem. Fordham Urban Law Journal, 10, 215 - 245.

Lee, Y.-J., & De Young., R. (1993). Intrinsic satisfactions derived from office recycling behavior: A case study in Taiwan. Social Indicators Research, 31, 63 - 76.

Lee, Y.-J., De Young, R.D., & Marans, R.W. (1995). Factors influencing individual recycling behavior in office settings: A study of office workers in Taiwan. Environment and Behavior, 27(3), 380 - 403.

Liebrand, W.B.G., Messick, D.M., & Wilke, H.A.M. (1992). Current theoretical issues. In W.B.G. Liebrand, D.M. Messick & H.A.M. Wilke, Social dilemmas: Theoretical issues and research findings. Oxford: Pergamon Press.

Luyben, P.D., & Bailey, J.S. (1979). Newspaper recycling: the effect of rewards and proximity of containers. Environment and Behavior, 11, 539 - 557.

Luyben, P.D., Cummings, S. (1982). Motivating beverage container recycling on a college campus. Journal of Environmental Systems, 11(3), 235 - 245.

Madsen, M.C. (1967). Cooperative and competitive motivation of children in three Mexican subcultures. Psychological Report, 20, 1307 - 1320.

Marcinkowski, T. (1989). An analysis of correlates and predictors of responsible environmental behavior. Dissertation Abstracts International, 49(12), 3677-A.

McCarthy, J.A., & & Shrum, L.J. (1993). A structural equation analysis of the relationships of personal values, attitudes and beliefs about recycling, and the recycling of solid waste products. In L. McAlister & M. Rothschild (Eds.), Advances in consumer research (Vol. 20, pp. 641 - 646). Provo, UT: Association for Consumer Research.

McCarthy, J.A., & Shrum, L.J. (1994). The recycling of solid wastes: Personal values, value orientations, and attitudes about recycling as antecedents of recycling behavior. Journal of Business Research, 20, 53 - 62.

McGaul, K.D., & Kopp, J.T. (1982). Effects of goal setting and commitment on increasing metal recycling. Journal of Applied Psychology, 67(3), 377 - 379.

McGuinness, J., Jones, A.P., & Cole, S.G. (1977). Attitudinal correlates of recycling behavior. Journal of Applied Psychology, 62, 376 - 384.

Mens, 1997. Dossier: 'Recycleren moet je leren'. Mens, 7(1), 3-15.

Mohai, P., & Twight, B.W. (1987). Age and environmentalism: An elaboration of   the Buttel Model using national evidence. Social Science Quarterly, 68, 798 - 815.

Murdock, S.H., & Schriner, E.C. (1977). Social and economic determinants of the level of support for environmental protection and economic growth in a rural population. Paper presented at the Annual Meeting of the rural Sociological Society, Madison,   Wisconsin.

Netemeyer, R.G., Burton, S., & Johnston, M. (1991). A comparison of two models for the   prediction of volitional and goal-directed behaviors: A conformatory analysis approach. Social Psychology Quarterly, 54, 87 - 100.

Nielsen, J.M., & Ellington, B.L. (1983). Social processes and resource conservation. In N.R. Feimer & E.S. Geller (Eds.), Environmental Psychology: Directions and

Perspectives (pp. 288 - 312). New York: Praeger.

Oskamp, S., Harrington, M.J., Edwards, T.C., Sherwood, D.L., Okuda, S.M., & Swanson, D.C., (1991). Factors influencing household recycling behavior. Environment and Behavior, 23(4), 494 - 519.

OVAM, 1997. Inzamelmethoden voor papier en karton, glas, plastiek, metaal en drankkartons. Resultaten van het IOK-proefproject. Mechelen: OVAM

Pallak, M.S., Cook, D.A., & Sullivan, J.J. (1980). Commitment and energy conservation. Applied Social Psychology Annual, 1, 235 - 253.

Pardini, A.U., & Katzev, R.D. (1983 - 1984). The effects of strength of commitment on newspaper recycling. Journal of Environmental System, 13, 245 - 254.

Pieters, R.G.M. (1986). Gescheiden inzameling van huishoudelijk afval in Amerongen: Oordelen van deelnemers. Unpublished report, KUB, Tilburg.

Pieters, R.G.M. (1989). Attitudes and behavior in a source separation program. A garbology approach. Delft: Euburon.

Pieters, R.G.M. (1991). Changing garbage disposal patterns of consumers: Motivation, ability, and performance. Journal of Public Policy and Marketing, 10(2), 59 - 76.

Pieters, R.G.M., & Verhallen, T.M.M. (1986). Participation in source separation projects: Design characteristics and perceived costs and benefits. Resources and Conservation, 12, 95 - 111.

Pieters, R.G.M., Bijmolt, T., van Raaij, F., & de Kruik, M. (1998). Consumers' attributions of pro-environmental behavior, motivation and ability to self and others. Working paper,

KUB, Tilburg.

Platt, J. (1973). Social Traps. <u>American Psychologist</u>, <u>28</u>, 641 - 651.

Reams, M.A., & Ray. B.H. (1994). The effects of three prompting methods on
   recycling participation rates: A field study. <u>Journal of Environmental Systems</u>,
   <u>22</u>(4), 371 - 379.

Reid, D.H., Luyben, P.D., Rawers, R.J., & Bailey, J.S. (1976). Newspaper recycling: The
   effects of prompting and proximity of containers. <u>Environment and Behavior</u>,   <u>8</u>,
471 - 481.

Reschovsky, J.D., & Stone, S.E. (1994). Market incentives to encourage household
   waste recycling: Paying for what you throw away. <u>Journal of Policy Analysis and</u>
   <u>Management</u>, <u>13</u>(1), 120 - 139.

Reynolds, T.J., & Gutman, J. (1984). Laddering: Extending the Repertory Grid
   Methodology to construct Attribute-Consequence-Value hierarchies. In R. Pitts, & A.
Woodside (Eds.), <u>Personal values and consumer psychology</u>. Lexington Books.

Reynolds, T.J., & Gutman, J. (1988). Laddering theory, method, analysis and
   interpretation. <u>Journal of Advertising Research</u>, <u>28</u>, 11- 31.

Rogers, E.M. (1983). <u>Diffusion of innovations</u>. New York: Free Press.

Rokeach, M. (1973). <u>The nature of human values</u>. New York: The Free Press.

Samdahl, D.M., & Robertson, R. (1989). Social determinants of environmental concern:
   Specification and test of the model. <u>Environment and Behavior</u>, <u>21</u>(1), 57 - 81.

Schifter, D.E., & Ajzen, I. (1985). Intention, perceived control, and weight loss: An

application of the Theory of Planned Behavior. Journal of Personality and Social Psychology, 49, 843 - 851.

Schnelle, J.G., Gendrich, J.G., Beegle, G.P., Thomas, M.M., & McNees, M.P. (1980). Mass media techniques for prompting behavior change in the community. Environment and Behavior, 12, 157 - 166.

Schwartz, S.H. (1968a). Awareness of consequences and the influence of moral norms on interpersonal behavior. Sociometry, 31, 355 - 369.

Schwartz, S.H. (1968b). Words, deeds, and the perception of consequences and responsibility in action situation. Journal of Personality and Social Psychology, 10, 232 - 242.

Schwartz, S.H. (1970). Elicitation of moral obligation and self-sacrificing behavior: An experimental study of volunteering to be a bone marrow donor. Journal of Personality and Social Psychology, 15, 283 - 293.

Schwartz, S.H. (1973). Normative explanations of helping behavior: A critique, proposal, and empirical test. Journal of Experimental Social Psychology, 9, 349 - 364.

Schwartz, S.H. (1977). Normative influences on altruism. In L. Berkowitz (Ed.), Advances in experimental social psychology (Vol. 10, pp. 221 - 279). New York: Academic Press.

Schwartz, S.H., & Howard, J.A. (1980). Explanations of the moderating effect of responsibility denial on the personal norm-behavior relationships. Social Psychology Quarterly, 43, 441 - 446.

Shrum, L.J., Lowrey, T.M., & McCarty, J.A. (1994). Recycling as a marketing problem: A framework for strategy development. Psychology and Marketing, 11(4), 393 - 416.

Sia, A., Hungerford, H., & Tomera, A. (1985 - 1986). Selected predictors of   responsible
environmental behavior: An analysis. Journal of Environmental   Education,   17(2),
31 - 40.

Simmons, D., & Widmar, R. (1988). Motivations and barriers to recycling: Toward a
strategy for public education. Journal of Environmental Education, 20, 13 - 18.

Smith, S.M., Haugtvedt, C.P., & Petty, R.E. (1994). Attitudes and recycling: Does the
measurement of affect enhance behavioral prediction? Psychology and Marketing,
11(4), 359 - 374.

Smeesters, D., Warlop, L., & Vanden Abeele, P., work in progress.

Søndergaard, H., & Jensen, J. (1990). Forbrugernes holdninger til grønne systemer.
Resultatet af spørgeskemaundersøgelse blandt 1600 husstande I København,
Odense, Vejle og Frederikssund vedrørende disses affaldsorteringssystemer (The
consumers' attitudes toward green systems. Results from a questionnaire   analysis   of
1600 households in Copenhagen, Odense, Vejle, and Frederikssund   concerning   their
waste sorting systems.)   Working Report No. 18 / 1990.   Copenhagen: The
National Agency of Environmental Protection.

Stern, P.C., Black, J.S., & Elworth, J.T. (1982). Influences on household energy
adaptations. Paper presented at the annual meeting of the American Association for   the
Advancement of Science, Washington, DC.

Stern, P.C., & Oskamp, S. (1987). Managing scarce environmental resources. In D.
Stokols, &   I. Altman (Eds.), Handbook of environmental psychology (pp. 1043 -
1088). New York: Wiley.

Stern, P.C., Dietz, T., Kalof, L., & Guagnano, G. (1995). Values, beliefs, and pro-

environmental action: Attitude formation toward emergent attitude objects. Journal   of Applied Social Psychology, 25, 322 - 348.

Swenson, M.R., & Wells, W.D. (1997). Useful correlates of pro-environmental
    behavior. In M.E. Goldberg, M. Fishbein, S.E. Middlestadt (Eds.), Social   Marketing,
Theoretical and practical perspectives (pp. 91-111). Mahwah, New   Jersey: Lawrence
Erlbaum Associates, Publishers.

Taylor, S., & Todd, P. (1995). An integrated model of waste management behavior: A test
    of household recycling and composting intentions. Environment and Behavior,
    27(5), 603 - 630.

Thøgersen, J. (1991). Changing consumer attitudes and behavior: Lessons from Danish
    source separation programs. Presentation at the ERRA Scientific Symposium:
    Environment and the consumer. Solutions to the solid waste issue, Brussels.

Thøgersen, J. (1994a). A model of recycling behavior, with evidence form Danish source
    separation programs. International Journal of Research in Marketing, 11, 145   -
    163.

Thøgersen, J. (1994b). Monetary incentives and environmental concern: Effects of a
    differentiated garbage fee. Journal of Consumer Policy, 17(4), 1 - 36.

Thøgersen, J. (1996). Recycling and morality. Environment and Behavior, 28(4), 536 -
    558.

Thøgersen, J. and Grunert, S.C. (1997). Values and attitude formation towards
    emerging attitude objects: From recycling to general, waste minimizing behavior.
    Advances in Consumer Research, 24, 182 - 189.

Tognacci, L.N., Weigel, R.H., Wideen, M.F., & Versnon, D.T.A. (1972).

Environmental Quality: How universal is public concern? Environment and   Behavior, 4, 73 - 86.

Triandis, H.C. (1979). Values, attitudes, and interpersonal behavior. In M.M. Page
(Ed.), Nebraska Symposium on Motivation, 1979: Beliefs, Attitudes and Values   (pp. 195 - 259). Lincoln: University of Nebraska Press.

Uusitalo, L. (1989). Economic man or social man -exploring free riding in the   production of collective goods. In: K.G. Grunert and F. Ölander (Eds.),   Understanding   economic behavior, 267 - 283. Dordrecht: Kluwer Academic   Publishers.

Uusitalo, L. (1990). Are environmental attitudes and behavior consistent? Findings
from a Finnish study. Scandinavian Political Studies, 1, 211-223

Van Liere, K.D., & Dunlap, R.E. (1980). The social bases of environmental concern: A
review of hypotheses, explanations and empirical evidence. Public Opinion Quarterly, 44, 181 - 197.

Van Raaij, W.F. (1981). Economic psychology. Journal of Economic Psychology, 1, 1 - 24.

Van Raaij, W.F. & Antonides, G. (1994). Consumentengedrag: een sociaal-
wetenschappelijke benadering. Utrecht: Lemma.

Verhallen, T.M.M., & Pieters, R.G.M. (1984). Attitude theory and behavioral costs.
Journal of Economic Psychology, 5, 223 - 249.

Vilstrup KS (1989). Brugerbedømmelse af kildesortering af husholdningsaffald I
forsøgsområdet på Amagerbro. Tabelrapport (User evaluation of source separation of household waste in the test area at Amagerbro. Table report). Vanløse: Vilstrup KS.

Vining, J., & Ebreo, A. (1988). <u>A survey of residents' responses to a citywide curbsiderecycling program before and after expansion</u>. Final report, Illinois Office of Solid Waste Research.

Vining, J., & Ebreo, A. (1990). What makes a recycler? A comparison of recyclers and nonrecyclers. <u>Environment and Behavior</u>, <u>22</u>(1), 55 - 73.

Vining, J., & Ebreo, A. (1992). Predicting recycling behavior from global and specific environmental attitudes and changes in recycling opportunities. <u>Journal of Applied Social Psychology</u>, <u>22</u>, 1580 - 1607.

Wang, T.H., & Katzev, R.D. (1990). Group commitment and resource conservation: Two field experiments on promoting recycling. <u>Journal of Applied Social Psychology</u>, <u>20</u>(4), 265 - 275.

Warlop, L., & Ratneshwar, S. (1993). The Role of Usage Context in Consumer Choice: A Problem Solving Perspective. <u>Advances in Consumer Research</u>, <u>20</u>, 377- 382.

Warlop, L., Mitra, A., & Smeesters, D., <u>work in progress</u>.

Warlop, L., Smeesters, D., & Ratneshwar, S., <u>work in progress</u>.

Warlop, L., Smeesters, D., & Vanden Abeele, P., <u>work in progress</u>.

Weigel, R.H. (1977). Ideological and demographic correlates of proecology behavior. <u>Journal of Social Psychology</u>, <u>103</u>, 39 - 47.

Werner, C.M., Turner, J., Shipman, K., Twitchel, F.S., Dickson, B.R., Bruschke, G.V., & von Bismarck, W.B., (1995). Commitment, behavior, and attitude change: An analysis of voluntary recycling. <u>Journal of Environmental Psychology</u>, <u>15</u>, 197 - 208.

Wilson, T.D., Lisle, D.J., & Draft, D. (1990). Effects of self-reflection on attitudes and consumer decisions. <u>Advances in Consumer Research</u>, <u>17</u>, 79 - 85.

Witmer, J.F., & Geller, E.S. (1976). Facilitating paper recycling: Effects of prompts, raffles and contests. <u>Journal of Applied Behavior Analysis</u>, <u>9</u>, 315 - 322.

Hefbomen voor een beleid gericht op duurzame ontwikkeling:

Tussen groene woorden en groene daden …: De relatie tussen milieubesef en milieuzorg

bij individuele consumenten (HL/DD/24)

Part 2

A qualitative analysis of household garbage recycling behavior

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INTRODUCTION

Household recycling is necessary to reduce the total amount of combustible waste and, consequently, to reduce the scarce spare capacity of landfills and incinerators. In Belgium, recycling of household waste is organized at the municipal or intermunicipal level.

Most municipal programs are designed with minimal assumptions about the individual citizen's intrinsic motivation to participate in these programs. They are set up such that compliance is the most cost-effective behavioral strategy, if one plays by the rules. But none of these systems is airtight. Defective behavior is possible to the extent that a household's actions are not completely transparent, and control is imperfect. For example, individuals can place recyclables with the rest waste or vice versa, because sanitation workers have only limited opportunity to inspect the garbage before collection. Or some people might try to get rid of their waste by dumping it at public locations.

We want to achieve an in depth understanding of the way in which individual citizens cope with the social obligation to sort and recycle waste accurately. We will do this by listening to personal stories of sorting activities, and we will use a qualitative method to analyze the data. These methods can be used to uncover and understand what lies behind a phenomenon about which little is known. Also, qualitative methods can give the complex details of phenomena that are difficult to convey with quantitative methods. This present paper deals with people's perceptions of recycling programs and their own recycling activities, as based on focus groups interviews.

OPERATIONAL OBJECTIVES OF OUR RESEARCH

This qualitative study has several complementary operational objectives:

1. At the most descriptive level we want to construct an inventory of the problems experienced by individual citizens confronted with the obligation to sort their household waste. This problem is relatively new in the field. Most of the existing research has been conducted as an evaluation of entirely voluntary programs. Nothing is known on how the Belgian systems are experienced by the very people subjected to them.

2. Our study has an 'experiential' character. We want to investigate <u>how people experience</u> the sorting of their domestic waste. We asked our participants to 'reflect' about their daily sorting activities, which often become habits (where people do not think about in their daily life). From these descriptions of their sorting experiences, we will draw a theoretical framework through inductive and deductive reasoning.

3. We also conducted this study in preparation of a more extensive Means End Chain motivational study. We want to obtain insight in the motivational concepts, at the value as well as the consequence level that individuals bring up when they think and discuss about household recycling. This exploration will prepare us for the more structured data collection format of the means-end methodology. We will use the results of this study to assemble an inventory of recycling related behaviors that could be used as a starting point for means-end interviewing.

4. This study also serves as a starting point for further qualitative in-depth analysis of individuals' experiences of coping with environmental motivations, social and legal obligations, and the personal costs involved in household recycling behavior. This report only summarizes our insights based on group interviews. This may not be the ideal way to gather information about personal experiences of conflict and coping, but it is a starting point. The results of follow-up individual depth interviews will be presented later.

METHODOLOGY

DATA COLLECTION

We selected 36 participants from socio-cultural organizations. They tend to be middle aged (between 40 and 60). None of the participants would qualify as an environmental activist. Still, most of them are self- proclaimed conscientious recyclers. As of now, we have selected from rural and suburban areas, not from inner city areas. Issues specific to inner-city neighborhoods are not yet covered by our research.

Currently we have conducted 6 focus groups with 5 or 6 participants in each session. Each participant received a bottle of champagne (worth approx. 600 BEF) as compensation. Sessions were held in a quiet and convenient room and lasted on average 90 minutes. All the interviews were recorded on audiotape and were completely transcribed. The literal transcripts are available but not included in this report.

ANALYSIS

We based our analysis on grounded theory (Glaser and Straus 1967). A grounded theory is an inductive substantive theory about a phenomenon, which is discovered, developed and verified through systematic collection and analysis of the data. This method meets all the criteria for doing "good" science: significance, theory-observation compatibility, reproducibility, precision, rigor, and verification (Straus and Corbin 1990).

The "grounded" analysis of qualitative data contains several phases. The first step in our analysis is called *open coding*. This is an analytic process by which concepts are identified and developed in terms of their properties (attributes pertaining to a category) and dimensions (location of properties along a continuum). Similar events and incidents are labeled and afterwards grouped to form categories.

The next step is the *axial coding*, a process of relating subcategories to a category. We try to develop each category (phenomenon) in terms of its causal conditions that give rise to it, the specific dimensional location of this phenomenon in term of its properties, the context, the action/interactional strategies used to handle, manage, respond to this phenomenon in the light of that context, and the consequences of any action/interaction taken.

In the last step, the *selective coding*, we make use of the results that came out of the open coding and out of the axial coding. The purpose, here, is to build up a systematic model on the basis of the insights of the first two steps. We choose a core-category, which we will develop in terms of his properties and dimensions. This category will serve as the heart of our comprehensive model. Around this core concept we will link all the important categories (induced from the open coding) to provide a systematic picture of the recycling behavior (derived from the axial coding). An extensive log of the coding procedure is available, but not included in this report. Here, we only present a summary of our current findings. We use quotes from the original (Dutch) transcripts where appropriate.

INSIGHTS

HABIT FORMATION AND HABIT PERSISTENCE

The core concepts of our emerging theoretical framework (Figure 1) are *habit formation and habit persistence*. According to Ronis, Yates, and Kirscht (1986) a habit is a pattern of actions that has been executed many times and has become automatic. Habits are characterized by at least two stages: formation and persistence. In a first phase behavior is always 'planned behavior' (habit formation) but with repetition it will develop to 'habitual behavior' (habit persistence).

<u>Habit formation</u>

When people are confronted with new situations and new tasks, problem solving is very important. People have to make a <u>plan</u> about what they intend to do. For example, at the beginning of the sorting programs, people have to <u>reason</u> about their sorting activities. They have to plan their sorting behavior. Habit formation is the ultimate result of reasoned action. One participant expressed this as follows: "*Ja, toen, op het begin was dat 'hoe moet ge beginnen'. Hoe moet ge beginnen met te recycleren? Dan*
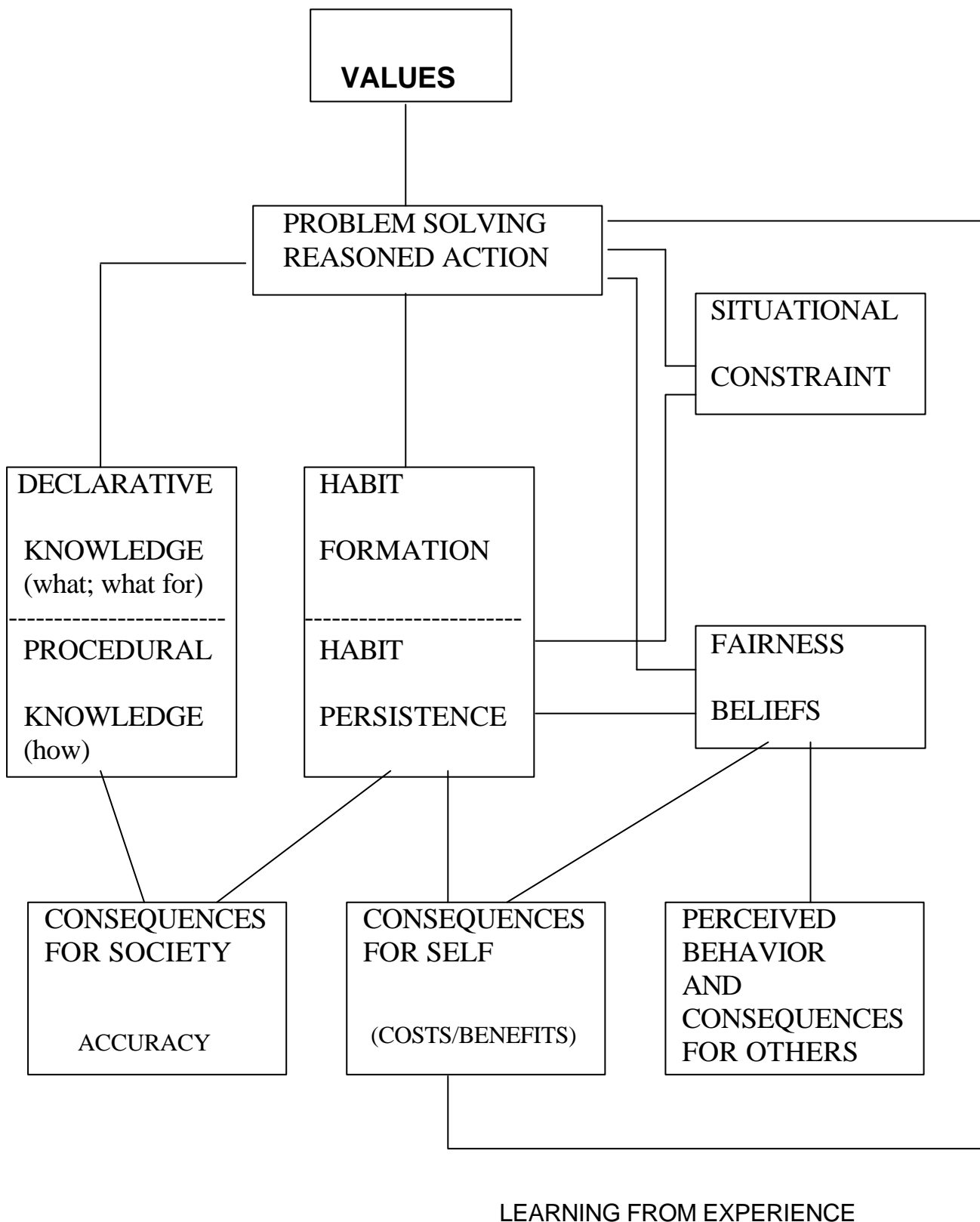
VALUES

PROBLEM SOLVING
REASONED ACTION

SITUATIONAL

CONSTRAINT

DECLARATIVE

KNOWLEDGE
(what; what for)

PROCEDURAL

KNOWLEDGE
(how)

HABIT

FORMATION

HABIT

PERSISTENCE

FAIRNESS

BELIEFS

CONSEQUENCES
FOR SOCIETY

ACCURACY

CONSEQUENCES
FOR SELF

(COSTS/BENEFITS)

PERCEIVED
BEHAVIOR
AND
CONSEQUENCES
FOR OTHERS

LEARNING FROM EXPERIENCE

Figure 1 Theoretical framework of household garbage recycling behavior

moet ge daar toch wel eens effen over nadenken. Maar na een tijdje wordt ge dat wel gewoon, hoor" (MG, female, 43). People initially have to consider explicitly the alternatives available for getting rid of their waste materials. They can follow the municipal sorting instructions, they can sort inaccurate and mix all different materials or they can even dump or burn their garbage. They will make the choice that seems to be the most justifiable, either to oneself or to others who will evaluate their choices, such as neighbors, authorities or the social group to which they belong. At that time, they are forming a sorting habit. This sorting habit produces *consequences for the self* in terms of costs and benefits (time, money, effort, and social approval…). The processing of these costs and benefits works as a feedback mechanism back to the sorting attitude and intention, which refers respectively to a (positive or negative) feeling towards the sorting behavior and the intent to execute the sorting behavior (Allen et al. 1993; Goldenhar and Connell 1992 - 1993; Jones 1990; Kok and Siero 1985; Pieters 1989; Pieters and Verhallen 1986; Thøgersen 1994). We call this link *learning from experience*. The learning process can lead individuals to strengthen or change their sorting attitudes and intentions and, subsequently, their sorting habits.

Habit persistence

Once habitualized, persistence of sorting and recycling activities does not require much conscious thought. An important consequence of the central role of sorting habit is that people stop pondering over the costs and benefits of sorting. They developed a behavioral routine, which takes these into account.

Routinization, however, is never absolute. First, in case of non-daily sorting activities (e.g. larger items that people do not have to discard very often) ad-hoc solutions needs to be found. Actually this is true for all new sorting tasks (e.g. when rules for sorting a specific material have changed). These decisions continue to involve conscious thought and the consideration of at least one alternative to the selected course of action ('planned behavior'). Second, altered program-related characteristics can induce new problem-solving behavior. For example, sorting rules can change over time and people have to take this into account when sorting their domestic waste. Like in this example: "*In het begin was het zo: dit afval hier, een ander daar, dat moet niet meer in die vuilzak. In het begin*

mag je er dan ook bepaalde dingen nog ingooien zoals lampen. In het begin gaf ik die ook mee. Maar dan hebben ze gezegd van lampen niet meer. En dan moet ge u daarin weer aanpassen." (OW, male, 42). Third, the sorting habits can also be interrupted when individuals witness alternatives to their own routines. For example, a neighbor who does not recycle his paper garbage, but burns it in his backyard can instigate someone to re-evaluate his/her own behavior. To summarize, even when habits have formed people will actively revert to conscious problem solving whey they find themselves in novel situations, or when they are confronted with alternatives to their own routines. This requires new problem-solving behavior.

VALUES

Valuation of the behavioral costs and benefits that drive habit formation is based on a person's *values*. Values are considered to be enduring beliefs about the self, abstract in nature, which serve to guide both attitudes and behavior (Rokeach 1973). Values are functional in focusing attention to what is important in a situation and thus assisting the person in making more efficient decisions (Dietz and Stern 1995). A better understanding of the values driving recycling behavior will be necessary for the development of communications and sensitization campaigns. In our research, most often participants expressed experienced social and civil duty as their values to sort. Sorting garbage is part of being a "good citizen". Some examples, *"Ik vind, als ouders hebt ge toch ook een beetje plichten. Ik vind; niet alleen qua milieu, maar dat ge uw kinderen daar zelf wat bewust van maakt. En gij het zelf goed doet, ge geeft zelf het goede voorbeeld"* (RB, female, 47) or *"Ik sorteer omdat ik moet sorteren van de gemeente en ik doe dat dan ook"* (YV, male, 45). A second, apparently less dominant source of motivation are environmental values. Examples are: *"Ik doet het toch ergens voor het het milieu, want, zover zoals het nu is, zo kan het niet meer verder vind ik"* (MG, female, 43)*, "Ik doet het omdat ik zelf ook een milieubewustzijn heb ook, omdat ik vind alles even vuil vind en ge vindt overal vuil tegenwoordig"* (RB, female, 47) or *"Ik vind, dat als je een beetje met het milieu inzit dat je dan sorteert"* (AS, female, 52). Note that these values pop up when people reflect about their sorting experiences; this does not imply that they are necessarily brought to mind during daily sorting

activities.

These results correspond largely to the findings of other researchers (see Smeesters, Warlop, and Vanden Abeele 1998), although our results deviate somewhat with respect to the apparent importance of each type of value. Actually, most other studies find 'environmental values' as the most important motive for recycling behavior (e.g. De Young 1986; 1988-1989; Hopper and Nielsen 1991; Nielsen and Ellington 1983; Oskamp et al. 1991). More secondary motivations typically are 'experienced civil and social duty' (e.g. Batson et al. 1986; De Young 1986, Dunlap et al. 1983; McCarthy and Schrum 1993), and 'frugality in consumption' (e.g. De Young 1985-1986; Lee and De Young 1993; Oskamp et al. 1991).

We are currently running more structured means-end chain interviews to investigate further which personal values constitute the motivational basis for sorting behavior. Means-end chains are organized structures of meanings that individuals construct to represent important or salient relationships in their lives (Gutman and Reynolds 1979; Reynolds and Gutman 1984). One of the most applied techniques to reveal means-end structures is 'laddering' (Reynolds and Gutman 1988). This technique refers to an in-depth, one-on-one interview used to develop an understanding of how individuals translate the attributes of products and behaviors into meaningful consequences and personal values.

Only Bagozzi and Dabholkar (1994) have hitherto used the laddering technique to derive the goals and values relevant to recycling. Consistent with most prior research they also found environmental values to be dominant, and duty-related values to be secondary. We hope that our own means-end chain research will shed more light on the relative importance of these different values in the Belgian context.

PERCEIVED CONSTRAINTS

We argue that people form and persist in socially appropriate sorting behavior as long as they have good reasons to do so, and as long as they are not confronted with reasons not to. Most people in our sample are not lacking in intrinsic motivation to sort their garbage, based either a sense of duty or on environmental reasons. The necessary 'motor' (motivation) for the socially adequate behavior seems to be in place. Therefore, probably

the best strategy to facilitate accurate sorting is the creation of an environment in which people find little reasons to deviate from what they are intrinsically motivated to do and from what they consider socially desirable. As a first step towards such a strategy, we want to investigate which constraints people experience when sorting their garbage. These constraints are the potential reasons why people might deviate from their routinized sorting habits and possibly lead to the formation of new, less desirable habits. If we find some possible constraints then, we can examine how manipulations of these constraints influence behavior.

We found three important categories of constraints: knowledge, situational constraints and fairness beliefs. Note that these three types of constraints are perceptual in nature. They are representations of <u>how</u> people see the sorting "reality". They are used by our respondents as justifications for episodes of non-compliance with the rules. We do not exclude that additional, less salient constraints might also operate on the respondents' behavior.

Perception of knowledgeability

A first type of constraint is imposed by individuals' self-perceptions of knowledgeability. Perceived knowledge constraints can be divided in two classes. *Procedural knowledge* is knowledge in the sense of 'how to execute the sorting task'. People have to know where to throw all the different waste materials. A second type of knowledge is *declarative knowledge*. This refers to knowledge about the ultimate goal of sorting behavior and about what happens with your garbage after discarding it. Pieters (1989) argues that procedural knowledge is the most important knowledge-based determinant of sorting behavior. Participants are often uncertain about the sorting rules that needed to be applied for recycling different categories of waste. When deficient task knowledge is salient to the individual, it may lead to the deliberate withdrawal from participation in a source separation program (De Young 1988-1989). Knowledge gaps that are not salient to the individual may lead to persistent sorting failures (Humphrey et al. 1977), especially because participants often do not know and never learn that they are making mistakes (Pieters 1989). Examples: "*Maar ja, wat doet ge met die extra plastiek, waar moet ge dat*

bijsteken? Dat moet dan bij de gewone zak. 't is weer plastiek het is een echt zottekot" (BD, female, 43)*, "Ik heb een keer gebeld naar Incovo, om te vragen waarvoor dat pijltje stond op de botervlootjes. Dat bedoelt 'recycleerbaar', dat dat allemaal in de blauwe zak mag. Maar nee, dat mag niet, hé. Het is toch verwarrend, hé. Waarom staat dat teken daar dan op?"* (MJ, female, 51)*, or "Wat ik niet weet, dat gooi ik bij de restafval. Daar maak ik geen problemen van. Als ik weet dat dat in de blauwe zak niet kan, hup, in de andere"* (JL, female, 48).

Our participants indicated that declarative knowledge is also very important for them. *"En het zou toch wel handig zijn om te weten 'wat gebeurt er nu met ons afval dat wij moeten recycleren"* (YV, male, 45) or *"Ik zou heel graag willen weten wat er met het afval gebeurt; dus als wij het recycleren, wat zij ermee doen. Ik vind misschien dat dat toch nog ergens moet benadrukt worden"* (MG, female, 43).

Program-related constraints

Program-related constraints serve as a second type of constraint. Municipal garbage sorting programs have several situational characteristics that might influence the accuracy and the efficiency of the sorting behavior, like the frequency of garbage collection, the proximity of glass containers, the ease to reach the container park etc. People have to take these situational characteristics into account and this puts some constraints to the ease with which the sorting behavior can be performed. These constraints can vary from a low level of situational constraint, e.g. frequent collection of garbage, glass containers at a nearby location to a high level of situational constraint, e.g. infrequent garbage collection, glass containers at a distant location. The more strict these constraints, the more they will interfere with habit formation and habit persistence. High levels of situational constraint interfere with the development of sorting habits because task automaticity is less likely to develop. People might still need conscious problem-solving behavior in these more complex situations. This can slow down the development of a habit. In addition, accurate sorting behaviors in situations with high levels of constraint might not be carried out frequently enough to automatically elicit the behavior.

Habit formation will still proceed to the extent that program-related constraints stabilize

over the course of the program. For example, our participants clearly mentioned that they knew exactly where glass containers and the container park were located and that they were aware of the garbage collection schedules. Taylor and Todd (1995) found that the more facilitating these situational influences resources are, the stronger perceived behavioral control and subsequent intention to recycling will be. Thus, the level of situational constraint seems to affect our sorting intentions. Some statements out of our focus groups confirm this hypothesis**:** *"Ik heb heel veel snoeiwerk. En na de winter als dat allemaal gedaan is, ja, op zekere dag steek ik de brand erin. Omdat ik het niet weet hoe ik het moet wegkrijgen. Ik heb geen remorque of niks om dat naar het containerpark te doen"* (RH, male, 61), *"Soms doet de gemeente je wel grijpen naar deze toestanden. Je kan nu nog beperkte dingen brengen naar het containerpark. Laatst was er een gebuur van mij die zich begaf naar het containerpark om er een oude, houten geverfde deur af te geven. Hij mocht ze terug meenemen. Dus wat doen zulke mensen ermee, ofwel branden ze die deur op ofwel smijten ze ze ergens langs de kant van de weg. Waarom is er dan dat containerpark als ge er dat al niet meer kwijtgeraakt"* (OW, male, 42) or *"Ik heb ook op een appartement gewoond, zag ge ons daar al beginnen met al die bakken ? Ze maken het zo moeilijk, he, dat de mensen op het laatst, toch gaan beginnen van alles bij mekaar te gooien, he. Dat blijft niet duren, wat ze nu vragen, he, daar moogt ge zeker van zijn"* (BD, female, 43).

Fairness beliefs

Fairness beliefs appeared as a third very important constraint for people to persist in their original sorting habits, in four different ways. People often compare the outcomes from a behavior by comparing them with those of another party, taking into account the individual variations in input. Fairness exists if the outcome to input ratio of the self equals the outcome to input ratio of the other party (Adams 1965). While knowledge-related and program-related constraints have been addressed often in the literature, few researchers have considered perceived fairness (see Pieters, Bijmolt, van Raaij, and de Kruijk 1998 for one exception).

Fairness beliefs about community differences

It was very salient to our participants that there is a lack of standardization between the household collecting practices and sorting guidelines in different communities. These inter community differences are perceived to be unfair. Our respondents concentrated particularly on aspects of the comparison showing them to be worse off. This unfairness perception can cause feelings of intolerance and can induce waste problems (e.g. when consumers try to discard their waste in adjacent cities). Some examples illustrate this: *"Het systeem zou overal hetzelfde moeten gemaakt worden. Hoeveel vuil heeft er niet gestaan in Zoutleeuw afkomstig van de mensen van Sint-Truiden toen het systeem hier nog niet ingevoerd was. Ze zetten het hier gewoon neer. Tonnen en tonnen. Veel meer afval in Zoutleeuw dan in Sint-Truiden. Als het systeem overal hetzelfde is, dan zal dat veel minder problemen geven"* (JC, male, 47) or *"Iedere Belg moest toch gelijk zijn voor de wet, hé. En het huisvuil van Interleuven en het huisvuil van Antwerpen, dat zou toch op dezelfde manier gesorteerd moeten worden. Iedereen zou hetzelfde moeten doen. Dat is niet eerlijk, wat ze ons hier aandoen"* (RH, male, 61).

Fairness beliefs about manufacturers

Equally prominent in virtually all conversations is the perception that government tries to put most of the burden for decreasing the amount of nonrecyclable waste on individual citizens and households, and not on the manufacturers of the consumer products. Participants easily attributed a large share of the responsibility to manufacturers for using too much (redundant) packaging and generating too much waste. In other words, not the consumer buying the goods is ultimately responsible for the production of waste, but the manufacturer making (and packaging) those goods. Interestingly, retailers are not held responsible. Our participants have indicated this with some of the following statements: *"De producent is ook verantwoordelijk natuurlijk. Bij sommige producten is het nodig om vijf verschillende lagen papier er rond te doen. Terwijl het bij minder ook wel zou kunnen gaan. De producent kijkt niet naar de hoeveelheid verpakking die hij gebruikt"* (YV, male, 45). *"Wij zijn de slaaf van de fabrikanten, he.Die maken maar verpakkingen, en wij moeten dan betalen om het terug weg te krijgen."* (RH, male, 61) or *"Maar wie moet er weer iets aan doen? Wij. Maar de fabrikanten. Die moeten er eigenlijk iets aan doen. Als*

die het niet op de markt brachten, konden wij het niet gebruiken" (AF, female, 35).

Fairness beliefs about free riders

A third source of unfairness is due to the perception that defection is possible. Many participants reported instances of neighbors or others "beating the system", by burning waste or littering. Successful deception puts a strain on their own compliance behavior. People ask for punishment of the socially defective behavior of free riders and for more investigations of inaccurate sorted materials. They think that these controls are necessary to stop the actions of these wrong social examples and to prevent other people from switching to defective behavior. Some examples: "*Wat mij het meeste ergert, dat zijn die mensen die met hun plastieken zakjes vol afval naar publieke vuilbakken gaan en die die vuilbakken dan zo propvol steken*" (MJ, female, 51), "*Vooral de mensen die nog alles maar dan ook alles in de vuilniszak steken moeten opgepakt worden*" (JF, female, 58) or "*Eerst zou men de mensen educatief moeten zeggen: 'zo moet het. Willen ze het niet educatief aanleren dan moet er maar repressief worden opgetreden. Niet doen, boete! Er zou maar eens frequenter een controlleur moeten meestappen met de vuilniswagen. Vuilzak open. Niet in orde, brief in de brievenbus. Blijft men slecht sorteren, laat dan maar een boete in de brievenbus vallen*" (JC, male, 47).

Fairness beliefs about authorities

Finally a fourth source of unfairness is perceived within society. People believe that the authorities have to take up their responsibilities instead imposing all their citizens with unfair situations. Interestingly, "taking responsibility" is equated with imposing a system that treats everybody in the same way. The present sorting system (annual tax and expensive bags) is perceived as too expensive. Repeatedly, respondents argue that a fixed amount of money (i.e. tax) together with a significant reduction of the prizes for bags would be more fair and a much more effective system. This idea stands in stark contrast with the "polluter pays" principle held by the Belgian government. Our participants reasoned that a fixed prize system will reduce dumping and burning of waste. They think that low prizes for bags take away the economic motive to defect. This can be illustrated by some quotes: "*Een vast*

bedrag voor iedereen, dat gaat dat sluikstorten toch wel tegen, he. De zakken goedkoper en een vast bedrag voor iedereen dan moest iedereen betalen." (AF, female, 35) or *"Maar als je dat systeem van de zakken minder duur maakt gaat het zwerfvuil verminderen. Dan heeft het toch geen nut meer om ergens uw vuilniszakken uit te kieperen of je vuilnis opbranden"* (EB, female, 49).

Our respondents also believe that the government has to take measures to avoid confusion with respect to the existing rules of the sorting programs. A recurrent source of confusion is the sorting rule for plastics. The currently imposed differentiation between different types of plastic is too complicated for the lay-man. They reason that all types of plastics are the same, and consequently belong in the same waste bag. This reasoning is clearly expressed by the following statement of one of our respondents: *"Wat de aanpassing is voor de mensen is het juist uit elkaar houden van al die dingen. Want er zijn dingen die ge niet meer kunt uit elkaar houden. Zo gelijk, plastiek is voor mij plastiek, en dat hoort in een plastieken zak, maar als ge begint de papieren tegoei te lezen, hè, dan moogt ge die plastiek daar niet bij, en dat mag daar niet bij, en dan wordt het een hutsepot. Als ge dat aan de oudere mensen, want ik werk met oudere mensen, moet gaan wijsmaken. Zo van : weet ge nog wat ? Maar ik weet het zelfs niet meer. Dus, ik gooi gewoon plastiek en blik samen, want ja, dan doe ik het ook in een ton, als het mij teveel wordt, maar het wordt veel veel te moeilijk gemaakt"* (BD, female, 43).

IMPLICATIONS OF OUR RESEARCH

First, we will discuss the possible contributions of our qualitative research to some interesting theoretical perspectives to study sorting behavior. Then we propose some preliminary managerial implications of our research.

Contributions of our research

In this section we try to link the insights obtained from our data with a few current theoretical perspectives. We think that our research has some interesting contributions to each of the described theoretical frameworks.

Collective action problem

Household recycling confronts the individual with a social dilemma. One is faced with a social dilemma when the individual self-interest conflicts with the collective interest (Dawes 1980; Hardin 1968; Messick and Brewer 1983). In order to reduce the strain on the country's garbage processing capacity, every citizen needs to incur individual cost to achieve a common interest. However, those who do not contribute can share the same benefits achieved by the community. This type of decision situation is called a *collective action problem* (Olson, 1965). The crucial aspect of this kind of social dilemma is that a person can share the common interest without paying his/her individual dues, as long as other people keep contributing their dues. In fact, a person is better off by not taking action. Therefore, a rational person (in the economic sense) will be reluctant to take action, particularly when the social interest produced by that person's actions is less than his/her individual cost. That rational individual is a *free rider*. And if everybody wants a free ride, they will all fail to achieve the social interest. This problem will be most salient when we are confronted with large-scale social dilemmas (Olson 1965). It is generally known that cooperation decreases with increasing group size (Dawes 1980; Messick and Brewer 1983; Stroebe and Frey 1982). Large-scale dilemmas are characterized by a minimal overall impact of one individual's behavior, low perceived visibility of individual behavior, and low feelings of responsibility for the collective welfare. This social dilemma approach is a very interesting (and new) application to sorting behavior. People construct the sorting problem mainly in terms of "benefits to society" versus "costs for myself". Performance of the behavior is immediately costly to the individual, either in terms of personal comfort or money, yet the benefits of such behaviors are often not realized for months or years. The deliberation of these costs and benefits can affect the choice of a specific behavior. In this context, people can choose between a cooperative behavior (e.g. sorting their garbage in an accurate way) or a defective behavior (e.g. sorting their waste in an inaccurate way, littering, burning their waste). Thus, if the behavior is conceptualized as a social dilemma, the choice

aspect is at the core of the problem, whereas the more common attitude approach ignores the choice component of recycling behavior.

Contributions to Hornik et al.'s (1995) model of consumer recycling behavior

One objective of our research was to make an inventory of the problems people perceive when they are sorting their domestic waste. One prior attempt to do this was Hornik et al.'s (1995) meta-analysis of recycling research. Their study led to a broad model in which the many variables affecting consumer-recycling behavior are classified into four theoretical groups: intrinsic incentives, extrinsic incentives, internal facilitators and external facilitators. Hornik et al. (1995) found that the strongest predictors of recycling behavior are internal facilitators, particularly knowledge and commitment to recycling. External facilitators (e.g. collection frequency, social costs, time required…) had the lowest predictive power. External incentives (e.g. prizes, laws, social influences…) and internal incentives (e.g. conservation, frugality, locus of control…) occupy intermediate positions between the two groups of facilitators. The authors propose that to induce short-term recycling, the best variables are external incentives (e.g. monetary rewards). For inducing long-term recycling these external incentives are rather impractical; it is better to appeal to internal incentives and increase facilitators.

Hornik et al. (1995) did not include qualitative studies. Therefore, it is very interesting to compare our kind of data with Hornik et al.'s (1995) data, as some of his proposed determinants of sorting are found in our data. We found four important differences between the two research projects. First, what we see is that in both studies knowledge is one of the most important predictors of sorting behavior. However, Hornik et al. (1995) makes no distinction between knowledge proper, and self-perceptions of knowledgeability. Second, program-induced constraints turn out to be much more important in our research than in Hornik et al.'s (1995) study, in which situational characteristics are perceived as the least important influence. However, this might be due to the nature of the studied programs. Programs might differ in the extent to which recycling behavior is voluntary (based on a pure intrinsic motivation) or imposed (based on rules and laws). Third, another surprising

observation is that our participants mentioned other high order values than those described in the meta-analysis of Hornik et al. (1995). The values that drove our respondents to sort their domestic waste were rather 'duty/citizenship' or 'environmental values' than values like self-sufficiency and frugality. Finally, in our study fairness beliefs appeared to be of significant value to study sorting behavior. This variable was not included in the meta-analysis of Hornik et al. (1995).

In summary, while Hornik et al.'s (1995) model may serve as a guiding framework for the strategic decisions of the environmental manager, our initial results indicate that the model can still be improved and adapted to the Belgian situation.

Managerial implications

Our data reveal some problems that an individual might encounter when s/he is sorting domestic waste. This is very interesting for environmental managers, who have to take these problems into account when evaluating and adapting the sorting program. While we do not want to rush to conclusions, the following issues seem to command further exploration.

First, one of the most common explanations for episodes of noncompliance is lack of knowledge. Many participants report incomplete knowledge on how to recycle, sometimes even for frequently occurring items of waste. Interestingly, the lack of knowledge is treated as a fairness issue. It is not their responsibility to seek out this information but the responsibility of the authorities to inform them better. This opinion stands in strong contrast to the opinions of collection agency representatives that we interviewed. They attribute a much larger responsibility for learning to the public, than the public itself seems to be willing to accept. Individuals seem to lack willingness to actively acquire information on concrete recycling rules for packaging and other waste items. Rather, the information should be easily available in the decision situation itself. It is a small step from here to the suggestion that the packaging frequently purchased (and discarded) consumer products should be coded, such that the consumer can easily check how to sort the item at the very moment it is being thrown away.

Second, people expect authorities to carry out more controls on socially defective sorting behavior. According to the social dilemma literature, success in solving those social

dilemmas is rarely the results of a successful socialization of individuals into responsible citizens. Success mostly comes from organized efforts to develop socially appropriate systems. For example, a set of rules is set up in a community to organize the sorting activities of the residents. However, such a set of rules might not be effective enough to keep everything under control. Therefore, people might ask for leadership or a sanctioning system (Messick, Wilke, Brewer, Kramer, Zemke, & Lui 1983; Rutte and Wilke 1984; Samuelson et al. 1984; Sato 1987). This was very clear in our group interviews, in which our respondents suggested some possible structural solutions. This to prevent a 'rot apple' effect (Colman 1982). Our respondents assume that the perception of an act in favor of the self-interest increases the probability that the observer will act in the same way. The possibility of such an effect is much greater when people see that those 'rot apples' are not punished for their action. However, the perceived effectiveness of sanctioning may far exceed its actual effectiveness. Our future research will explore to what extent the anticipation of possible sanctions really does work as a deterrent.

Third, environmental practitioners have to strive for <u>one</u> sorting system in Belgium. People are not only confused by rule differences between municipalities, they also feel disadvantaged because they tend to focus on comparisons that show them to be worse off. This perception of inequity can induce inaccurate sorting or socially defective behaviors like the dumping and burning of waste. People can be instigated to these kinds of behavior if they think 'that recycling does not matter after all'. For example: "*Ik vraag mij wel af, of wat wij doen nu wel allemaal de moeite is. Van dat zo apart te sorteren, wel waar het terecht komt, of ze dat allemaal samen terug gooien. Daar stel ik mij wel eens de vraag over. Hier sorteert men zo en in Limburg daar sorteert men anders als wij hier, hoe doet men dan dat achteraf? Dus wij zijn wel bezig met sorteren, maar wordt het niet allemaal terug op een hoop gegooid?*".

Final conclusion

This is a research-in-progress report. In order to develop a full-fledged qualitative model of the recycling experience we need to collect more data. The focus group approach proved successful in helping us develop a list of justifications for defective behavior.

Overall, our results show that participants have no intrinsic problems with their "duty" to separate waste. Constraints on cooperative choices are found, not as much in the limitations of their ability to store waste (although this may be partially due to our current choice of sample) but in the perception that they are being treated unfairly. It would be interesting to compare these findings with what is found in the literature on dilemmas and games. This literature suggests that a large proportion of the population tends to be cooperative, but that cooperative participants in games tend to retaliate for being taken advantage of. In these games, however, people are playing against each other (Kelley and Stahelski 1970). In the large social dilemma we are examining here, the behavior of other players does not have direct consequences for the individual, although it may be perceived as unfair. Our data are currently vague with respect to the situational factors that facilitate defection or interfere with the performance of cooperative behavior. The recent events in Antwerp's "Chicago" neighborhood suggest that defection does happen and may lead to rapid escalation. The causes of such phenomena are as of yet unclear. This would be an interesting avenue for continuing our research.

REFERENTIES

Adams, J.S. (1965). Inequity in social exchange. Advances in Experimental Social Psychology, 2, 267 – 299.

Allen, J., Davis, D., & Soskin, M. (1993). Using coupon incentives in recycling aluminum: A market approach to energy conservation policy. Journal of Consumer Affairs, 27(2), 300 - 318.

Bagozzi, R.P., & Dabholkar, P.A. (1994). Consumer recycling goals and their effect on decisions to recycle: A means-end chain analysis. Psychology and Marketing, 11(5), 313 - 340.

Batson, C.D., Bolen, M.H., Cross, J.A., & Neuringer-Benefiel, H.E. (1986). Where is

the altruism in the altruistic personality? <u>Journal of Personality and Social</u>   <u>Psychology</u>, <u>50</u>, 212 - 220.

Colman, A.M. (1982). <u>Game theory and experimental games</u>. Oxford: Pergamom Press.

Dawes, R.M. (1980). Social dilemmas. <u>Annual Review of Psychology</u>, <u>31</u>, 169 - 193.

De Young, (1985 - 1986). Encouraging environmentally appropriate behavior: The   role of intrinsic motivation. <u>Journal of Environmental Systems</u>, <u>14</u>(4), 281-291.

De Young, R. (1986). Some psychological aspects of recycling. <u>Environment and Behavior</u>, <u>18</u>, 435 - 449.

De Young, R. (1988 - 1989). Exploring the difference between recyclers and nonrecyclers: The role of information. <u>Journal of Environmental Systems</u>, <u>18</u>, 435 - 449.

Dietz, T., & Stern, P.C. (1995). Toward a theory of choice: Socially embedded preference construction. <u>Journal of Socio-economics</u>, <u>24</u>, 261 - 279.

Dunlap, R.E., Grieneeks, J.K., & Rokeach, M. (1983). Human values and pro-environmental behavior. In W.D. Conn (Ed.), <u>Energy and material resources: Attitudes, values and public policy</u> (pp. 145 - 168). Boulder, CO: Westview Press.

Glaser, B., & Straus, A. (1967). The discovery of grounded theory. <u>Chicago</u>: Aldine.

Goldenhar, L.M., & Connell, C.M. (1992 - 1993). Understanding and predicting recycling behavior: An application of the Theory of Reasoned Action. <u>Journal of Environmental Systems</u>, <u>22</u>(1), 91 - 103.

Gutman, J., & Reynolds, T.J. (1979). An investigation at the levels of cognitive abstraction

utilized by the consumers in product differentiation. In J. Eighmey (Ed.), <u>Attitude research under the sun</u>. Chicage: American Marketing Association.

Hardin, R.G. (1968). The tragedy of the commons. <u>Science, 162</u>, 1243 - 1248.

Hopper, J., & Nielsen, J.M. (1991). Recycling as altruistic behavior: Normative and behavioral strategies to expand participation in a community recycling program. <u>Environment and Behavior, 23</u>(2), 195 - 220.

Hornik, J., Cherian, J., Madansky, M., & Narayana, C. (1995). Determinants of recycling behavior: A synthesis of research results. <u>The Journal of Socio -   Economics, 24</u>(1), 105 - 127.

Humphrey, C.R., Bord, R.J., Hammond, M.M., & Mann, S.H. (1977). Attitudes and conditions for cooperation in a paper recycling program. <u>Environment and   Behavior, 9</u>, 107 - 124.

Jones, R.E. (1990). Understanding paper recycling in an institutionally supportive setting: An   application of the Theory of Reasoned Action. <u>Journal of Environmental Systems, 19</u>(4), 307 - 321.

Kelley, H.H., & Stahelski, A.J. (1970). Social interaction basis of cooperators' and competitors' beliefs about others. <u>Journal of Personality and Social Psychology, 16</u>, 66 – 91.

Kok, G., Siero, S. (1985). Tin recycling: Awareness, comprehension, attitude, intention and behavior. <u>Journal of Economic Psychology, 6</u>, 157 - 173.

Lee, Y.-J., & De Young., R. (1993). Intrinsic satisfactions derived from office recycling behavior: A case study in Taiwan. <u>Social Indicators Research, 31</u>, 63 - 76.

McCarty, J.A., & & Shrum, L.J. (1993). A structural equation analysis of the relationships of personal values, attitudes and beliefs about recycling, and the recycling of solid waste products. In L. McAlister & M. Rothschild (Eds.), Advances in consumer research (Vol. 20, pp. 641 - 646). Provo, UT: Association for Consumer Research.

Messick, D.M., & Brewer, M.B. (1983). Solving social dilemmas. In L. Wheeler, & P.R. Shaver (Eds.), Review of Personality and Social Psychology (Vol.4, pp. 11 – 44). Beverly Hills: Sage Publications.

Messick, D.M., Wilke, H.A.M., Brewer, M.B., Kramer, R.M., Zemke, P.E., & Lui, L. (1983). Individual adaptations and structural change as solutions to social dilemmas. Journal of Personality and Social Psychology, 44, 294 – 309.

Nielsen, J.M., & Ellington, B.L. (1983). Social processes and resource conservation. In N.R. Feimer & E.S. Geller (Eds.), Environmental Psychology: Directions and Perspectives (pp. 288 - 312). New York: Praeger.

Olson, M. (1965). The logic of collective action. Cambridge, MA: Harvard University Press.

Oskamp, S., Harrington, M.J., Edwards, T.C., Sherwood, D.L., Okuda, S.M., & Swanson, D.C., (1991). Factors influencing household recycling behavior. Environment and Behavior, 23(4), 494 - 519.

Pieters, R.G.M. (1989). Attitudes and behavior in a source separation program. A garbology approach. Delft: Euburon.

Pieters, R.G.M., & Verhallen, T.M.M. (1986). Participation in source separation projects: Design characteristics and perceived costs and benefits. Resources and Conservation, 12, 95 - 111.

Pieters, R.G.M., Bijmolt, T., van Raaij, F., & de Kruik, M. (1998). Consumers' attributions of pro-environmental behavior, motivation and ability to self and others. Working paper, KUB, Tilburg.

Reynolds, T.J., & Gurman, J. (1984). Laddering: Extending the Repertory Grid Methodology to construct Attribute-Consequence-Value hierarchies. In R. Pitts, & A. Woodside (Eds.), Personal values and consumer psychology. Lexington Books.

Reynolds, T.J., & Gutman, J. (1988). Laddering theory, method, analysis and interpretation. Journal of Advertising Research, 28, 11- 31.

Rokeach, M. (1973). The nature of human values. New York: The Free Press.

Ronis, D.L., Yates, J.F., & Kirscht, J.P. (1986). Attitudes, decisions and habits as determinants of repeated behavior. In A.R. Pratkanis, S.J. Breckler, & A.G. Greenwald (Eds.) Attitude structure and function. Hillsdale, NJ: Erlbaum.

Rutte, C.G., & Wilke, H.A.M. (1984). Social dilemmas and leadership. European Journal of Social Psychology, 14, 105 – 121.

Samuelson, C.D., Messick, D.M., Rutte, C.G., & Wilke, H.A.M. (1984). Individual and structural solutions to resource dilemmas in two cultures. Journal of Personality and Social Psychology, 47, 94 – 104.

Sato, K. (1987). Distribution of the cost of maintaining common resources. Journal of Experimental Social Psychology, 23, 19 – 31.

Smeesters, D., Warlop, L., & Vanden Abeele, P. (1998). The state-of-the art on domestic recycling research. Working paper, Federale Diensten voor Wetenschappelijke, Technische en Culturele Aangelegenheden.

Straus, A., & Corbin, J. (1990). Basics of qualitative research: Grounded theory, procedures and techniques. Newbury Park, California: Sage publications.

Stroebe, W., & Frey, B.S. (1982). Self-interest and collective action: The economics and psychology of public goods. Britisch Journal of social psychology, 21, 121 – 137.

Taylor, S., & Todd, P. (1995). An integrated model of waste management behavior: A test of household recycling and composting intentions. Environment and Behavior, 27(5), 603 - 630.

Thøgersen, J. (1994). A model of recycling behavior, with evidence form Danish source separation programs. International Journal of Research in Marketing, 11, 145 - 163.

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Tussen groene woorden en groene daden …: De relatie tussen milieubesef en milieuzorg

bij individuele consumenten (HL/DD/24)

Part 3

Exploring the Recycling Dilemma:

Consumer Motivation and Experiences in

Mandatory Garbage Recycling Programs.

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Abstract

Household recycling is conceptualized as a social dilemma in which households have a choice between cooperative and defective options. Promoting cooperative choice in the recycling dilemma has emerged as an important issue for social marketing in recent years. Most of the available insights that could guide policy makers in designing appropriate social marketing strategies are based on research conducted in the context of voluntary recycling programs. Increasingly social marketing action takes the form of mandatory programs, though suffering from a lack of transparency and imperfect coercion. On the basis of two explorative studies into the underlying values and consumer experiences with mandatory programs, we argue that the primary motivational basis for cooperation has shifted from environmental values to 'civic duty' related values. We describe how these values drive both individual experiences of recycling behavior and the reactions to non-cooperative behavior by others. Implications for public policy and social marketing are discussed.

1. Introduction

One of the implications of sustainable economic development is that a community should control its production and disposal of waste. The decreasing spare capacity of landfills and incinerators throughout the industrialized world, especially in densely populated Western Europe, have made this task increasingly difficult. One way to realize efficient control is to bring waste back into the economic circuit by recycling. Our work concentrates on the problem of household waste recycling, which has recently emerged as one of the key areas of debate in the public policy arena. Recycling requires the separation of waste fractions, which can be most efficiently done at the source, by individuals and households. Researchers in consumer behavior and social marketing have therefore paid increasing attention to 'disposal behaviors' as the final stage in the consumption cycle (Antonides and van Raaij 1998).

From a consumer perspective, recycling constitutes a social dilemma (Rothschild 1979; Wiener and Doescher 1991). Consumers can choose between defective behavior that minimizes personal costs (not sorting, burning waste, littering) and cooperative behavior that will maximize the social pay-off, but only if a large majority of the population cooperates (Dawes 1980). Mere consideration of self-interest would always dictate the defective choice. The social marketing task of promoting cooperation in the recycling dilemma is made even more difficult as the social pay-off (a cleaner environment) typically does not accrue to the recycling individuals, but to subsequent generations. Two strategic routes to encourage cooperation are available to social marketers: an 'attitudinal route', which induces individuals to cooperate for the sake of cooperation, and a 'structural route', which seeks to change the properties of the decision situation such that it is no longer a social dilemma (Messick and Brewer 1983; Wiener and Doescher 1991). Structural solutions change the pay-off structure such that cooperation is the alternative with the lowest personal cost.

In recycling dilemmas, the preferred social marketing strategy has long been attitudinal. Until a few years ago, most recycling programs in Europe and elsewhere were voluntary in nature. Local governments created the opportunity to participate, without

controlling or rewarding actual compliance. Interventions have traditionally taken the form of informational and motivational campaigns, starting from the assumption that *intrinsic motivation* to participate can be created or facilitated. Most of the reported research on recycling behavior has been conducted as an evaluation of such voluntary programs. These studies, indeed, find that the extent and quality of participation can be predicted based on individual attitudes towards recycling, which in turn are under control of environmental values as an intrinsic driving force (for reviews, see Thøgersen 1996; Smeesters, Warlop and Vanden Abeele 1998). Empirical tests of the possibility of changing these beliefs and attitudes, and the consequent recycling behavior (e.g. Lutz) have been completely lacking.

Due to the increasing strain on available waste processing capacity, governments are increasingly switching to structural strategies, by setting up mandatory programs. Local governments mandate the use of particular waste recipients for separated waste fractions, the prices of which are set to cover the processing or dumping costs for each fraction. Compliance is monitored, and infractions are fined or prosecuted. Mandatory programs make minimal assumptions about intrinsic motivation. They are set up such that compliance is the most cost-effective behavioral strategy, if one plays by the rules. They are believed to ensure that more people will participate to a larger extent, even if they are not intrinsically motivated.

Few prior studies have examined programs of a more mandatory nature (see Grunert 1996; Thøgersen 1994 for exceptions). The move to structural social marketing strategies raises a number of issues that have not been addressed. First, none of these systems is foolproof. Defective behavior is possible to the extent that a household's actions are not completely transparent, and control is imperfect. Also, the system itself with its high prices and fines may lead to resentment. Small-group social dilemma research has suggested that cooperative individuals confronted with defection will tend to retaliate (Dawes 1980). Second, it has been argued that the existence of extrinsic reasons to comply reduces the intrinsic motivation for the same behavior (Frey 1993; Lepper & Greene 1978). Third, recycling research has equated the cooperative orientation, found in most social dilemmas (Van Lange, Otten, De Bruin, and Joireman 1997) primarily with

environmental values. It is unclear whether these values will still dominate behavior in the context of mandatory programs. If it is still important to activate intrinsic motivation in mandatory programs (Frey 1993), which values and beliefs need to be addressed? Finally, if the driving values can be identified, how can value-consistent (and socially desirable) behavior be promoted by appropriate social marketing action?

These questions constitute an extensive research program. In this paper we discuss the results of our initial exploration of household recycling experiences in the context of mandatory programs. We report two qualitative studies. The first study uses an interpretative methodology, and investigates individual adaptation to mandatory recycling programs. The second study uses laddering (Reynolds and Gutman 1988) to uncover the underlying motivational (value) structure of compliant and defective behavior. Below, we will first report both studies and then add a general discussion.

2. Study 1: Constructing an interpretative model of recycling experience

At the most descriptive level, our objective is to construct an inventory of the problems experienced by individual consumers confronted with the obligation to sort their household waste. Analysis and interpretation of these narrative data are based on 'grounded theory' (Strauss and Corbin 1990), and result in an interpretative model of sorting experience, and of its antecedents and consequences *as experienced by the respondents.* We will continue to adapt our interpretations as we add more data and sharpen our insights.

2.1. Data collection

We have currently gathered narrative data from 71 respondents. Thirty-six took part in one of six focus groups, conducted in different rural and suburban regions of Flanders. We added 35 individual depth-interviews, conducted in urban and suburban regions. Respondents' ages ranged between 25 and 70, with a majority between 40 and 60. None of the participants would qualify as an environmental activist. The focus groups lasted about 90 minutes; the individual depth interviews ranged in duration between 30 and 90 minutes. All interviews were conducted in Dutch. They have been recorded on tape and

completely transcribed.

2.2. Findings and conceptual model

We based our analysis on grounded theory (Glaser and Straus 1967). A grounded theory is an inductive substantive theory about a phenomenon, which is discovered, developed and verified through systematic collection and analysis of the data. Conceptual categories were extracted, and relationships between categories explored using the NUD-IST software (QSR 1997). The resulting model is presented in Fig. 1. The model centers on the formation and persistence of sorting habits and its antecedents. Below we discuss each of these interpretative categories.
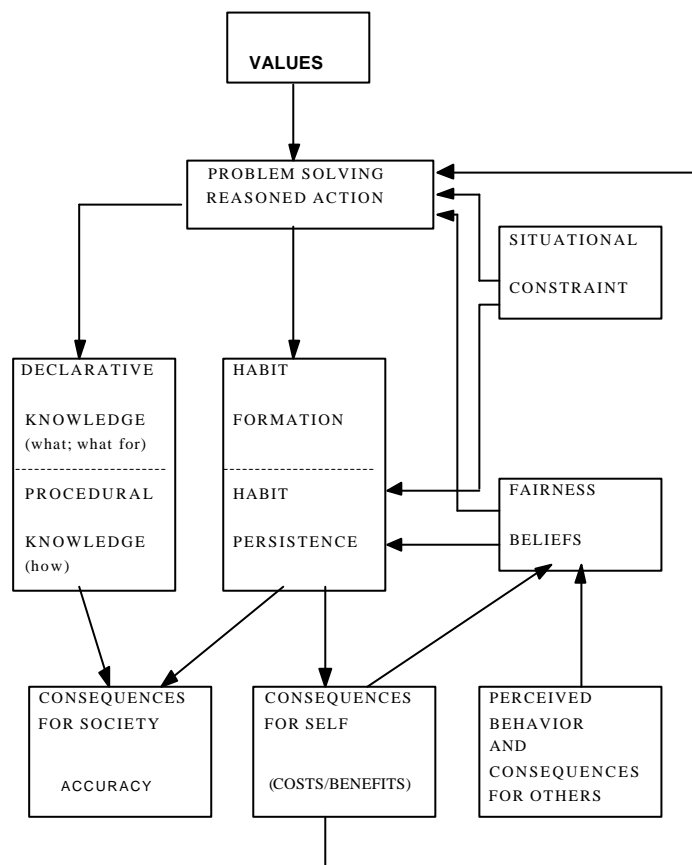

Figure 1: Conceptual model of recycling experience

2.2.1. Sorting habit

At the time of the interviews, all respondents had lived with a mandatory sorting program for at least six months, some for more than three years. Most salient in their narratives was the habitual nature of their behavior. Most households had experienced

stable behavioral routines to accomplish the tasks involved in gathering, sorting, and disposing of waste materials (all labeled 'recycling' in the remainder of this paper). They considered their routines optimal, given the constraints imposed by the municipal requirements and by their living environment. Central in our interpretation is therefore the construct of *habit*. When people are confronted with new situations and new tasks, problem solving is very important. Early during a recycling program, consumers have to consider the alternatives for discarding garbage, and evaluate the *consequences for the self* in terms of costs and benefits (time, money, effort, and social approval…). They can follow the municipal sorting instructions, they can sort inaccurately and mix different materials; they can even dump or burn their garbage… They will make the choice that seems to be the most justified, either to oneself or to others who will evaluate their choices. At that time, they are *forming a recycling habit*.

Once habitualized, the *persistence* of sorting and recycling activities does not require much conscious thought. Routinization, however, is never absolute. First, in case of non-daily recycling activities (e.g. larger items that people do not have to discard very often) ad-hoc solutions need to be found; this is true for all new recycling tasks (e.g. when municipal rules for sorting a specific material have changed). These decisions continue to involve conscious thought and the consideration of at least one alternative to the selected course of action ('planned behavior'). Second, changing program characteristics can induce new problem-solving behavior. Municipal recycling rules can change, and mandate a change in recycling routines. Third, habits can also be interrupted when individuals witness alternatives to their own routines. For example, a neighbor who does not recycle, but burns garbage in his backyard can instigate someone to re-evaluate his/her own behavior. Such experienced "interrupts" (Bettman 1979) trigger reconsideration of costs and benefits, and work as a feedback mechanism to the recycling attitude and intention (Pieters 1989). This learning process may strengthen or change attitudes and intentions and, consequently, the recycling habits.

2.2.2. Values

The evaluation of the costs and benefits that drive habit formation is based on a person's *values*. In most prior research, the guiding values were <u>assumed</u> to be environmental (see Smeesters et al., 1998). Those who did study the recycling value structure empirically, indeed found that values related to the environment (e.g., sustaining life, providing for future generations) were most important (e.g., Oskamp et al. 1991). Secondary motives typically are 'civic and social duty' (e.g. Dunlap, Grieneeks and Rokeach 1983), 'frugality in consumption' (DeYoung 1985-1986), and 'promoting health' (Bagozzi and Dabholkar 1994). It is, however, important to know that these studies have been conducted in a context of voluntary recycling programs. Consideration of additional values may be necessary to explain the compliance by participants in mandatory programs.

Unlike most of the above-mentioned studies, we did not present potential values to our respondents but merely asked them to reflect on their personal reasons for recycling. Only a minority, especially in urban areas, did not spontaneously mention values at all. Their justifications remained at the level of 'avoiding fines'. Most respondents, however, referred to 'doing one's duty' as the dominant motivational 'force' underlying their recycling behavior. They found it important to comply with the sorting and recycling rule and regulations because that is part of "being a good citizen". The dominant underlying value is therefore not different from that for other civic behaviors like paying taxes or obeying traffic rules. Purely environmental values were only secondary, and mentioned by a minority of respondents. The <u>mandatory</u> nature of the programs we are investigating seems, indeed, to call for different value orientations.

2.2.3. Perceived constraints

We found evidence for habitual recycling, driven predominantly by 'civic duty' considerations. We argue that most of the consumers are intrinsically motivated to persist in socially appropriate sorting behavior. However, in some situations people might deviate from what they are intrinsically motivated to. Although most of our respondents perceived themselves as complying with the rules, they all were able to reflect on past episodes of defection. These narratives reflect the attributions consumers make for their own violations of the rules. Attributions are typically external. Circumstances are held responsible, rather

than the self (Pieters, Bijmolt, van Raaij, and de Kruijk 1998). Whether or not these attributions are the true reasons has no implications for the validity of our model. We argue that perceived constraints are 'real' in the sense that they are reasons why people might deviate from their recycling routines, which may lead to the formation of new, less desirable habits. We do not exclude that additional, less salient constraints might also operate on the respondents' behavior. We found three important categories of perceived constraints: knowledge gaps, situational constraints and unfairness beliefs.

2.2.3.1. Self perception of knowledge gaps

Perceived knowledge constraints can be divided in two classes. *Procedural knowledge* is knowledge about 'how to execute the sorting task'. Knowledge gaps that are not salient to the individual may lead to persistent sorting failures, especially because participants often do not know and never learn that they are making mistakes (Pieters 1989). Our data reveal that lack of task knowledge is also used as a justification for defective episodes. Respondents often justified violations of the rules by arguing that they did not know what exactly do to with a particular garbage item.

Declarative knowledge refers to knowledge about the societal implications of (not) recycling, as well as about how the recycling process proceeds once the garbage has been collected. We consider this a constraint because people want to know if and how they contribute to a desirable end-goal. Many respondents report a sense of contributing to a socially desirable goal, but they lack insight into how this happens. This may also explain why environmental values are rarely mentioned as a dominant motivator. "Duty" related values can be used as a guiding force even if the actor does not understand the scope of the social dilemma.

2.2.3.2. Situational constraints

Situational constraints are due to the residential status of respondents or to program characteristics. Residential constraints were acute for respondents living in small apartments, often in inner-city high-rises. Before the institution of the mandatory program, they had been able to use collective disposal containers, conveniently located near their dwellings. The

combination of the sudden switch to individual responsibility with the lack of space and the interference of garbage storage with other household activities created highly publicized littering problems in some Belgian inner-city neighborhoods. Respondents in these neighborhoods were less likely to report habit formation and had the lowest levels of intrinsic motivation. For most others however, *program-related constraints* appeared to be more salient. Municipal programs vary in the frequency of garbage collection, the proximity of glass containers, the number of waste fractions to be separated, etc… High levels of situational constraint interfere with the development of sorting habits, especially when these constraints are not stable over time. Consumers experience more frequent interrupts, resulting in slower habit formation and more threats to habit persistence.

2.2.3.3. Unfairness beliefs

Consumers compare self-experienced costs and benefits of recycling with those inferred for other parties. Our respondents justified noncompliance by referring to three different sources of unfairness.

First, *unfairness beliefs about community differences* were very salient. Our respondents are aware of the lack of standardization between different municipal programs, and actively compare regulations between municipalities. These inter-community differences are perceived to be unfair: consumers tend to concentrate on aspects of the comparison showing them to be worse off. This unfairness perception can cause feelings of intolerance and can induce defection (e.g. discarding waste in adjacent municipalities). Equally prominent in virtually all narratives are *unfairness beliefs about manufacturers*. Government is believed to put most of the burden of recycling on the consumer, not on the manufacturers of consumer products. Respondents easily attributed a large share of the responsibility for using redundant packaging and generating too much waste to manufacturers. Third, many respondents reported instances of neighbors or others "beating the system", by burning waste or littering. Such *free riding* is considered unfair. Consumers ask for more controls and for more severe punishment of littering malpractice.

3. Study 2: A means-end chain exploration of recycling motivation

Unlike in prior studies, our interviews revealed that the intrinsic motivation to comply with recycling programs is often driven by 'good civic' values rather than by environmental values. Many respondents did not even mention the environment while explaining why they found it important to participate in recycling programs. The importance for the development of sensitization campaigns of knowing the underlying value structure (Reynolds and Gutman 1988) motivated our second study.

We used the means-end chain framework (Reynolds and Gutman 1988) to investigate which personal values constitute the motivational basis for sorting behavior, and how they are linked to these behaviors. Means-end chains are organized structures of meanings that connect actual behaviors to an individual's personal values. They describe a hierarchy of interconnected motivations, of increasing level of abstraction, each constituting the means to reach higher level goals. Values are at the highest level of abstraction and linked to observable behaviors through more direct motivational antecedents of the behavior of the behavior.

One of the most applied techniques to reveal means-end structures is 'laddering'. This technique refers to an in-depth, one-on-one interview used to develop an understanding of how individuals translate the attributes of behaviors into meaningful consequences and personal values. A laddering interview starts from an inventory of elicited recycling behaviors and behavioral attributes. The researcher encourages the respondent to think about the reasons why each of these behaviors is important for him or her. The procedure is repeated for the generated reasons, until the respondent indicates there is no deeper or higher reason left. We used this laddering technique to provide a more complete picture of the motivational antecedents of the behavior.

3.1. Data Collection and Analysis

Thirty of the respondents from Study 1 were asked after the interview to participate in the laddering study. Elicitation of starting concepts for laddering was based on the respondents' own narratives during the depth-interview in study 1. The interviewer inventoried which basic recycling behaviors (gathering, sorting, discarding different

categories of waste, gathering information, littering) were mentioned by the respondent during each interview. On average, 6 to 7 ladders per respondent were constructed (207 ladders in total). For the initial analysis reported here, we assigned responses to the consequences and value categories based on consensus among the authors. The laddering data were subjected to a qualitative analysis, using the Laddermap program (Gengler and Reynolds 1993). The cut-off value for inclusion of a link was set at 5; the resulting map incorporated 30% of the ladders. Individual ladders and details of the analysis are available from the first author upon request. Figure 2 presents a graphical representation of the dominant means-end chains.

3.2. Basic Findings

In Fig. 2 'sorting waste' is the starting category for most ladders. During the interviews, actual starting concepts referred to sorting in general, and to sorted waste categories (organic waste, paper, glass, nonrecyclables,…), which were then aggregated. These ladders reflect the basic social dilemma of recycling.

Sorting is negatively related to the "easy life". Respondents argue that sorting is effort-consuming which is disliked because they want to minimize effort. It is positively related to self-protection, by obeying laws, and by saving money through the reduction of nonrecyclable waste. Fairness is negatively related with being law abiding, if they see other successfully defect. Intrinsic motivation for cooperation is fueled by environmental values ("Preserve the world"), and 'civic' values. Our sample is too small to allow statistical analysis, but both ladders seem to be about equally strong. Environmental values are clearly more prevalent in Study 2 than in Study 1. This may be because laddering requires more reflection than do depth interviews. The environmental values may spontaneously not be as salient as the 'civic' values, but can activated by deeper reflection.
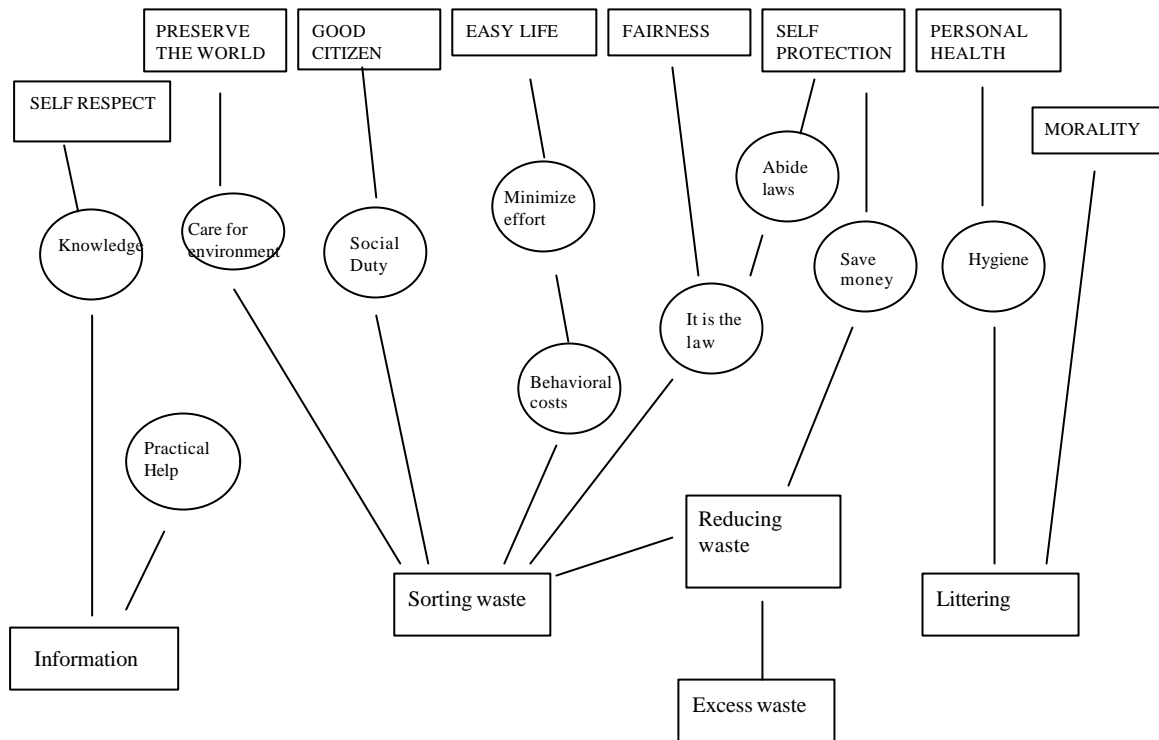
Figure 2: LADDERMAP summary of recycling value structures.

Self respect, personal health, and morality are other values associated with recycling behavior. Self-respect is derived from gaining knowledge, both procedural and declarative, about recycling. Littering is considered immoral, and bad for health through its influence on the cleanliness of the living environment.

Compared to the depth interviews and focus groups in study 1, the laddering procedure in study 2 has sacrificed spontaneity in return for more reflection. Respondents in a laddering study are more likely to uncover a broad set of 'deep' motivations to participate in recycling. It has been argued (Cohen and Warlop, in press) that because of this heightened reflection, means-end chains may be less suitable for understanding the actual cognitive activity preceding behavioral choice. Our means-and chain analysis should therefore be considered complementary to the interpretative analysis of spontaneous narratives, by indicating the potential but not necessarily realized motivational basis for recycling behavior in mandatory programs.

4. Discussion

Most of the available research insights on household recycling behavior were obtained from evaluation studies of voluntary programs. Our study looks explicitly at

mandatory programs in which the government attempts to play a coercive role. We expected that both the consumers' experience of the programs and the motivational structure underlying their recycling behavior might be qualitatively different from what was found with voluntary programs. Our initial results confirm these expectations. At the current stage of our research, we reach two preliminary conclusions.

First, consumers in mandatory recycling programs do not seem to lack intrinsic motivation, except in situations of severe situational constraint. Obviously, their stories may be self-serving. They are based on the participants' own reflections, such that social desirability bias cannot be excluded. Still, these findings comport with surveys of (American) environmental values (see Bagozzi and Dabholkar 1995). They are also consistent with the finding that most individuals' initial choices in social dilemma situations reflect a cooperative (rather than individualistic or competitive) perspective (Van Lange et al. 1997). In contrast with prior research from voluntary programs, we find much a greater incidence of 'civic' values rather than of environmental values as a basis for intrinsic motivation, especially when the analysis is based on spontaneous verbalizations (Study 1). Study 2 shows that 'duty' remains important when values are generated by respondents in a more reflective mode.

Second, while our respondents comment on their recycling habits, they are sensitive to constraints due to residence and program characteristics, lack of knowledge, and perceived unfairness. Situational constraints are relatively stable over time; they still allow habit formation. Uncertainty concerning whether one is doing things right, and feelings of being treated unfairly remain are used as justifications for own and other's defective behavioral episodes. Despite the potential for socially desirable answers, our respondents had no difficulty recalling and commenting upon such episodes of defection. We therefore conceptualize recycling in mandatory programs as a 'habit under strain': habitual behavior is readily interrupted by events that make people reconsider their options.

Unfairness perceptions are hard to control by social marketers and designers of recycling programs. Our results do suggest, however, that attention to the situational determinants of unfairness perceptions should be a continuing consideration. Government

can take steps into improving the standardization of mandatory recycling programs. Currently, consumers hold strong prior beliefs that the system to which they are subjected compares unfavorably to that of neighboring municipalities. Officials could also allocate more resources to removing evidence of successful defection (littering), which both cursory observation ("litter attracts litter") and our qualitative data suggest to be a major driver of defection from appropriate recycling behavior.

Others before us have convincingly argued the importance of improving recycling knowledge (e.g., Pieters 1989). Our findings emphasize that the modal consumer experiences a great deal of difficulty making sense of the different recycling rules, especially with respect to the packaging materials (plastics). A better, standardized, coding system for the nature of packaging materials should help reduce the resulting uncertainty

Our studies have mapped the values underlying choices for the cooperative option in the social dilemma of recycling. Further experimental and survey research can use these insights to test hypotheses about the potential of these values to promote cooperative action under various levels of structural constraint and behavioral transparency. Social dilemma theory has been used as a metaphor and a model to create a typology for social marketing action (Thøgersen 1994; Wiener and Doescher 1991), but has rarely been used as a theoretical model for guiding data collection in social marketing research. The social dilemma literature offers a rich toolbox of research paradigms and concepts that can be used to conduct such research. Located at the crossroads of psychology and economics, it should attract marketing researchers from very different orientations. The social dilemma paradigm is ideally suited for the study of cooperative behavior when a socially desirable motivational orientation is in place (inter-individual stability), but when changeable (and sometimes manageable) situational factors explain variation in compliance (intra-individual variability). Until recently, the dominant research paradigm for recycling research was the theory of reasoned action (Fishbein and Ajzen 1975), or one of its variants. This paradigm explains recycling behavior as a function of variability across individuals; it has not yielded much insight beyond the realization that individuals differ in environmental attitudes and

values. At the current state of the art in this domain, a social dilemma approach seems to hold more promise.

By adopting a dilemma paradigm, social marketing research may also contribute to theoretical knowledge. Social marketing in social dilemma situations has been likened to "selling brotherhood" (Rothschild 1979). However, in order to 'sell brotherhood', the 'customers' must be aware that brotherhood exists as a choice alternative. Most theoretical social dilemma research uses paradigms in which both the individual and the social pay-offs for a cooperative and a noncooperative option are made extremely salient. Our respondents' attention to 'duty' rather than to environmental values or other 'brother's keeper' considerations, may indicate a lack of insight into the scope of the social pay-off of recycling, rather than a lack of motivation. They also suggest that defectors are not choosing 'against the environment' but that the environmental consequences of their behavior may simply not be salient or meaningful enough to them at the time of the act. Investigating the manageable causes of salience and diagnosticity of value orientations at the time of recycling acts may be of help to social marketing practitioners, as well as enrich social dilemma theory.

References

Antonides, G. and W. F. Van Raaij, 1998. Consumer behavior: a European perspective. Chichester: Wiley.

Bagozzi, R. P. and P. A. Dabholkar, 1994. Consumer recycling goals and their effect on decisions to recycle: A means-end chain analysis. Psychology and Marketing 11, 313 - 340.

Bettman, J. 1979. An information processing theory of consumer choice. Reading, Ma: Addison Wesley.

Cohen, J. B. and L. Warlop (in press), "A motivational perspective on means-end chains". In: T. J. Reynolds and J. C. Olson (eds.), Understanding Your Customers: Means-End Chain Theory and Practice. Hillsdale, NJ: Lawrence Erlbaum.

Dawes, R.M., 1980. Social dilemmas. Annual Review of Psychology 31, 169 - 193.

DeYoung, R., 1985 - 1986. Encouraging environmentally appropriate behavior: the role of intrinsic motivation. Journal of Environmental Systems 14, 281-291.

Dunlap, R. E., J. K. Grieneeks, and M. Rokeach, 1983. Human values and pro-
environmental behavior. In: W.D. Conn (ed.), Energy and material resources:
Attitudes, values and public policy. Westview Press, Boulder, CO.

Fishbein, M. and I. Ajzen, 1975. Belief, attitude, intention, and behavior: an introduction to
theory and research. Reading, MA: Addison Wesley.

Frey, B. S., 1993. Motivation as a limit to pricing. Journal of Economic Psychology 14,
635-664.

Gengler, C. E and T. J. Reynolds, 1993. LADDERMAP: A software tool for analyzing
laddering data.

Grunert, S. C., 1996. Antecedents of source separation behavior: a comparison of two
Danish municipalities. In: J. Berács, A. Bauer and J. Simon (eds.), Marketing for an
expanding Europe: Proceedings of the 25th EMAC Conference. Budapest: EMAC,
525-538.

Lepper, M.R. and D. Greene, 1978. The hidden costs of reward: New perspectives on the
psychology of human motivation. New York: Erlbaum.

Lutz, R.J., 1975. Changing brand attitudes through modification of cognitive structure.
Journal of Consumer Research 1(4), 49-59.

Messick, D.M. and M.B. Brewer, 1983. Solving social dilemmas. In: L. Wheeler and P.R.
Shaver (eds.), Review of Personality and Social Psychology Vol. 4, 11-44. Beverly
Hills: Sage Publications,

Oskamp, S., M.J. Harrington, T.C. Edwards, D.L. Sherwood, S.M., Okuda, and D.C. Swanson,
1991. Factors influencing household recycling behavior. Environment and Behavior 23,
494 - 519.

Pieters, R.G.M., 1989. Attitudes and behavior in a source separation program. A garbology
approach. Delft: Euburon.

Pieters, R.G.M., T. Bijmolt, F. van Raaij, and M. de Kruijk, 1998. Consumers' attributions
of pro-environmental behavior, motivation, and ability to self and others.
Forthcoming: Journal of Public Policy and Marketing.

QSR (1997). QSR NUD*IST 4: Software for qualitative data analysis. Thousand Oaks, CA: Sage
Publications Software.

Reynolds, T.J. and J. Gutman, 1988. Laddering theory, method, analysis and interpretation.
Journal of Advertising Research 28, 11- 31.

Rothschild, M. L., 1979. Marketing communications in nonbusiness situations or why it's so hard to sell brotherhood like soap. Journal of Marketing 43 (Spring), 11-20.

Smeesters, D., L. Warlop, and P. Vanden Abeele, P., 1998. The state-of-the art on domestic recycling research. Sustainable Development Research Report #13 Brussels: OSTC.

Straus, A. and J. Corbin, 1990. Basics of qualitative research: Grounded theory, procedures and techniques. Newbury Park, California: Sage publications.

Thøgersen, J., 1994. Monetary incentives and environmental concern: effects of a differentiated garbage fee. Journal of Consumer Policy 17, 407-442.

Thøgersen, J., 1996. Recycling and morality: a critical review. Environment and Behavior 28, 536-558.

Van Lange, P. A. M., W. Otten, E. M. N. De Bruin, and J. A. Joireman 1997. Development of prosocial, individualistic, and competitive orientations: theory and preliminary evidence. Journal of Personality and Social Psychology 72, 1373-1395.

Wiener, J. L. and T. A. Doescher, 1991. A framework for promoting cooperation. Journal of Marketing. 55 (April), 38-47.

Plan voor wetenschappelijke ondersteuning van een beleid gericht
op duurzame ontwikkeling (1996-2001)

Hefbomen voor een beleid gericht op duurzame ontwikkeling

LUIK B

**Part 4: Hiërarchische klasse-analyse (HICLAS) van
afvalsorteermotivaties and afvalsorteergedrag**

**Part 5: Heterogeneity in sustainable consumption: A
segmentation analysis of waste sorting behavior**

Promotoren:
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Hefbomen voor een beleid gericht op duurzame ontwikkeling:

Tussen groene woorden en groene daden …: De relatie tussen milieubesef en milieuzorg

bij individuele consumenten (HL/DD/24)

Part 4

Hiërarchische klasse-analyse (HICLAS) van afvalsorteermotivaties en afvalsorteergedrag

Kurt Nys
Dirk Smeesters
Luk Warlop

KULEUVEN

ALGEMENE INLEIDING

Steeds meer wordt, naast loutere productie van goederen, het adequaat beheren en controleren van afvalproductie en afvalstockage een opdracht binnen de economische ontwikkeling van een gemeenschap. Eén van de technieken die een gemeenschap kan helpen om in deze opdracht te slagen is recyclage. Recyclage heeft het grote voordeel dat er zo veel mogelijk afval terug in het economische circuit belandt, waardoor de zware belasting op vuilnisbelten en verbrandingsovens verminderd kan worden. Omwille van de beperkte capaciteit van deze laatste twee is het management van huishoudelijk afval de laatste jaren een belangrijk punt geworden op de politieke en de economische agenda.

Smeesters, Warlop & Vanden Abeele (1998) onderscheiden drie soorten strategieën die lokale overheidsinstanties hanteren om het management van huishoudelijk afval te optimaliseren. Ten eerste zijn er de motivationele strategieën. Deze pogen het milieubewustzijn van de burgers te verhogen. Voorbeelden hiervan zijn mediacampagnes om de algemene bezorgdheid om het milieu te verhogen of om de intrinsieke motivatie om deel te nemen aan recyclageacties aan te wakkeren.

Ten tweede zijn er de informatiestrategieën. Hier tracht de overheid om de kennis van de burgers over het sorteren zelf ('Hoe doet men dat?') en over het behandelen van afval ('Wat gebeurt er met het opgehaalde afval?') te verhogen. Deze strategieën vinden vaak hun neerslag in de bedeling van folders, affichage en bedrukking van de verpakking van bepaalde producten.

Als derde soort strategieën onderscheiden ze de strategieën die het directe gedrag van individuele consumenten rechtstreeks trachten te beïnvloeden in de richting van meer milieuvriendelijk gedrag. Op het vlak van sorteren kunnen we binnen deze gedragsstrategieën programma's onderscheiden die aanspraak maken op een intrinsieke of op een extrinsieke motivatie om te sorteren. Bij programma's gericht op een intrinsieke motivatie, worden er voorzieningen aangeboden om te sorteren. De mensen zijn vrij om te kiezen of ze hieraan willen deelnemen. Het afval van de personen die niet deelnemen aan het

programma wordt ook ongestraft opgehaald. De extrinsieke motivatie programma's hanteren een systeem waarin consumenten verplicht worden om bepaalde zakken en/of bakken aan te kopen. De prijs van de zakken (bakken) voor recycleerbaar afval wordt laag gehouden terwijl men de prijs voor de zakken met restafval sterk optrekt. Op deze manier tracht men te bereiken dat er zo weinig mogelijk recycleerbaar afval in de zak met restafval wordt gestoken.

De manier waarop lokale overheden deze 3 soorten strategieën combineren en toepassen in hun beleid, weerspiegelt de impliciete theorie die deze overheden aanhangen over wat de burger zal aanzetten om meer te sorteren. Het uiteindelijke succes van deze beleidsmaatregelen hangt af van de consistentie en de accuraatheid waarmee de consumenten hun huishoudelijk afval sorteren. Om de personen die dit beleid ontwikkelen en evalueren meer inzicht te verschaffen in de geschikte toewijzing van de budgetten aan de verschillende alternatieven, is er informatie nodig aangaande de determinanten van deelname aan recyclage en van de accuraatheid van het sorteergedrag.

HOOFDSTUK 1: Kritisch overzicht van de literatuur aangaande de determinanten van het sorteren van huishoudelijk afval. Aanloop tot het voorliggend onderzoek

1.1. Inleiding

De terminologie die in de literatuur wordt gebruikt, is niet steeds even eenduidig. Vooral de termen 'recyclage' en 'sorteren' kunnen aanleiding geven tot enige onduidelijkheid. Recyclage is grotendeels een industriële activiteit. In de literatuur wordt 'recyclage' echter vaak gebruikt om het geheel van sorteer- en afvalbewaargedragingen te benoemen. Wij beschouwen beide termen als synoniemen. Strikt genomen onderzoeken we in deze verhandeling 'sorteren' en meer bepaald 'het sorteren voor gescheiden ophaling door afvaldiensten'.

In dit hoofdstuk geven we een gestructureerd overzicht van het reeds verrichte wetenschappelijk onderzoek over het sorteren van huishoudelijk afval. Hiermee creëren we een context waarin we ons eigen onderzoek kunnen situeren en verantwoorden. De verschillende denkpistes die wetenschappers in dit domein reeds hebben gevolgd, helpen ons om een benadering te kiezen voor het onderzoek in deze verhandeling.

In de volgende delen bespreken we de meest opvallende tendensen in het onderzoek naar mogelijke determinanten van sorteergedrag. In het eerste deel geven we een overzicht van de bestaande literatuur. Een tweede deel behandelt beknopt de theoretische modellen die in deze context zijn voorgesteld als verklaring voor de bevindingen. In het derde deel bundelen we de kritiek op het eerder aangehaalde onderzoek uit de literatuur en wordt de overgang gemaakt naar ons eigen onderzoek. In het laatste deel gaan we uitgebreid in op de onderzoeksmethodologie die we hebben gebruikt.

1.2. Overzicht van het onderzoek inzake sorteren en recyclage bij individuele consumenten

Voor dit overzicht van de bestaande literatuur over het sorteren van huishoudelijk afval hebben we vooral beroep gedaan op Smeesters et al. (1998). De classificatie die zij voorstellen gebruiken we hier als leidraad. Drie soorten variabelen werden gecategoriseerd als mogelijke determinanten van sorteergedrag: (1) socio-demografische variabelen, (2) persoonlijkheidskarakteristieken, en (3) situationele variabelen. Hieronder bespreken we kort de belangrijkste bevindingen in elk van deze categorieën.

1.2.1. Socio-demografische variabelen

Recycleerders en niet-recycleerders verschillen volgens sommige studies inzake socio-demografische kenmerken. Onderzochte variabelen zijn o.a. leeftijd, geslacht, inkomen, opleidingsniveau en levensstandaard. Deze variabelen worden vaak door beleidmakers gebruikt voor demografische segmentatie. De aangenomen assumptie is dat de ene socio-demografische groep verschilt van de andere inzake recycleergedrag of –attitude. De meeste van deze studies zijn echter 'in een los verband' uitgevoerd of vaak als een 'ad hoc' evaluatie van sorteerprogramma's. Hiermee wordt bedoeld dat er vaak geen opbouwende onderzoeksgeschiedenis voorhanden was. De resultaten van deze studies blijken bij onderlinge vergelijking vaak inconsistent (Smeesters et al., 1998).

Zo werd er vaak gevonden dat jonge, hoger opgeleide mensen met een hoog inkomen meer betrokken zijn op het milieu (Mohai & Twight, 1987; Swenson & Wells, 1992; Van Liere & Dunlap, 1980). Nochtans vonden andere studies een zeer beperkt verband of zelfs helemaal geen verband (Kinnear, Taylor & Ahmed, 1974; Lansana, 1992). Twee andere studies kwamen dan weer tot het besluit dat oudere mensen vaker sorteren dan jongere (Samdahl & Robertson, 1989; Vining & Ebreo, 1990).

Omdat deze studies geen eenduidige resultaten opleverden, is het interpreteren van de resultaten niet gemakkelijk. De loutere vaststelling dat bepaalde socio-demografische variabelen differentiëren tussen recycleerders en niet-recycleerders, verklaart natuurlijk niet inhoudelijk *waarom* de twee groepen zich op een andere manier gedragen. Dit gebrek aan

inhoudelijke verklaringsmogelijkheden is nu net waarom socio-demografische variabelen vaak minieme bijdragen leveren in de ontwikkeling van wetenschappelijk onderbouwde theorieën. Omwille van deze tekortkoming zijn onderzoekers meer op zoek gegaan naar 'oorzakelijk' verklarende concepten die in de ontwikkeling van een theorie een grotere bijdrage kunnen leveren, waarover hieronder meer.

1.2.2. Persoonlijkheidskarakteristieken

De onderliggende assumptie van dit soort studies is dat het verschil tussen de recycleerders en de niet-recycleerders te wijten is aan verschillen in de intrinsieke motivatie. De recycleerder zou een vorm van voldoening krijgen van het sorteren van huishoudelijk afval. De motivationele concepten werden door Smeesters et al. (1998) nog eens onderverdeeld in 3 categorieën: (1) waarden, (2) waargenomen kosten en baten, en (3) attitudes.

1.2.2.1. Waarden

Waarden zijn de meest intuïtieve determinanten van iemands recycleergedrag. Mensen worden intrinsiek beloond door gedrag te stellen dat in overeenstemming is met hun waardenoriëntaties. Vele onderzoekers hebben gepoogd om een duidelijke definitie te geven van waarden. Rokeach (1973) vat waarden op als langdurige, van nature abstracte opvattingen over het 'zelf' die dienen om zowel attitudes als gedrag te kanaliseren. Schwartz (1994) geeft een uitgebreidere definitie:

> *"a belief pertaining to desirable end states or modes of conduct that transcends specific situations, guides selection or evaluation of behavior, people, and events, and is ordered by importance relative to other values to form a system of value priorities"* (p. 20)

Waarden zijn volgens Dietz & Stern (1995) zeer stabiel en centraal binnen de cognitieve structuur en helpen de persoon om beslissingen te nemen door de aandacht te richten op belangrijke aspecten van een situatie.

Ook binnen deze onderzoeksstroom moet men vaststellen dat de onderzoekspogingen niet-cumulatief en 'in het wilde weg' zijn gebeurd. Vooral de verschillende labels die verschillende auteurs aan de waarden hebben gegeven, maken het moeilijk om de resultaten te vergelijken. Smeesters et al. (1998) verdelen de waarden met de nodige voorzichtigheid in in drie groepen. Tussen de haakjes worden enkele referenties vermeld van onderzoekers die een bepaalde groep van waarden hebben bestudeerd:

(1) 'milieuwaarden' (Hopper & Nielsen, 1991; Oskamp, Harrington, Edwards, Sherwood, Okuda & Swanson, 1991)

(2) 'burgerlijke en sociale plicht' (Batson, Bolen, Cross & Neuringer-Benefiel, 1986; De Young, 1986; McCarty & Shrum, 1993)

(3) 'zuinigheid inzake consumptie' (De Young, 1985-1986; Lee & De Young, 1993)

Het identificeren van waarden is één zaak, maar de manier waarop ze gedrag beïnvloeden is een andere. Met deze vraag hebben zich tot nu toe weinig studies ingelaten. Met betrekking tot de initiële resultaten over de impact van de waardenoriëntaties, dienen volgens Smeesters et al. (1998) een drietal aandachtspunten in acht genomen te worden. Ten eerste hebben de waardenstudies implicaties voor segmentatie. Inderdaad, het milieubeleid heeft er alle belang bij om verschillende strategieën te gebruiken voor personen met verschillende waardenoriëntaties. De tot nu toe bekomen resultaten zijn echter niet bruikbaar voor deze doeleinden omdat de metingen van de waarden en de keuze van de waarden zelf sterk bepaald zijn door de onderzoeker. Zo heeft er geen enkele studie meer dan twee waardenoriëntaties opgenomen. Dit hiaat kan ondervangen worden door een geschiktere methodologie te gebruiken zoals bijvoorbeeld laddering bij means-end chain analyse of hiërarchische klasse-analyse (HICLAS). De onderbouw van deze redenering wordt verder besproken. Ten tweede wordt er vanuit vele hoeken uit de wetenschappelijke wereld gesuggereerd dat niet de gehouden waarden op zich het gedrag bepalen, maar enkel dié waarden die als saliënt en als relevant worden gepercipieerd in een bepaalde situatie

(Huffman, Ratneshwar & Mick, 1996). Het gebrek aan aandacht voor dergelijke situationele aspecten wordt ook bekritiseerd door Cohen & Warlop (in pers). In de paragraaf waar de HICLAS-methode wordt besproken, zal duidelijk worden op welke manier HICLAS voor het gebrek aan een link met situaties een oplossing kan aanreiken. Ten derde is er de vaststelling dat de huidige studies slechts een tip van de sluier oplichten over hoe waarden recycleergedrag kunnen beïnvloeden. Zo is er bijvoorbeeld weinig geweten over de evolutie van de invloed van waarden op het recycleergedrag als de ervaring en de vertrouwdheid met recycleren toeneemt.

1.2.2.2. Waargenomen kosten en baten

Binnen de decisietheorie worden vaak kosten en baten gekoppeld aan elk keuzealternatief. Kosten verwijzen hierbij naar de waargenomen en verwachte offers die men moet maken om zijn doel te bereiken, daar waar de baten refereren naar de waargenomen en verwachte positieve gevolgen. De beslisser zal zijn voorkeur uitspreken voor het alternatief met het hoogste baten/kosten ratio. Wanneer men dit individueel keuzegedrag plaatst binnen een ruimere sociale context, kan men duidelijk het verband zien met sociale dilemma's (Dawes, 1980; Messick & Brewer, 1983). Een sociaal dilemma heeft drie essentiële kenmerken, namelijk (1) een situatie waarin een aantal individuen wederzijds afhankelijk zijn van elkaar aangaande de uitkomsten van hun gedragingen, (2) ieder betrokken individu ervaart een conflict tussen het collectieve belang en het eigenbelang, en (3) de baten van een gedrag dat het eigenbelang dient, komen ten volle aan het individu toe, terwijl de kosten voor iedereen zijn. Het gevolg is dat handelen in het eigenbelang het meest aantrekkelijk gedragsalternatief is. Het collectieve belang daarentegen is enkel gebaat bij de bereidheid van alle betrokkenen om individuele kosten te dragen (coöperatief gedrag). Het louter nastreven van individuele baten laat niet toe het gemeenschappelijk doel te bereiken. Sorteren of pro-milieugedrag in het algemeen kan beschouwd worden als een sociaal dilemma omdat de consumenten bepaalde voorkeursgedragingen moeten opofferen voor een gemeenschappelijk doel. Afhankelijk van hun intrinsieke motivatie zouden sommige consumenten dit allicht willen doen, maar alleen als de andere leden van de maatschappij zich op dezelfde manier gedragen en geen "free-ride"-gedrag stellen (Pieters, Bijmolt, van Raaij & de Kruijk,

1998).

Sommige studies maken een onderscheid tussen publieke (toepasselijk op de maatschappij in zijn geheel) of private (enkel toepasselijk op diegene die het gedrag stelt) kosten. Andere onderzoeken hebben de kosten ingedeeld volgens andere criteria, nl. (1) financiële kosten (bijvoorbeeld het betalen van zakken en bakken), (2) gedragskosten (tijdsinvestering, fysieke inspanning), en (3) private investeringskosten (bijvoorbeeld het vrijhouden van ruimte om afval te stockeren).

Een beperkt aantal studies heeft de invloed van gepercipieerde baten nagegaan. Søndergaard & Jensen (1990) besloten dat weinig mensen private voordelen ervaarden. De meest gekozen opties verwezen naar publieke baten zoals een gezonde omgeving of afvalbeperking. Wanneer kosten en baten samen onderzocht worden, stelde men vast dat de houding ten opzichte van recycleren meer bepaald wordt door de gepercipieerde baten dan door de gepercipieerde kosten (Pieters, 1989; Pieters & Verhallen, 1986). De enige uitzondering hierop is Thøgersen (1994) die vaststelde dat de gepercipieerde kosten een sterkere invloed hadden dan de gepercipieerde baten.

Smeesters et al. (1998) stellen dat de empirische resultaten over de gepercipieerde kosten en baten schaars zijn, doch suggestief. In een sociaal dilemma zijn de private kosten vaak zeer duidelijk en merkbaar op korte termijn, terwijl de publieke baten meestal onduidelijk zijn en pas op lange termijn zichtbaar worden. Een consument die enkel de private kosten en baten beschouwt, zou dus de niet-coöperatieve optie moeten verkiezen. Net daarom probeert de overheid de burgers te bewegen tot meer recycleren door de niet-coöperatieve optie, namelijk niet sorteren, duurder te maken. Zo worden in de praktijk de zakken voor restafval vaak veel duurder gemaakt dan de zakken voor recycleerbare afvalfracties. Met dit in het achterhoofd zijn er twee opmerkelijke resultaten: (1) gepercipieerde kosten zijn minder belangrijke determinanten van recyclagegedrag dan gepercipieerde baten, en (2) gepercipieerde financiële kosten hebben minder invloed dan gepercipieerde gedragskosten. Deze beide bevindingen zetten de effectiviteit van beleidsmaatregelen die de financiële kosten van niet-recycleren verhogen tussen aanhalingstekens. Smeesters et al. (1998)

formuleren 2 potentiële redenen voor deze resultaten: (1) de meeste studies gaan niet na wat de directe impact is van kosten en baten op het gedrag, wel op de attitude ten aanzien van het gedrag, en (2) de meeste studies zijn opgezet in een context waar de deelname aan het recyclageprogramma een vrije keuze is. Als de deelname hierin eerder een verplichting is, zoals in de meeste Belgische gemeenten, dan zouden de gepercipieerde kosten wel eens een meer belangrijke rol kunnen gaan spelen.

1.2.2.3. Attitudes

Een attitude wordt door Antonides & van Raaij (1994) omschreven als een positief of negatief gevoel ten aanzien van een bepaald gedrag, persoon, product of een ander attitude-object. Pieters (1989) stelt dat de attitudes ten aanzien van sorteergedrag geconstrueerd worden op basis van saliënte oordelen over de kosten en baten van het gedrag. Attitudes zouden op die manier een directe impact hebben op de intentie tot sorteren. De resultaten van verscheidene onderzoeken doen echter vermoeden dat de impact van de attitudes afhankelijk is van het abstractieniveau waarop ze gemeten worden. Algemene pro-milieu attitudes schijnen geen sterke predictoren van recycleergedrag te zijn (Oskamp et al., 1991; Vining & Ebreo, 1990). Zelfs studies die meer specifieke metingen van attitudes gebruiken, vinden over het algemeen ook slechts matige tot zwakke verbanden (McCarty & Shrum, 1993; Pieters, 1989).

Ajzen & Fishbein (1977), specialisten inzake attitude en gedrag, stellen dat de attitude en het gedrag op hetzelfde niveau van specificiteit gemeten moeten worden opdat attitudes predictief kunnen zijn voor gedrag. Algemene attitudes zouden hierdoor als niet relevant beschouwd kunnen worden voor het specifiek gedrag dat men bestudeert, zoals recycleren. Verder speelt ook het tijdsinterval tussen de attitude- en de gedragsmeting een belangrijke rol. De temporele afstand tussen beide metingen zou zo kort mogelijk moeten zijn om de kans op verandering van de attitude vóór de meting van het gedrag te minimaliseren (Pieters, 1989). Naast de attitudes zijn er nog andere factoren die het gedrag kunnen beïnvloeden zoals sociale normen, eerder gesteld gedrag en situationele invloeden (Pieters, 1989).

De beperkingen van attitudeonderzoek zijn dus vrij groot te noemen. Zoals verwacht, biedt dit soort onderzoek dan ook weinig houvast voor een meer nauwkeurig ontwerp van de beleidsmaatregelen inzake milieu.

1.2.3. Situationele variabelen

Gedrag is zowel individueel als situationeel bepaald. Individuele verschillen kunnen de beleidsmensen helpen om hun publiek beter te segmenteren, maar deze verschillen geven geen inzicht over hanteerbare regels aangaande *wát* men moet doen om meer mensen aan te zetten tot meer en accurater sorteergedrag. Situationele variabelen zijn dikwijls vrij direct door de lokale overheden te beïnvloeden. Daarom kan informatie over dit soort variabelen nuttig aangewend worden in de praktijk. Smeesters et al. (1998) verdeelden de situationele determinanten in 3 subgroepen. Ten eerste is er de subgroep 'kennis en informatie'. Algemeen stellen de verschillende onderzoeken dat recycleerders vaak meer kennis hebben inzake recycleren dan niet-recycleerders (Vining & Ebreo, 1990). Pieters (1989) formuleert in deze context zijn stelling dat procedurele kennis een belangrijke situationele determinant is van recycleergedrag. Procedurele kennis verwijst naar kennis in verband met de sorteerregels (Welk soort afval moet in welk soort zak? En waarom?). Vaak zijn respondenten onzeker over de sorteerregels en worden ze niet op hun fouten gewezen, zodat ze hier ook geen lessen uit kunnen trekken. Aangaande kennis en informatie kan men besluiten dat het belangrijke aspecten zijn binnen het beslissingsproces om te recycleren, maar dat de verschillende functies die kennis en informatie kunnen hebben nog moeten uitgeklaard worden.

Ten tweede is er volgens Smeesters et al. (1998) de subgroep 'publieke betrokkenheid'. We bedoelen hier het voorleggen van de vraag aan de burger om een verklaring te onderschrijven om te recycleren (uit eigen initiatief geopperde verklaringen, zonder dat de vraag van buitenaf gesteld werd, zou men echter eerder als een persoonlijkheidsvariabele kunnen opvatten). De onderzoeksresultaten zijn hier zo goed als eenduidig. Publieke betrokkenheid geeft aanleiding tot hoge onmiddellijke participatieratio's en lange termijn effecten. Cialdini (1985) geeft een drietal mogelijke oorzaken voor deze effecten: (1)

betrokkenheid kan 'automatische consistentie' met zich mee brengen, omdat er een natuurlijke tendens bestaat om gedrag te vertonen dat consistent is met een eerder ingenomen standpunt, (2) in de mate dat individuen zich verantwoordelijk voelen voor hun gedrag, kan betrokkenheid hun zelfconcept veranderen, en (3) betrokkenheid kan mensen nieuwe oordelen doen creëren om hun nieuwe zelf te versterken.

De laatste subgroep van situationele determinanten zijn de 'extrinsic incentives'. Extrinsieke aansporingen beïnvloeden de gepercipieerde persoonlijke kosten en baten van recycleergedrag t.o.v. mogelijke alternatieven. Hornik, Cherian, Madansky & Narayana (1995) onderscheiden drie types van extrinsieke aansporingen, nl. financiële beloningen, sociale invloed (zoals bezorgdheid om het oordeel van buren of vrienden) en de wetgeving. Het aanbieden van een 'incentive' maakt de optie om te recycleren aantrekkelijker, zonder beroep te doen op dieperliggende waarden of milieuattitudes.

1.2.4. Theoretische modellen

De meest frequente theoretische modellen binnen deze onderzoeksstroom, zijn een toepassing van meer algemene gedragsmodellen op sorteergedragingen. De reden hiervoor is dat waarden en attitudes gezien worden als dispositionele constructen die relatief stabiel zijn binnen elk individu en dat juist deze constructen in de algemene gedragsmodellen een belangrijke rol spelen in het trachten te verklaren en voorspellen van gedrag. Omdat waarden en attitudes in het onderzoek naar sorteergedrag ook een vooraanstaande rol hebben gespeeld (en nog spelen), ligt het voor de hand dat deze algemene modellen, die eveneens waarden en attitudes hanteren, werden toegepast op een sorteercontext. Drie algemene theorieën worden vaak als uitgangspunt gebruikt: (1) 'theory of reasoned action', (2) 'theory of planned behavior', en (3) het altruïsme model van Schwartz. Het ligt niet in onze bedoeling om deze theorieën in detail te bespreken en te vergelijken. Het opzet van deze paragraaf is louter om een beknopt overzicht te geven van de reeds aangewende en ontwikkelde theoretische modellen om sorteergedrag te verklaren en te voorspellen.

Het overgrote deel van het onderzoek werd geïnspireerd door de 'theory of reasoned

action (TRA)' (Fishbein & Ajzen, 1975) en de uitbreiding van deze theorie, namelijk de 'theory of planned behavior (TPB)' (Ajzen, 1985). De TRA poneert dat de uitvoering van gewild gedrag direct beïnvloed wordt door de intentie van het individu om dit gedrag uit te voeren. Deze gedragsintentie wordt gezien als een directe functie van attitudes ('hoe men zich voelt bij een bepaald gedrag') en sociale normen ('hoe men de visie van significante anderen percipieert'). Attitudes worden op hun beurt bepaald door overtuigingen aangaande de gevolgen (kosten en baten) van het gedrag en hun belangrijkheid. De sociale normen worden bepaald door overtuigingen over de normen van significante derden en de motivatie van het individu om aan deze normen te beantwoorden. Smeesters et al. (1998) stelden vast dat de meeste studies die dit model hebben trachten te valideren, gevonden hebben dat de sorteerintentie afhankelijk is van de attitude t.o.v. sorteren en dat de sociale norm vaak ofwel geen significante ofwel een duidelijk kleinere invloed had dan de attitude.

De TPB is een uitbreiding van de TRA en gebruikt dezelfde determinanten van de gedragsintentie. De TPB voegt er echter nog één bijkomende determinant aan toe, namelijk 'gepercipieerde gedragscontrole' (overtuigingen betreffende de eigen capaciteiten om het gewenste gedrag uit te voeren). Deze gepercipieerde gedragscontrole is afhankelijk van (1) de gepercipieerde beschikbaarheid van middelen om het gedrag uit te voeren en van (2) het zelfvertrouwen van het individu aangaande het te stellen gedrag. In de context van sorteergedrag blijkt de gepercipieerde gedragscontrole, naast de attitude, een significante invloed uit te oefenen op de intentie om te recycleren (Taylor & Todd, 1995).

Het altruïsmemodel van Schwartz (1968) is opgebouwd rond normen. Sociale normen representeren volgens Schwartz de waarden en attitudes van significante anderen. Men verwacht van anderen dat zij zich conform deze normen gedragen. Deze sociale normen hebben echter pas invloed op het eigenlijke gedrag als ze geïnternaliseerd zijn tot zogenoemde persoonlijke normen. Deze persoonlijke normen worden pas geactiveerd als ze van toepassing zijn op een bepaalde situatie. Twee factoren die de vertaling van persoonlijke normen in gedrag bepalen zijn: (1) het bewust zijn van de gevolgen die het gedrag heeft, en (2) het toekennen van de verantwoordelijkheid voor deze gevolgen. Smeesters et al. (1998) stellen vast dat studies die het model van Schwartz hebben gebruikt, tot de conclusie komen

dat ofwel enkel sociale normen, ofwel sociale én persoonlijke normen sorteergedrag beïnvloeden. Deze conclusie druist dus in tegen de implicaties van het model. Thøgersen (1996) geeft hiervoor als mogelijke verklaring dat persoonlijke normen enkel tot gedrag leiden als er geen extrinsieke motieven aanwezig zijn voor het gedrag. Smeesters et al. (1998) suggereren dat attributieprocessen hier wellicht verantwoordelijk voor zijn. Inderdaad, als mensen hun sorteergedrag beginnen toe te wijzen aan persoonlijk voordeel of het verminderen van de persoonlijke kosten, dan bestaat de mogelijkheid dat er geen reden meer is om het sorteergedrag te attribueren aan interne motivaties. Als we deze vaststelling plaatsen tegen de achtergrond van de Belgische praktijk, dan lijkt het zeer nuttig om te onderzoeken of deze attributieprocessen een terugkeer naar intrinsiek gemotiveerd gedrag in de weg staan als de extrinsieke beloningen wegvallen. Verder lijkt het interessant om na te gaan of de aanwezigheid van een beloning voor het sorteren van één soort afval ook de intrinsieke motivatie voor het sorteren van een andere soort afval aantast (Smeesters et al., 1998).

Naast de algemene gedragsmodellen hebben enkele auteurs ook 'ad hoc' modellen geformuleerd. Deze modellen zijn gebaseerd op de hierboven beschreven modellen, maar ze voegen er nog enkele verklarende constructen aan toe die niet in deze algemene modellen werden opgenomen. Zo haalt Thøgersen (1994) drie determinanten aan in zijn model: (1) de motivatie van het individu om een bepaald gedragsalternatief te kiezen, (2) de capaciteit om te recycleren, die volgens Thøgersen (1994) afhankelijk is van de gewoonte en de kennis om correct te recycleren, en (3) externe voorwaarden die een bepaalde actie faciliteren of inhiberen. Pieters (1991) gebruikt gelijkaardige determinanten als Thøgersen, maar legt minder de nadruk op de externe condities. Hij benadrukt het belang van de capaciteit om te sorteren (gewoonte en taakkennis) als een voorwaarde om de motivatie om sorteergedrag uit te voeren te laten resulteren in het uiteindelijke stellen van dit sorteergedrag. Een laatste model dat we hier aanhalen is dat van Hornik et al. (1995). Zij onderscheiden vier belangrijke variabelen voor sorteergedrag: (1) extrinsieke aansporingen (o.a. financiële beloningen, sociale druk en de wet), (2) intrinsieke aansporingen (o.a. locus van controle en identificatie), (3) externe facilitators of barrières (o.a. tijdsinvestering en ophaalfrequentie) en (4) interne facilitators of barrières (o.a. kennis en betrokkenheid). Interne facilitators zouden

de beste voorspellers van sorteergedrag zijn en een lange termijn effect hebben, terwijl externe facilitators een lage voorspellingswaarde en korte termijn effecten bezitten. De beide vormen van aansporing bevinden zich ergens tussen deze twee extremen in.

1.3. Gevolgde gedachtenlijn bij het uitstippelen van het voorliggend onderzoek: fundering en motivaties

De hierboven vernoemde tekortkomingen in de onderzoeksopzetten en –contexten liggen ten gronde aan de hierna voorgestelde aanpak. We stellen een nieuwe methode voor die de aangehaalde leemtes en gebreken van het reeds uitgevoerde onderzoek kan opvangen. Hieronder zullen we onze visie verder verduidelijken.

1.3.1. Overzicht van de voornaamste kritieken op voorgaand onderzoek.

Zoals hierboven reeds werd aangehaald zijn vele gepubliceerde onderzoeken ongestructureerd, a-theoretisch en 'ad hoc'. Inderdaad een door Smeesters et al. (1998) duidelijk geformuleerde kritiek is dat veel van het reeds gevoerde onderzoek geen plaats vindt binnen een cumulatieve onderzoeksstroom. Vooral de onderzoeken die peilden naar de relaties van sorteergedrag met socio-demografische variabelen en persoonlijkheidskarakteristieken missen context en inbedding. De onderzoekswereld heeft deze denkpiste dan ook al een tijdje verlaten. We besteden in deze verhandeling verder dan ook weinig aandacht aan deze variabelen.

Het onderzoek naar waarden die achter het recycleergedrag zouden kunnen zitten, miste onderlinge vergelijkbaarheid omdat de labels van de waarden zo sterk samenhingen met de onderzoeker zelf. Hetzelfde label werd soms gebruikt voor verschillende waarden en andersom werden verschillende labels soms gebruikt voor dezelfde onderliggende waarden. Een tweede kritiek op dit soort onderzoek is zijn niet-cumulatieve aard, zoals we ook bij de socio-demografische kenmerken al hebben moeten vaststellen. Ten derde selecteren auteurs

vaak slechts een zeer beperkt aantal waarden (vooral milieugerichte waarden) die ze willen onderzoeken. Beter zou zijn zoals Smeesters et al. (1999) geprobeerd hebben om eerst een inventaris te maken van alle mogelijke waarden. Bovendien doet het opnemen van een zeer klein aantal waarden vragen rijzen naar de mate van intercorrelatie tussen de verschillende waarden. Ten slotte is er de kritiek op het tot nu toe gevoerde waardenonderzoek dat er geen link werd gelegd met situationele factoren die de saliëntie en de relevantie van de waarden bepalen.

Aangaande het reeds gevoerde attitudeonderzoek kunnen we kritieken formuleren analoog aan deze bij het waardenonderzoek. Bij het attitudeonderzoek valt er vooral te vermelden dat de graad van specificiteit van de meting hier belangrijk is. Als de meting van de attitude en het gedrag dezelfde specificiteit hebben, dan pas kunnen attitudes een voorspellende waarde hebben ten aanzien van het gedrag (Ajzen & Fishbein, 1977). Dat in de dagelijkse praktijk attitudes niet als enige verantwoordelijk zijn voor bepaalde gedragingen, pleit voor het verruimen van de onderzoekshorizon zodat ook concepten als sociale normen en situationele factoren opgenomen worden in het onderzoek.

Wat betreft de Belgische situatie hebben de studies over de gepercipieerde kosten en baten van recycleren en niet-recycleren vooral de beperking dat de meeste studies zijn uitgevoerd in een 'vrijwillig' milieu, terwijl de Belgische situatie meer gekenmerkt wordt door 'mandatory' systemen, d.w.z. dat de consument (meer) verplicht wordt om in een bepaald recycleerprogramma te stappen. Dit maakt dat de kosten-baten analyses die tot nu toe zijn gevoerd, niet volledig van toepassing zijn op de Belgische situatie.

Inzake de reeds onderzochte situationele variabelen kan men stellen dat het onderzoek ook hier eerder 'exemplarisch' is en getuigt van weinig opbouw en overwogen structuur. Situationele variabelen die in de praktijk het meest worden gebruikt, blijken in de literatuur diegene die het minst zijn onderzocht (bijvoorbeeld de prijszetting).

Een kritiek van Lindsay & Stratham (1997) op modellen van sorteergedrag is dat deze vaak eerder het resultaat zijn van een concreet onderzoek dan het structureel kader ervan. Als

uitzonderingen hierop zien zij de algemene gedragsmodellen ('theory of reasoned action', 'theory of planned behavior', en het altruïsmemodel van Schwartz).

1.3.2. Onderzoek dat deze tekortkomingen heeft trachten op te vangen

Het formuleren van kritieken op voorgaande onderzoeken is natuurlijk slechts één zijde van de medaille. Eraan verhelpen of met een alternatief op de proppen komen is de andere, vaak 'moeilijkere' zijde. Hieronder worden enkele voorbeelden gegeven van onderzoeken die getracht hebben om de eerder geuite tekortkomingen op te vangen, die een hele andere aanpak hebben gebruikt of die een nieuwe dimensie van sorteren hebben onderzocht. Uit deze reeks voorbeelden bespreken we enkel de bijdrage van Smeesters et al. (1999) uitvoeriger omdat dit onderzoek het fundamenteel uitgangspunt is van het empirisch onderzoek dat het voorwerp uitmaakt van deze licentiaatsverhandeling.

Op niveau van de theorieën hebben Harland, Staats & Wilke (1999) de 'theory of planned behavior' uitgebreid met de persoonlijke normen uit het altruïsmemodel van Schwartz. Er werd dus een poging ondernomen om theorieën te integreren. Zij stelden vast dat persoonlijke normen een significante bijdrage leverden in het verklaren van enkele specifieke gedragsintenties. Lindsay & Stratham (1997) zijn een nieuwe weg ingeslagen aangaande theorievorming rond determinanten van recycleergedrag. Zij hebben het Health Belief Model, dat zijn waarde in het medisch-psychologisch vakdomein reeds heeft bewezen, aangepast voor sorteergedrag en erop toegepast. De opgenomen aspecten in het basis Health Belief Model zijn: (1) gepercipieerde dreiging (vatbaarheid voor en ernst van een negatieve gebeurtenis), (2) voordelen geassocieerd met een bepaalde preventieve actie, en (3) de kosten geassocieerd met het stellen van deze actie. Variabelen die door Lindsay & Stratham werden toegevoegd zijn (1) normen, (2) procedurele kennis, en (3) in acht nemen van toekomstige gevolgen. De sterke effecten op recycleergedrag waren afkomstig van de kosten geassocieerd met het stellen van een preventieve actie en de vatbaarheid voor een negatieve gebeurtenis.

Een uitbreiding van het bestaande onderzoek naar waarden vinden we terug bij Schultz &

Zelezny (1998). Zij gingen de relatie na tussen waarden en het stellen van pro-milieugedrag binnen de context van het altruïsmemodel van Schwartz. Hierbij hebben ze zich gebaseerd op data uit 5 verschillende landen uit drie verschillende continenten. Ondanks beperkingen in de meting stelden zij vast dat, over de verschillende landen heen, waarden belangrijke predictoren zijn van pro-milieugedrag. Schultz & Zelezny voegden dus een internationale dimensie toe aan het onderzoek naar milieuwaarden en corresponderend gedrag. Ook Brechin (1999) heeft informatie uit verschillende landen (24) gebruikt. Hij stelde vast dat inwoners van armere landen meer betrokken waren met lokale milieuproblemen dan inwoners uit rijkere landen.

McKenzie-Mohr, Nemiroff, Beers & Desmarais (1995) hebben meer specifieke (minder algemene) milieugerichte gedragingen en determinanten bestudeerd, hetgeen vooral de kritiek op de metingen van attitudes en gedrag ondervangt. Door middel van een discriminantanalyse waren zij in staat om 82% van de respondenten correct te klasseren in de groep composteerders of niet-composteerders. Demografische variabelen leverden geen bijdrage aan het discrimineren tussen de twee groepen. Variabelen die daar wel in slaagden, waren o.a.: (1) afval verminderen, (2) geen plezier, en (3) voldoening.

Smeesters et al. (1999) hebben een breed onderzoeksproject opgezet dat een aantal van de voorgaande kritieken in sterke mate tegemoet komt. Een onderdeel van dit onderzoeksproject wordt hier verder besproken. Vooral de tekortkomingen van het waardenonderzoek waren een bron van inspiratie voor een andere aanpak. Warlop & Ratneshwar (1993) stellen dat de acties van consumenten moeten gezien worden als een middel om een einddoel te bereiken. In geen van de reeds besproken onderzoeken aangaande recycleren heeft men nagegaan hoe doelen met elkaar in conflict kunnen zijn en hoe tegenstrijdige waarden met elkaar verzoend worden in de dagelijkse praktijk. Deze vaststelling te samen met het feit dat de selectie van waarden tot nu toe zeer sterk onderzoekersafhankelijk was en het gebrek aan inzicht in de mogelijke samenhang tussen verschillende waarden, zijn de voornaamste drijfveren geweest achter het gemodifieerde onderzoeksopzet van Smeesters et al. (1999).

Kwalitatief onderzoek kon hier perspectief bieden en de aanloop zijn van een geïntegreerde en cumulatieve onderzoeksstroom, wat vele van de eerder aangehaalde onderzoeken misten. Smeesters et al. (1999) hebben middel-doel ketens gebruikt als kader om zicht te krijgen op de persoonlijke waarden die de motivatie vormen voor sorteergedrag. Eerder werd deze methode al aangewend in dit onderzoeksdomein door Bagozzi & Dabholkar (1994), maar dan als een pretest voor vragenlijstonderzoek. Het middel-doel keten model is zeker geen onbekende methodologie, vooral niet in de marktonderzoekswereld. De kracht van dit model situeert zich vooral in het feit dat het onderscheid kan maken tussen verschillende niveaus van attributen. Het model legt de klemtoon op de connectie tussen attributen, gevolgen voor de consument en persoonlijke waarden (Batra, Myers & Aaker, 1996).

Middel-doel ketens zijn georganiseerde betekenisstructuren die gedragingen in verbinding brengen met de persoonlijke waarden van een individu. Zij beschrijven een hiërarchie van onderling verbonden motivaties waarvan het abstractieniveau toeneemt. Elke motivatie is een middel om doelen van een hoger niveau te bereiken. De waarden vormen het hoogste abstractieniveau en zijn aan het observeerbare gedrag gekoppeld via meer directe motivationele antecedenten van dit gedrag (Gutman, 1982; Reynolds & Gutman, 1988).

Analyse van middel-doel ketens laat dus een hiërarchische ordening toe van verscheidene concepten, waardoor deze analyse in staat is om complexere gedragingen en hun achtergronden in kaart te brengen, zoals sorteergedrag. De hiërarchie zit vooral tussen de attributen, de gevolgen en de waarden. Samen met deze hiërarchie wordt ook een beeld gevormd van de bestaande onderlinge verbanden tussen de verschillende waarden en/of gevolgen. Hiermee krijgt men zicht op de mogelijke samenhang of op mogelijke conflicten tussen bepaalde (instrumentele) waarden, en hoe zij gelinkt zijn aan bepaalde einddoelen.

Eén van de meest gebruikte technieken om middel-doel ketens bloot te leggen is 'laddering'. Laddering verwijst naar een persoonlijk diepte-interview dat gebruikt wordt om inzicht te verkrijgen in de manier waarop individuen de attributen van gedrag vertalen in betekenisvolle gevolgen en persoonlijke waarden. Dit interview start vanuit een inventaris van aangehaalde

sorteergedragingen en gedragsattributen. De interviewer moedigt de respondent dan aan om na te denken over de redenen waarom elk van die gedragingen voor hem / haar belangrijk is. Deze procedure wordt voor de aangegeven redenen herhaald tot de respondent verwoordt dat er geen dieperliggende reden meer aanwezig is. De associatieve netwerken die zo aan de oppervlakte komen, worden ook wel 'ladders' genoemd (Reynolds & Gutman, 1988).

Door het toepassen van deze methode wensten Smeesters et al. (1999) op een exploratieve wijze een zo volledig mogelijke 'mapping' tot stand te brengen van de mogelijke motieven die aan de basis liggen van sorteren of niet sorteren. Op basis van een steekproef van 30 respondenten die thuis werden geïnterviewd, werden middel-doel ketens (207 ladders in totaal) opgesteld. Hierdoor werd een ruim repertorium van waarden, attributen en gevolgen gecreëerd. De woordkeuze van de respondenten wordt door de middel-doel keten aanpak zo veel mogelijk gerespecteerd. Dit stelt de onderzoekers in staat om met een groter aantal waarden en andere concepten van start te gaan. Verder komen deze verwoordingen van de respondenten zelf, wat de face-validiteit verhoogt. De ladderingdata werden onderworpen aan een kwalitatieve analyse gebruik makend van het Laddermap programma (Gengler & Reynolds, 1993). Figuur 1 bevat de grafische representatie van de dominante middel-doel ketens.

In figuur 1 is 'sorting waste' de startcategorie van de meeste ladders. Tijdens de interviews was sorteren in het algemeen of het sorteren van bepaalde afvalcategorieën (deze werden achteraf samengenomen) vaak het startpunt. Sorteren is negatief gerelateerd aan 'easy life'. De respondenten argumenteren dat sorteren moeite kost en dat ze nu juist verkiezen om het zichzelf gemakkelijk te maken. Sorteren is positief gelinkt met 'self protection' via het gehoorzamen aan wetten en het besparen van uitgaven. Intrinsieke motivaties voor sorteren worden hier voorgesteld door milieuwaarden ('preserve the world') en burgerwaarden ('good citizen'). De nodige voorzichtigheid in acht nemend omdat de steekproef te klein is voor statistische analyse, kan men stellen dat deze beide ladders even sterk zijn. Andere waarden die geassocieerd werden met recycleergedrag waren 'self respect', 'personal health' en 'morality'. Afval op straat gooien ('littering') wordt als immoreel aanschouwd en

als slecht voor de gezondheid door zijn effect op de netheid van de leefomgeving.

: LADDERMAP-samenvatting van de structuren van sorteerwaarden

      (Smeesters et al., 1999, p.11)
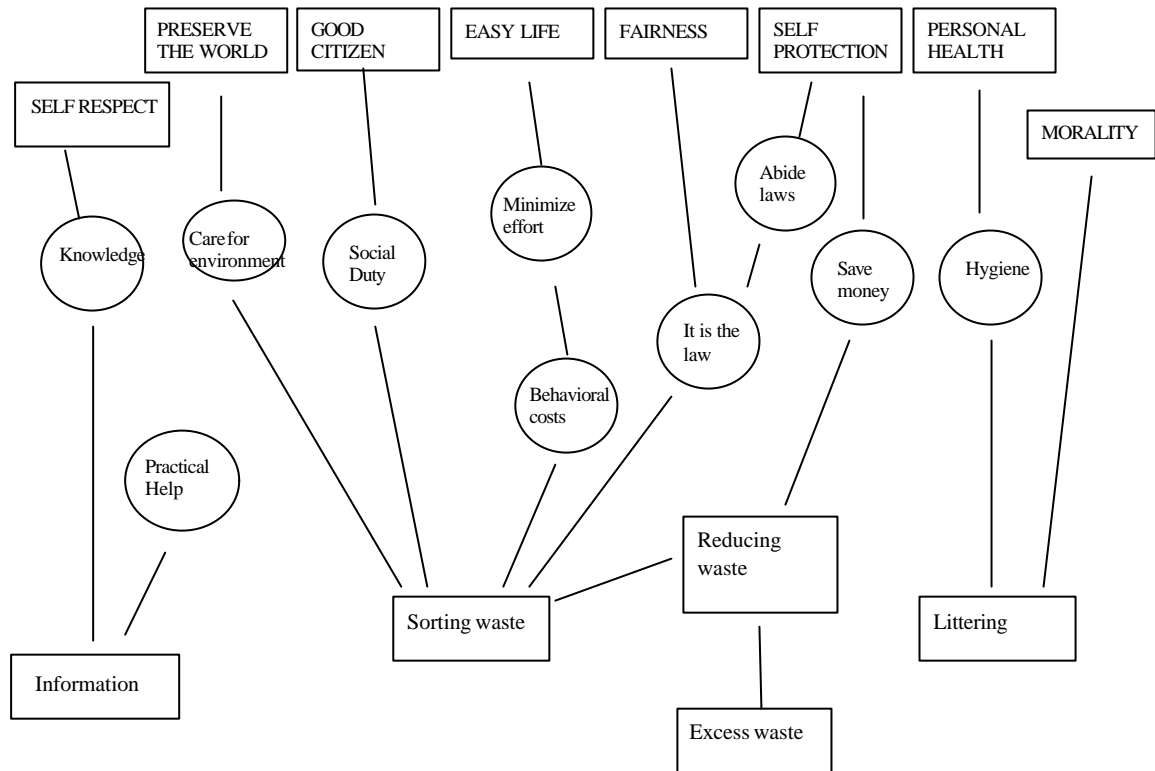
Smeesters et al. (1999) merken op dat respondenten in een ladderingstudie meer geneigd zijn om een brede set van 'diepere' sorteermotivaties aan het licht te brengen omdat ze worden aangezet tot grotere reflectie. Cohen & Warlop (in pers) zijn van mening dat juist omwille van deze diepere reflectie middel-doel ketens minder geschikt kunnen zijn om de eigenlijke cognitieve activiteit die een gedragskeuze vooraf gaat te begrijpen. Daarom stellen Smeesters et al. (1999) dat hun middel-doel keten analyse eerder de potentiële, maar niet noodzakelijk gerealiseerde motivationele basis weergeeft voor sorteergedrag bij verplichte milieuprogramma's.

1.4. Doel van ons onderzoek?

De verhoopte bijdrage van ons eigen onderzoek situeert zich op meer dan één terrein. Ten eerste willen we een onderzoek opzetten over sorteergedrag en zijn determinanten, dat niet onderhevig is aan de kritieken die we hierboven geformuleerd hebben. Daarom willen we ons onderzoek koppelen aan een reeds bestaande onderzoeksstroom, zodat de effecten en resultaten gecumuleerd kunnen worden en een aanzet of inspiratiebron kunnen zijn voor verder onderzoek. Het voorliggend onderzoek wil daarom een steunend, aanvullend en kritisch onderdeel zijn van het door Smeesters et al. (1999) geconcipieerde onderzoeksopzet. Meer bepaald willen we een bijdrage leveren aan het onderdeel dat inzicht tracht te vergaren in de drijfveren van sorteergedragingen bij te treden. De nauwe relatie tussen het onderzoek van Smeesters et al. (1999) en het voorliggend onderzoek zal duidelijk worden in de methodologische sectie van hoofdstuk 2.

Ten tweede zal getracht worden om binnen de waarden en andere motieven die in het onderzoek zullen opgenomen worden, de hiërarchie aan het licht te brengen. Hiermee ondervangen we ten dele de kritische opmerking aangaande de eventuele intercorrelaties tussen verschillende waarden. We trachten met dit onderzoek inderdaad een beter zicht te krijgen op mogelijke verbanden tussen verschillende waarden en op de mogelijke structurele ordening van deze waarden binnen een hiërarchische context. Verder zal gepoogd worden om 'groepen' van waarden en motieven te vormen die sterk met elkaar samenhangen in hun relatie met sorteergedrag. Deze aanvulling aanzien we als vrij fundamenteel omdat de middel-doel keten methodiek wel een hiërarchie toont tussen 'individuele' gevolgen of waarden, maar dat ze deze groepeert in verzamelingen van gelijk(w)aardige gevolgen of waarden.

Ten derde zullen we proberen om ook binnen de sorteergedragingen zelf een mogelijke hiërarchie zichtbaar te maken. Ook hier trachten we, analoog aan de sorteermotivaties, een groepering te maken van sorteergedragingen met hetzelfde onderliggende motivationele patroon.

Ten vierde willen we via een onderzoeksmethodiek die zo goed als onbekend is in het toegepast economisch onderzoeksdomein trachten om de beide hiërarchieën van

gelijk(w)aardige groepen met elkaar te verbinden zodat hun onderlinge samenhang en associatie duidelijker wordt. Hierdoor hopen we een meer globaal, holistisch beeld te kunnen geven van de volledige motivationele achtergrond van een aantal sorteergedragingen.

De onderzoeksmethode waarvan gebruik zal gemaakt worden is hiërarchische klasse-analyse, niet te verwarren met een andere groeperingstechniek, namelijk hiërarchische clusteranalyse. Clusteranalyse wordt in wezen gebruikt om observaties te groeperen. De specifieke kenmerken en de achterliggende filosofie van hiërarchische klasse-analyse zijn dermate belangrijk voor het opzet van het onderzoek, en de interpretatie en draagwijdte van de resultaten, dat we in de volgende paragraaf uitgebreid ingaan op de meest belangrijke aspecten van deze methodologie.

1.5. Hiërarchische Klasse-analyse (HICLAS)

1.5.1. Introductie van de HICLAS-methodologie

Het hiërarchische klassemodel (De Boeck & Rosenberg, 1988) is een model voor 'object x attribuut'-matrices met een binaire inhoud. Voorbeelden van deze 'object x attribuut'-matrices zijn o.a. 'situaties x emoties', 'situaties x gedragingen', 'personen x karaktereigenschappen', en 'relaties x belevingskenmerken'. De Boeck & Rosenberg (1988) vullen hun eerste beschrijving van dit model ook aan met een algoritme voor data-analyse, namelijk 'HICLAS'. Dit algoritme poogt de onderliggende structuur in de datamatrix te onthullen door de discrepanties tussen de data en de gevonden structuur te minimaliseren.

In het toegepast economisch onderzoeksveld is deze analysemethode tot op heden weinig of niet bekend. De bakermat van de ontwikkeling en de elaboratie van deze methodiek is het onderzoeksdomein van de psychometrie (De Boeck & Rosenberg, 1988; De Boeck, Rosenberg & Van Mechelen, 1993; Van Mechelen, De Boeck & Rosenberg, 1995). Toepassingen en verder onderzoek naar HICLAS zijn vooral te vinden binnen de psychologie en dan wel binnen deelgebieden als de cognitieve psychologie (Storms, Van

Mechelen & De Boeck, 1994) en de persoonlijkheidspsychologie (Gara, Woolfolk, Cohen, Goldston, Allen & Novalany, 1993; Rosenberg, 1989). Binnen de sportpsychologie kent HICLAS sinds het vorige decennium een gestage opmars omwille van de voordelen voor de sportpsychologische praktijk (Van Mele, Vanden Auweele & Rzewnicki, 1995) en omwille van de link met theorieën over de persoonlijkheid van atleten (Nys, 1997; Vanden Auweele, Nys, Rzewnicki & Van Mele, in pers). In de volgende paragrafen wordt de hiërarchische klasse-analyse beschreven en tevens verduidelijkt aan de hand van een eenvoudig voorbeeld. Juist omwille van de grote onbekendheid in het toegepast economisch onderzoeksgebied zal deze beschrijving uitvoerig van aard zijn. De beschrijving zal de lezer in staat stellen om het onderzoeksgedeelte en de hieruit getrokken conclusies beter te begrijpen en te plaatsen in de context van de gebruikte onderzoeksmethodologie.

1.5.1.1.Dataverzameling

Bij HICLAS start men met het verzamelen van het repertoire van objecten en attributen. Deze 2 componenten vormen de horizontale en de verticale dimensie van een tweedimensionaal rooster. De eigenlijke inhoud van de twee dimensies (objecten en attributen) wordt gehaald uit interviews, vooronderzoek of theoretische constructen al naargelang de context van het onderzoek. Zo wordt bij intra-individueel onderzoek gebruik gemaakt van de eigen verwoordingen van de respondent om een hoge graad van herkenning (face-validiteit) te verkrijgen als achteraf de resultaten worden besproken. Onderzoek bij een grotere groep van individuen laat dit uiteraard niet in zulke mate toe. Een richtlijn uit de praktijk voor de grootte van het samen te stellen rooster is minimaal 10 objecten en 10 attributen. Verder is het beter als het rooster 'vierkanter' is. Hiermee wordt bedoeld dat bijvoorbeeld een rooster van 15x15 beter is dan een rooster van 8x22. 'Beter' moet hier begrepen worden als meer kans op een goed interpreteerbare analyse, een analyse met een goede goodness-of-fit-waarde (zie verder). Deze richtlijnen spruiten voort uit het mathematische algoritme dat HICLAS gebruikt (gebaseerd op Booleaanse algebra), waarover meer informatie beschikbaar is in o.a.. De Boeck & Rosenberg (1988), De Boeck et al. (1993) en Van Mechelen et al. (1995). Op dit algoritme wordt in deze verhandeling slechts zeer kort ingegaan in de volgende paragraaf omdat een grondige kennis

hiervan geen vereiste is om HICLAS adequaat te kunnen gebruiken en interpreteren.

Als er een rooster is ontworpen, wordt het aangeboden aan de respondent(en). De respondent wordt meestal gevraagd om cijfers te gebruiken van nul tot en met tien (vooral bij intra-individueel onderzoek). De volgende betekenis wordt aan de cijfers gegeven: '0' betekent dat het attribuut helemaal niet van toepassing is op het object, '10' geeft aan dat het attribuut volledig van toepassing is op het object en '5' dat het attribuut juist op het randje toepasselijk is op het object (cf. schoolresultaten). De cijfers die ertussen liggen, hebben natuurlijk een analoge betekenis. Het is belangrijk dat de respondenten de betekenis van de verschillende cijfers goed begrijpen vooraleer ze het rooster beginnen in te vullen. Schalen met minder posities worden evenzeer gebruikt om het rooster te laten invullen. Drie schaalposities zijn bijvoorbeeld een optie ('0'= niet toepasselijk; '1'= enigszins toepasselijk; '2'=heel toepasselijk) net als een binaire scoring ('0'= niet toepasselijk; '1'= toepasselijk). In ons onderzoek hebben we de binaire wijze van scoren gebruikt. Welke scoring men echter ook gebruikt, de analyse zelf gebeurt steeds op een binair rooster. De omzettingsregel die men gebruikt om van het originele rooster naar het gedichotomiseerde rooster te komen, moet men natuurlijk aanhouden bij de interpretatie van de resultaten (zie verder).

Elk object krijgt een score op elk attribuut, wat een noodzakelijke voorwaarde is om HICLAS te gebruiken. Hier vinden we dus een soort uitbreiding van het interview in die zin dat alle objecten gescoord worden ten opzichte van alle attributen, daar waar de respondent in een interview slechts spontaan één of enkele attributen noemt in relatie tot een object. De taak van de respondent is dus om de volledige verzameling van attributen te evalueren voor de volledige verzameling van objecten.

Het ingevulde rooster is de uiteindelijke data-input voor de analyse door middel van HICLAS. De veelgebruikte uitdrukking of gedachte bij wetenschappelijke analyses 'garbage in, garbage out' is zeer zeker van toepassing op HICLAS. Dat wil zeggen dat als het rooster een 'magere kwaliteit' heeft, het resultaat van de HICLAS-analyse ook 'mager' zal zijn.

<u>1.5.1.2.Terminologie gebruikt bij hiërarchische klasse-analyse</u>

Zoals vele andere statistische technieken gebruikt HICLAS software om het complexe algoritme uit te voeren. De Boeck stelde in 1992 deze software ter beschikking (De Boeck, 1992). In deze paragraaf worden de concepten en termen die gebruikt worden in een HICLAS-omgeving geïntroduceerd en hun respectieve betekenis verduidelijkt. Op het einde van deze paragraaf wordt zeer beknopt de aard van het door HICLAS gebruikte algoritme geschetst.

De ruwe scores uit het rooster worden in het programma ingevoerd. Daarna wordt de onderzoeker gevraagd een dichotomisatiewaarde in te geven. Dit is de grootste waarde op de gebruikte schaal vóór de cut-off. Vaak is de cut-off het middenpunt. (bijvoorbeeld op een schaal van 0 tot 10 is de dichotomisatiewaarde 4 en de cut-off 5). Dit brengt met zich mee dat alle cijfers die kleiner of gelijk zijn aan de dichotomisatiewaarde omgezet worden in een '0' en de andere cijfers in een '1'. HICLAS werkt verder alleen met dit gedichotomiseerde rooster.

In dit rooster zoekt de software naar objecten die hetzelfde patroon van attributen vertonen en tegelijkertijd naar attributen die gekoppeld zijn aan een zelfde patroon van objecten (zie verder voor het algoritme). Het uiteindelijke resultaat (output) is een hiërarchische structuur van klassen (groepen, categorieën) van attributen en van klassen van objecten.

Met elke klasse van objecten komt een set of patroon van attributen overeen. De attribuutpatronen die elk corresponderen met een verschillende objectklasse kunnen ontbonden worden in een kleiner aantal (mogelijk overlappende) basispatronen waaruit de originele patronen kunnen gereconstrueerd worden. Er wordt getracht om de grootte van deze basispatronen zo groot mogelijk te maken en dus hun aantal zo klein mogelijk. De attributen van zo een maximale basisset vormen een 'attribuutbundel'. In de hiërarchie van

de objecten vinden we op analoge manier 'objectbundels'. Er is een unieke correspondentie tussen de object- en attribuutbundels in die zin dat alle objecten van een gegeven objectbundel alle attributen van de corresponderende attribuutbundel hebben en omgekeerd. Het aantal bundelparen dat nodig is om de gegeven binaire matrix te representeren wordt de 'rang' genoemd van de structuur (De Boeck et al., 1993).

Het resultaat van een HICLAS-analyse bevat oplossingen in verschillende rangen en dus van een variërende complexiteit. Een oplossing of model met een lage rang (bijvoorbeeld 1 of 2) is eenvoudig, maar projecteert een minder accuraat beeld van de data die aanwezig zijn in het oorspronkelijke rooster. Een oplossing met een hogere rang heeft een meer complexe structuur, maar geeft de originele inhoud van het rooster nauwkeuriger weer. In de schematische output kan men duidelijk de twee aan elkaar gekoppelde hiërarchieën (attributen en objecten) waarnemen. De overgang van de ene hiërarchie naar de andere wordt weergegeven door zigzaglijnen (   ). Merk op dat het aantal zigzaglijnen overeenstemt met het aantal bundelparen en dus met de rang van de oplossing.

Binnen elke hiërarchie blijft het hiërarchische principe geldig. Dit principe impliceert dat elke klasse die zich hoger in de hiërarchie bevindt de elementen bevat van de lagere klassen waarmee ze verbonden is (aangeduid door middel van pijlen in de output). Dit kenmerk wordt ook de 'asymmetrische klasse inclusie' genoemd (Hampson, John & Goldberg, 1986). Van Steelandt en Van Mechelen (1998) beschrijven dit concept op een zeer inzichtelijke manier:

> *"All properties of a concept at a lower level in the hierarchy also apply to the hierarchically higher concept, the reverse not necessarily being true." (p.752)*

Hoe goed het HICLAS-schema de originele data representeert, wordt uitgedrukt door de goodness-of-fit-waarde die varieert van 0 (totaal geen representatie) tot 1 (perfecte representatie). Het 'elleboogcriterium' dat bij andere statistische technieken wordt aangewend (scree-plot bij factoranalyse), is ook hier van toepassing. Meestal kan men een vrij sterke verbetering zien in de goodness-of-fit als men naar de hogere rangen gaat, maar

na enkele rangen doet 'de wet van de verminderde meeropbrengst' zich gelden. Inderdaad, de winst inzake goodness-of-fit wordt meer en meer verwaarloosbaar terwijl de structuur steeds complexer wordt. Een goodness-of-fit-waarde van 0,60 of hoger wordt als goed beschouwd.

Het is duidelijk dat HICLAS een 'imperfecte' modelleertechniek is. Een goodness-of-fit-waarde van 1,00 zal in de praktijk slechts bij grote uitzondering gevonden worden. Dit hoeft echter geen nadeel te zijn. Rosch (1978) stelt dat imperfecte modellen de mogelijkheid bieden om categorieën te maken gebaseerd op prototypes. Deze bemerking van Rosch wordt door De Boeck & Van Mechelen (1990) erkend en gaat op voor de individuele klassen van de HICLAS-structuur. Men kan inderdaad elke klasse zien als een soort 'container' die gelijkaardige elementen bevat. Om aan te duiden hoe goed elk element past binnen de 'kernbetekenis' van de klasse, bepaalt de techniek een goodness-of-fit-waarde voor elk element in zijn klasse. Deze mate van 'prototypicaliteit' van het attribuut of het object voor de klasse waartoe het behoort, is een belangrijke handgreep om de HICLAS-structuur te interpreteren.

Attributen of objecten die geen plaats vinden in de structuur worden verwezen naar de zogenaamde 'nulklasse'. De elementen die tot deze nulklasse behoren, zijn belangrijke items om in het achterhoofd te houden bij de interpretatie van de HICLAS-structuur (zie verder). Een lege klasse daarentegen is wel geïncorporeerd in de HICLAS-structuur en maakt er dus ook integraal deel van uit (aangeduid in de output via arcering). Deze lege klassen verdienen ook speciale aandacht bij de interpretatie, waarover meer in de volgende paragraaf.

De aard van het algoritme dat bij HICLAS gebruikt wordt, willen we hier zeer beknopt even schetsen, zonder in detail te gaan. Dit zou ons te ver leiden van de kern van ons betoog. HICLAS benadert de oorspronkelijke, binaire datamatrix D (h x n) met een binaire matrix M (h x n), ook wel het model genoemd. Hierbij is D = M + E, waarbij E een discrepantiematrix voorstelt die de cijfers '0', '1' en '-1' kan bevatten in zijn cellen (M is immers een benadering van D). De betekenis van deze getallen is de volgende: '0' als M in overeenstemming is met de gegevens, '1' als M een attribuut verkeerdelijk niet toeschrijft

aan een object, en '-1' als M een attribuut verkeerdelijk wel toeschrijft aan een object. Het aantal discrepanties is dus een voor de hand liggende maat voor hoe sterk M van de gegevens afwijkt. Op basis van M worden de klassen en de afzonderlijke hiërarchieën gevormd (zie verder). De associatie tussen de beide hiërarchieën wordt gelegd via M= S ⊗ P' (⊗ = Booleaans matrix product). Hierbij definieert S (h x k) k mogelijk overlappende rijbundels en P' (k x n) k mogelijk overlappende kolombundels. Vanuit S en P' kan dus steeds M volledig terug samengesteld worden. De k wijst hierbij dus op de rang van de oplossing. (De Boeck et al., 1993; Van Mechelen et al., 1995)

1.5.1.3. Richtlijnen voor de interpretatie

De hierna vermelde richtlijnen voor interpretatie van een HICLAS-structuur zijn voornamelijk afkomstig uit De Boeck & Maris (1990). We zullen ze zelf toepassen in ons onderzoek.

Om de resultaten te interpreteren is het best om met het schema te starten. Hoewel het originele rooster soms ook reeds informatie kan aanreiken, is deze informatie meestal beperkt tot 1 attribuut of 1 object tegelijkertijd. In die zin is er dus geen samenhang met andere attributen of objecten uit het rooster. De Boeck & Maris (1990) stellen duidelijk dat:

> *"De interpretatie houdt meer in dan een opsommende beschrijving van die grafische voorstelling en moet worden beschouwd als een geheel van hypothetische uitspraken die inspirerend kunnen zijn voor verder onderzoek of voor het plannen van een interventie." (p. 33)*

Eerst kan men kijken naar de mate van integratie van de structuur. Een geïntegreerde structuur bevat klassen die allemaal met elkaar verbonden zijn. Een niet-geïntegreerde structuur heeft bepaalde delen die los staan van elkaar. De interpretatie die men hieraan geeft is natuurlijk afhankelijk van het soort attributen en kenmerken. Een ander punt is de complexiteit van de structuur. Zoals hierboven reeds werd aangegeven is de rang de aanduiding van complexiteit en is de globale goodness-of-fit-waarde een aanduiding van het

aantal discrepanties tussen de verkregen structuur en de oorspronkelijke data. Hoge goodness-of-fit-waarden en lage rangen wijzen in de richting van een eenvoudige structuur, waar lage goodness-of-fit-waarden en hoge rangen wijzen op complexe structuren.

Elke klasse bevat equivalente elementen, zo niet zouden de elementen in verschillende klassen thuishoren. Dus om een bepaalde klasse te interpreteren is het belangrijk om te zoeken naar gemeenschappelijke kenmerken van de verschillende leden van dezelfde klasse. Hier adviseren De Boeck & Maris (1990) om te beginnen met de basisklassen (de klassen die het laagst in hiërarchie staan, de klassen die raken aan een zigzaglijn) omdat deze vaak het meest homogeen zijn. In de klassen die hoger in de hiërarchie staan, zijn aspecten aanwezig van de lager geordende klassen.

Men stuit op een moeilijkheid als men een lege basisklasse heeft. Startend van de klassen die een uitbreiding zijn van deze lege basisklasse kan men pogen om af te leiden wat er in deze lege klasse had kunnen staan. Bij deze afleiding is het aangewezen om zich te laten leiden door convergerende evidentie, bijvoorbeeld de hiërarchische structuur en het interview, of de structuur en een of andere theorie. De vraag waarom deze klasse leeg bleef, kan verschillende hypothesen genereren waaronder 'beladen met angst', 'vergeten', 'onbestaand', 'niet aangeboden' of 'onderdrukt'.

Een speciaal item binnen de interpretatie van een HICLAS-structuur is de zogenaamde nulklasse. Deze klasse bevat de elementen die niet werden opgenomen binnen het HICLAS-schema. Dit zijn elementen waarvan het scoringspatroon vooral uit nullen bestaat ('niet van toepassing' dus). Als de elementen in deze klasse homogeen en talrijk zijn, dan bestaat er een basis voor de interpretatie ervan. De interpretatie is afhankelijk van de aard van de attributen of objecten die in de nulklasse zitten. Wanneer de betreffende elementen ervaringen zijn, kan men denken aan een vorm van ontkenning door het subject. Wanneer de elementen bijvoorbeeld situaties zijn, is het mogelijk dat deze situaties weinig waarde voor hem/haar hebben. Als de elementen in deze nulklasse niet homogeen zijn, is het aangewezen om zeer voorzichtig te zijn bij de interpretatie ervan.

Het niveau van een klasse is ook een hulpmiddel bij de interpretatie. Bijvoorbeeld als de elementen aan één zijde emoties en gedragingen zijn en aan de andere kant situaties, dan kan men stellen dat des te hoger de emoties en gedragingen in de hiërarchie staan, des te meer ze een indicator zijn van een 'stabiele karakteristiek' (trekachtig element) die wordt blootgelegd. Hoe lager in de hiërarchie, hoe meer men met specificiteit te maken heeft.

1.5.1.4. Voorbeeld

Om enkele van de hierboven vermelde theoretische concepten meteen inzichtelijker te maken, hebben we een illustratief voorbeeld opgenomen in deze uiteenzetting. Het voorbeeld werd genomen uit Storms et al. (1994). Het is een hypothetisch voorbeeld in de context van semantische concepten. De dataset die werd gebruikt, is weergegeven in tabel I en bestaat uit elf soorten fruit (objecten) en acht kenmerken (attributen). De waarde '1' in de tabel duidt aan dat een gegeven fruitsoort een bepaald kenmerk heeft en de waarde '0' geeft aan dat de fruitsoort een bepaald kenmerk niet bezit.

Tabel I: Object x attribuut matrix van de fruitgegevens

	Is fel gekleurd	Groeit bovengronds	Is sappig	Heeft een schil	Is rond	Bevat zaadjes	Is zoet	Is geel als het rijp is
Appel	1	1	0	1	1	1	0	0
Banaan	0	1	0	1	0	1	0	1
Kers	1	1	0	1	1	1	0	0
Mango	1	1	1	1	1	1	1	1
Appelsien	1	1	1	1	1	1	1	0
Passievrucht	1	1	1	1	1	1	1	0
Peer	1	1	1	0	0	1	1	0
Framboos	1	1	1	0	0	1	1	0
Aardbei	1	1	1	0	0	1	1	0
Radijs	0	0	0	0	0	0	0	0
Meloen	1	1	1	1	1	1	1	0

Als we naar de attributen kijken, dan kunnen we vaststellen dat 'sappig' en 'zoet' van toepassing zijn op precies dezelfde soorten fruit. Ook 'fel gekleurd' heeft een eigen groep fruit waarop het van toepassing is. We zien dus twee klassen van kenmerken verschijnen, namelijk [sappig, zoet] en [fel gekleurd]. Verder zien we het concept "asymmetrische klasinclusie" hier geïllustreerd. Zo impliceert de aanwezigheid van 'sappig' en 'zoet' steeds de aanwezigheid van 'fel gekleurd'. Het omgekeerde is echter niet het geval.

Voor de objecten zijn er gelijkaardige klassen en hiërarchische relaties vast te stellen. Bijvoorbeeld 'appelsien', 'passievrucht' en 'meloen' hebben hetzelfde patroon van kenmerken en vormen een klasse. Zo verkrijgen we verder de klassen [appel, kers] en [framboos, aardbei, peer]. Deze laatste twee klassen staan onder de klasse [appelsien, passievrucht, meloen] in het HICLAS-schema. Figuur 2 biedt een grafische representatie aan van het HICLAS-model in rang 3 van de datamatrix in tabel I.

Figuur 2: HICLAS-schema van de oplossing in rang 3 van de fruit dataset

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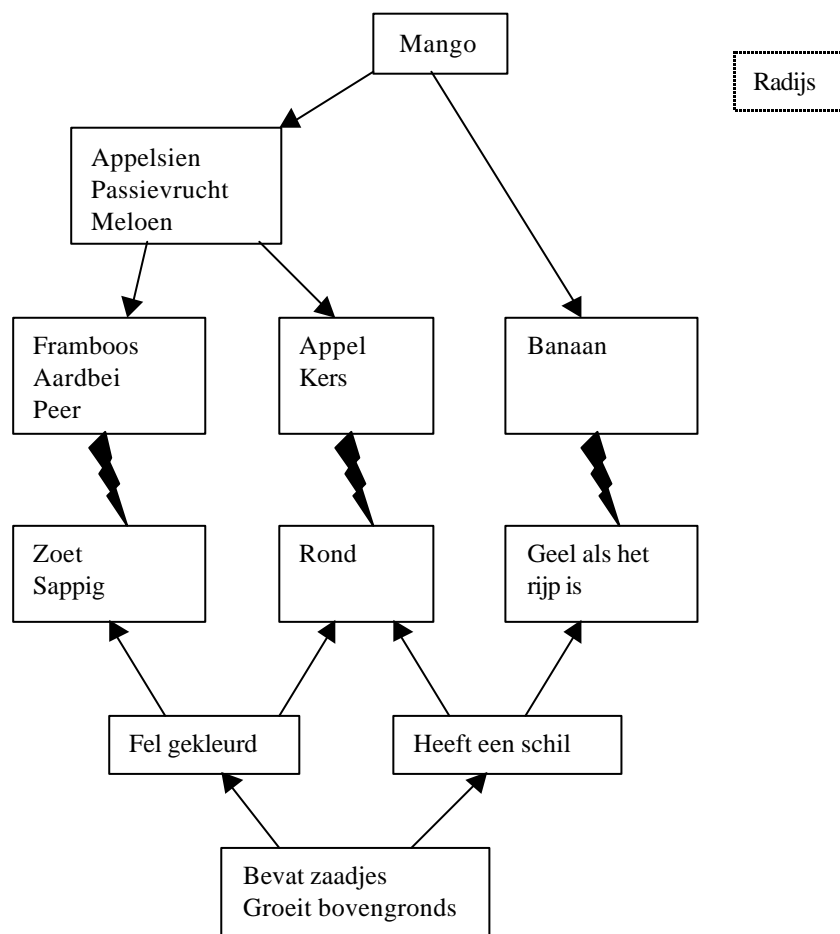
Deze figuur omvat de hiërarchie van de objecten en de hiërarchie van de attributen, en hun verbinding met elkaar. De pijlen wijzen op hiërarchische relaties. De zigzaglijnen vormen de verbinding tussen de twee hiërarchieën en geven de associatieve verbanden aan. Dat de oplossing er één van rang 3 is, kan men merken aan de aanwezigheid van drie bundels. Er zijn inderdaad in elke hiërarchie drie basisklassen (klassen op het laagste hiërarchische niveau) die door middel van zigzaglijnen direct verbonden zijn met de drie basisklassen van de andere hiërarchie.

Het schema kan gebruikt worden om te bepalen welk fruit gekarakteriseerd wordt door welke kenmerken. Zo heeft elke fruitsoort die behoort tot een basisklasse de kenmerken van de basisklasse waarmee de eigen klasse verbonden is (via de zigzaglijn dus) en ook de kenmerken van alle klassen die hiërarchisch boven deze basisklasse staan. Zo kan men uit het schema bijvoorbeeld afleiden dat een appel en een kers elk de volgende kenmerken hebben: (1) rond, (2) fel gekleurd, (3) heeft een schil, (4) bevat zaadjes, en (5) groeit bovengronds. Verder heeft elke klasse van fruit die hoger in de hiërarchie staat alle kenmerken die de basisklassen hebben waarmee ze verbonden is. Een voorbeeld zal dit verduidelijken. Een appelsien heeft alle kenmerken die eigen zijn aan de klassen [framboos, aardbei, peer] en [appel, kers]. Dit houdt dus met andere woorden in dat een appelsien alle kenmerken heeft, behalve 'geel als het rijp is'. 'Hoger in de hiërarchie staan' betekent hier niet hoger binnen een 'botanische theorie'. De achterliggende theorie is er één van percepties, en dus niet noodzakelijk een theorie over onderliggende causale verbanden. Onder andere de categorisatietheorie van Rosch houdt ook deze denkwijze aan (Rosch, 1978; Rosch, Mervis, Gray, Johnson & Boyes-Bream, 1976). We merken tenslotte op dat 'radijs' geen enkele link heeft met welk kenmerk dan ook. Daarom staat dit element, dat een klasse op zich vormt, buiten de structuur. Dit wordt een nulklasse genoemd. Met de interpretatie hiervan moet men steeds voorzichtig zijn, maar deze klasse niet betrekken in de bespreking van het geheel zou een gebrek zijn. In dit voorbeeld waar 'radijs' in de nulklasse terecht komt, kan men bijvoorbeeld het vermoeden uiten dat een radijs meer kenmerken heeft van een groente dan van fruit, en dat ze daarom op alle kenmerken een '0' scoorde.

Dit eenvoudig voorbeeld illustreerde enkele belangrijke basisaspecten van HICLAS zonder hierin exhaustief te zijn. Goodness-of-fit-waarden en prototypicaliteits-waarden werden hier niet besproken, maar zullen in het onderzoeksgedeelte van deze verhandeling aan bod komen.

1.1.1. Waarom HICLAS gebruiken in dit onderzoeksdomein?

De argumenten om HICLAS in dit onderzoeksveld te gebruiken hangen zeer nauw samen met de eigenheid van de methodiek zelf, die hierboven besproken werd. Een aantal van de kritieken die geleverd werden op voorgaande studies, worden door het gebruik van HICLAS opgevangen. In deze paragraaf zullen de sterktes en de mogelijkheden van HICLAS geplaatst worden in de context van sorteergedrag en de determinanten ervan.

De kracht van HICLAS zit vooral in het feit dat deze analysemethode in staat is om een weergave in één schema te geven van drie elementen: (1) klassen van objecten en klassen van attributen, (2) hiërarchische relaties tussen de klassen van elk type, en (3) een associatieve relatie die de structuur van de objectklassen verbindt met de structuur van de attribuutklassen (Storms et al., 1994). Deze drie elementen worden verder in de mate van het mogelijke afzonderlijk besproken.

Ten eerste groepeert HICLAS attributen en objecten in klassen. In ons onderzoek zijn de attributen sorteergedragingen en zijn de objecten sorteermotivaties. Dit groeperen in klassen, kan inzicht verschaffen in gelijkenissen tussen sorteergedragingen onderling en sorteermotivaties onderling. Het zijn de patronen van de scores die aanwezig zijn in het rooster die verantwoordelijk zijn voor de categorisering. Dit 'groeperingsaspect' werd door weinig andere studies op een gefundeerde manier onderzocht. Binnen elke groep (klasse) krijgt elk element een prototypicaliteitswaarde toegewezen. Deze waarden laten toe om een beeld te vormen van de 'sterkte van het klasselidmaatschap' en leiden de interpretatie verder dan het louter overnemen van de namen van de elementen van een klasse, omdat ze

aanzetten tot het zoeken van gemeenschappelijke eigenschappen tussen de elementen van een klasse. Mede hierdoor kunnen ook hypothesen gevormd worden over de plaats van elementen die niet in het onderzoek zijn opgenomen, maar die gelijkenissen vertonen met de elementen van een bepaalde klasse. Verder onderzoek is dan natuurlijk aangewezen om deze stellingen te staven.

Ten tweede voorziet HICLAS in twee hiërarchieën, één van de klassen van attributen (sorteermotivaties) en één van de klassen van objecten (sorteergedragingen). Deze hiërarchie geeft richtlijnen inzake de 'algemeenheid' (hoog in de hiërarchie) of 'specificiteit' (laag in de hiërarchie) van een bepaalde klasse. Zeker aangaande de sorteermotivaties is dit een aanvulling op het bestaande onderzoek omdat de onderlinge structuur en samenhang van verschillende groepen van waarden (sorteermotivaties) tegelijkertijd in beeld wordt gebracht. Voor de dagelijkse praktijk kunnen deze beide hiërarchieën ook verdienstelijk zijn. Zo kan er bijvoorbeeld een idee gevormd worden van welke sorteermotivaties specifiek aangesproken worden bij bepaalde sorteergedragingen. Op zijn beurt kunnen deze inzichten dan aanleiding geven tot veranderingen in de sociale marketing inzake het 'promoten' van sorteergedrag. Verder kan ook een inschatting gemaakt worden van de 'reikwijdte' van een bepaalde sorteermotivatie (Heeft de sorteermotivatie talrijke andere sorteermotivaties onder zich of is zij juist heel specifiek?).

Een derde voordeel van de HICLAS-methodologie is dat ze toelaat om associaties vast te leggen die bestaan tussen bepaalde klassen van sorteermotivaties en klassen van sorteergedragingen. HICLAS koppelt namelijk beide hiërarchieën aan elkaar op een associatieve wijze. Door deze koppeling van hiërarchieën is het mogelijk om complexe onderzoeksobjecten, zoals de mogelijke determinanten van sorteergedrag, in kaart te brengen.

Samengevat kunnen we dus stellen dat het grote voordeel van HICLAS de weergave is van de hiërarchische structuur van klassen van sorteermotivaties enerzijds en van klassen van sorteergedragingen anderzijds, waarbij er tevens een beeld wordt gegeven van de

interactionele relaties die er bestaan tussen deze sorteermotivaties en sorteergedragingen. Ter vergelijking: laddering resulteert niet in de vorming van equivalente klassen, noch in een 'dubbele' hiërarchie. Een andere met middel-doel keten werkende methode is de associatieve patroontechniek (APT) (ter Hofstede, Audenaert, Steenkamp & Wedel, 1998). APT meet de verbanden tussen attributen en gevolgen en tussen gevolgen en waarden apart, terwijl laddering de drie componenten samen behandelt. In vergelijking met laddering is APT echter wel meer geschikt om te gebruiken bij grotere steekproeven. Op dit vlak scoort APT gelijk met HICLAS (de manier van data verzamelen is immers vrij analoog). Maar net als laddering, leidt APT niet tot klassevorming of tot geassocieerde hiërarchieën. Zonder de specifieke sterktes van deze twee onderzoekstechnieken te ontkennen, zijn de voordelen van HICLAS dus aanzienlijk te noemen.

Een specifieke kenmerk van HICLAS is dat deze methode de gegevens in een meer kwantitatieve vorm kan gieten, zonder de voordelen van een kwalitatieve onderzoeksmethode volledig te verliezen. Men zou kunnen zeggen dat HICLAS een soort *'meso'-techniek* is die een tussenpositie inneemt tussen kwalitatieve en kwantitatieve methoden. HICLAS zien wij in het onderzoeksdomein van sorteergedragingen en sorteermotivaties, en specifiek binnen het hierna besproken onderzoek, als een exploratief instrument dat naast beschrijvingen ook hypothesen kan genereren voor verder en meer gericht onderzoek naar bepaalde deelaspecten die in het HICLAS-schema aan bod zijn gekomen.

Door de aard van de HICLAS-methodologie menen we dat de methode ook haar steentje kan bijdragen aan de 'optimalisatie' van de sociale marketing voor sorteren. Sorteergedrag is inderdaad een typisch item dat via sociale marketing aantrekkelijker gemaakt kan (moet) worden. Dit is echter makkelijker gezegd dan gedaan. Vele sociale veranderingscampagnes mislukken immers omwille van een groot aantal mogelijke redenen waaronder de incorrecte afbakening van de doelgroep en een weinig motiverende inhoud van de boodschap (Kotler & Roberto, 1989). Omdat HICLAS, ons inziens, een aanzet kan geven tot een betere segmentatie en hiermee samenhangend een betere targeting, leek deze methode ook voor dit

aspect, naast de andere aspecten die hierboven vernoemd zijn, een 'waardevolle investering'. Voor meer concrete reflecties omtrent sociale marketing verwijzen we naar de implicaties van ons onderzoek.

HOOFDSTUK 2: Hiërarchische klasse-analyse van sorteergedragingen en sorteermotivaties.

2.1 Methodologie

2.1.1. Respondenten

De samenstelling van de groep respondenten is niet gebaseerd op bijzondere stratificatievoorwaarden of andere wetmatigheden van steekproeftrekking. De respondenten werden gekozen uit de volgende groepen: (1) spelers en familie van de provinciale badmintonselectie van Antwerpen, (2) leden en partners van leden van de Katholieke Arbeidersvrouwen Vereniging Antwerpen, en (3) personen uit de ruimere sociale omgeving van de auteur. De beschikbaarheid en bereikbaarheid van deze personen was de enige reden om tot deze samenstelling te komen. Er werd wel enigszins gepoogd om een zo divers mogelijke groep te bekomen inzake socio-demografische kenmerken.

In totaal ontvingen we 96 vragenlijsten. De leeftijd van de respondenten varieerde tussen 15 en 71 jaar en was gemiddeld 35,6 jaar (STD = 13,7). Vrouwelijke respondenten (62,5%) waren in de meerderheid ten opzichte van de mannelijke (37,5%). De grootte van de gezinnen bedroeg maximum zes personen. Twee soorten gezinnen hadden duidelijk het grootste aantal vertegenwoordigers in de steekproef, namelijk de gezinnen met twee personen (N=28) en de gezinnen met vier personen (N=26). Andere gezinsgroottes hadden volgende frequenties: 13 alleenwonenden, acht gezinnen met 3 personen, elf gezinnen met 5 personen en acht gezinnen met 6 personen. Twee respondenten gaven geen informatie betreffende hun gezinsgrootte. Het aantal kinderen in het gezin bedroeg maximum vier. De best vertegenwoordigde groepen waren hier de kinderloze gezinnen (N=25) en de gezinnen met twee kinderen (N=28). Verder waren er vijf gezinnen met één kind, twaalf met drie kinderen en acht met 4 kinderen. Achttien respondenten gaven hier geen antwoord. Bij deze twee variabelen die betrekking hebben op het gezin, moet opgemerkt worden dat de

observatie-eenheid die in dit onderzoek gehanteerd werd het individu is en niet het gezin. Het is dus mogelijk dat er meerdere personen uit hetzelfde gezin komen, wat de hierboven vermelde aantallen in een ander daglicht stelt.

Het opleidingsniveau van de proefgroep was globaal bekeken hoog. Ongeveer 60% van de respondenten heeft hoger onderwijs of universitair onderwijs genoten. De groep van de universitairen was de grootste met 29% van de respondenten.

De laatste twee variabelen die bevraagd werden om de steekproefgroep te beschrijven, hebben betrekking op de aard van de woning en haar ligging. Het aantal respondenten dat een ééngezinswoning met een tuin betrekt, was 71%. Zeventien percent bewoont een appartement of studio en zeven percent een ééngezinswoning zonder tuin. Vijf percent had een andere woonvorm. Aangaande de ligging van de woning was de procentuele verdeling veel 'gelijkmatiger', namelijk als volgt: binnen een stadscentrum (26%), binnen een dorpkern (15%), aan de rand van de stad (21%), aan de rand van het dorp (22%) en op het platteland (15%).

2.1.2. Materiaal

De respondenten kregen persoonlijk een vragenlijst aangeboden of opgestuurd. De vragenlijst werd vergezeld van een brief waarin kort het doel en de context van het onderzoek werd aangegeven naast een woord van dank voor de medewerking (bijlage 1).

De vragenlijst zelf bestond uit een eerste deel dat een rooster bevatte (als input vaar de HICLAS-analyse) en een tweede deel met multiple choice en socio-demografische vragen. Het rooster werd opgebouwd op basis van een onderzoek van Smeesters et al. (1999) (zie hoger). In dit onderzoek werden 30 mensen geïnterviewd via de eerder besproken ladderingtechniek op een manier die achteraf middel-doel keten analyse toelaat (Reynolds & Gutman, 1988). Dit kwalitatief georiënteerd onderzoek bracht een hele waaier attributen, gevolgen en waarden aan het licht.

De attributen vormen de rijen van het rooster en de waarden en gevolgen zijn samengenomen voor de kolommen. Deze organisatie van het rooster werd gekozen om drie redenen. Ten eerste hebben we de attributen apart genomen omdat deze sterk gedragsmatig georiënteerd zijn (bijvoorbeeld 'glas sorteren' en 'kopen van milieuvriendelijke producten'). Ten tweede hebben we de gevolgen voor het individu en de waarden gegroepeerd aan één zijde van het rooster omdat deze inzake inhoud dichter bij elkaar aanleunen dan bij de attributen. Waarden en gevolgen vormen inderdaad veeleer een motivationele achtergrond voor het stellen van bepaalde gedragingen (bijvoorbeeld 'nuttig voor de maatschappij' en 'financieel voordeliger'). Op deze manier werd dus een rooster verkregen met in de rijen gedragingen (attributen) en in de kolommen motivaties (gevolgen en waarden) voor deze gedragingen. Een derde reden is louter methodologisch. Het type HICLAS-analyse dat hier wordt uitgevoerd kan namelijk alleen toegepast worden op matrices bestaande uit twee dimensies (rijen en kolommen). Hierdoor werden we ook genoodzaakt om twee van de drie categorieën uit de middel-doel keten samen te plaatsen aan één zijde van het rooster. Er is reeds een driedimensionale variant van HICLAS beschreven in de literatuur (Vansteelandt & Van Mechelen, 1998), maar de software die hiervoor nodig is, was echter nog niet beschikbaar. In deze drie redenen werd voldoende argumentatie gevonden om het rooster op de hierboven vermelde manier te gebruiken.

Maar waarom een rooster met 12 rijen en 18 kolommen? A priori moet een rooster voldoen aan een minimum grootte van 10 rijen en 10 kolommen (zie beschrijving HICLAS), opdat er een grotere kans zou zijn op een aanvaardbare goodness-of-fit-waarde. Uit de reeks attributen die in het onderzoek van Smeesters et al. (1999) door de respondenten werden vermeld, werden die attributen gekozen met de hoogste frequentie van voorkomen. Uiteindelijk hielden we twaalf attributen over omdat de kloof met de andere attributen inzake frequentie groot was. Dezelfde redenering werd gevolgd voor negen waarden en negen gevolgen. In tabel II is de lijst van de opgenomen elementen weergegeven per dimensie van het rooster met hun respectievelijke frequentie van voorkomen in het onderzoek van Smeesters et al. (1999) tussen haakjes. Het is dus duidelijk dat de absolute aantallen van de attributen, gevolgen en waarden geen a priori theoretische fundering hebben en dat deze aantallen voortspruiten uit de frequenties van voorkomen uit het onderzoek van

Smeesters et al. (1999).

Voor een concrete voorstelling van het rooster wordt er naar bijlage 2 verwezen. De instructie die bij dit rooster werd geleverd (zie bijlage 2), gaf aan om enkel de cijfers '1' en '0' te gebruiken bij het invullen van het rooster. Hierbij had '1' de betekenis van '… is een motivatie om …', '… is voor mij gerelateerd aan …', waarbij '0' de betekenis droeg van '… is geen motivatie om …', '… is voor mij niet gerelateerd aan …'. Voor meer details hieromtrent wordt verwezen naar bijlage 2. De beslissing om de respondenten de opdracht te geven binair te scoren had 3 redenen. Ten eerste wordt voor een willekeurige steekproef de opdracht beter eenvoudig gehouden. Ten tweede was het rooster vrij groot. We zouden de respondenten kunnen ontmoedigen hen te vragen zich voor (18*12=) 216 uitspraken genuanceerd uit te laten. Ten derde dwingt deze manier van werken respondenten om een keuze in de ene of de andere richting te maken waardoor de soms vertroebelende 'centrale tendens' vermeden wordt. De implicaties en mogelijke nadelen van deze beslissing worden in de discussie verder besproken.

Het tweede deel van de vragenlijst bestond voornamelijk uit meerkeuzevragen. We peilden naar: (1) gepercipieerde accuraatheid bij sorteren van negen soorten afval, (2) waarden, en (3) socio-demografische karakteristieken. De gepercipieerde accuraatheid van sorteren werd gemeten door de respondenten te vragen voor negen verschillende soorten afval aan te geven hoeveel stuks op tien ze ervan in de juiste zak of bak gooien. De waarden die in dit tweede deel van de vragenlijst (gespreid over meerdere vragen) aan bod kwamen, waren: (1) buurtgevoel, (2) identificatie met de buurt, (3) plicht om de wet te volgen, (4) bezorgdheid omtrent het milieu, (5) vertrouwen in andere mensen, (6) sociaal waardegevoel, (7) milieubewustzijn, (8) altruïsme, (9) burgerzin, en (10) vertrouwen in de overheid.

Tabel II: Selectie van attributen, gevolgen en waarden op basis van hun frequentie van voorkomen in het vooronderzoek.

Attributen (rijen in het rooster)	N
Afval sorteren	71
Kopen van milieuvriendelijke producten	18
Het verbranden van afval	23
Lezen van sorteerinformatie	34
Sorteren vraagt een aanpassing van gewoonten	11
Tijd besteden aan afval	30
Glas sorteren	19
Meer betalen voor milieuvriendelijke producten	17
Afval in de eigen vuilzakken zo veel mogelijk beperken	28
Composteren	11
Overtollig verpakkingsafval zo veel mogelijk vermijden	44
Het betalen van de prijzen van al de zakken en bakken	13
Waarden en gevolgen (kolommen in het rooster)	
Gezondheid / hygiëne	27
Financieel voordeliger	32
Niet dwarsliggen	12
Betere toekomst voor onze kinderen	13
Milieubewustzijn	68
Zelfrespect	12
Zie het nut er niet van in	22
Zorg voor de Aarde	19
Het is verplicht	22
Goede burger zijn (plichtsbewust)	33
Positief voor het milieu	14
Verantwoordelijkheid nemen t.o.v. mijn buurt	23
Goed gevoel (voldoening)	6
Boetes voorkomen	8
Uit principe	15
Verantwoordelijkheid nemen t.o.v. de maatschappij	28
Kost tijd en moeite	30
Nuttig voor de maatschappij	20

De scores op de verschillende waarden waren steeds afhankelijk van de scores op meerdere vragen. Voor de vijf eerste waarden en 'vertrouwen in de overheid' werd een binaire schaal gebruikt ('akkoord' of 'niet akkoord'). Het sociaal waardegevoel werd nagegaan via negen nominale vragen. De overige waarden werden gescoord op drie vragen met een vijfpuntenintervalschaal. De socio-demografische variabelen die in dit deel werden opgenomen zijn reeds vermeld bij de paragraaf die de respondenten bespreekt. Een exemplaar van dit tweede deel van de vragenlijst is te vinden in bijlage 3.

We voegden dit deel aan de vragenlijst toe om de resultaten hiervan te kunnen gebruiken als bijkomende informatie voor de interpretatie van de HICLAS-analyse. Een tweede reden was om de totale groep van respondenten te kunnen splitsen volgens een bepaalde positie op één van de hierboven vermelde waardenschalen. Op de gemiddelde roosters van deze groepen kan dan wederom een HICLAS-analyse gebeuren. Zodoende wordt een vergelijking van groepen respondenten mogelijk via HICLAS en kan er tevens een vorm van validiteitsonderzoek plaatsvinden. De waardenoriëntaties van de verschillende groepen zouden immers zichtbaar moeten zijn in het HICLAS-schema (zie verder).

2.1.3. Analyse

Van de 96 ingevulde roosters was er één rooster niet bruikbaar omdat het zeer onvolledig was ingevuld (slechts 9 van de 216 cellen). Voor de HICLAS-analyse konden we dus beschikken over 95 bruikbare roosters. De analyse van de individuele roosters behoorde niet tot de doelstellingen van het onderzoek, het opstellen van een gemiddeld profiel van de bevraagde respondenten wél.

Alle individuele roosters werden in EXCEL ingevoerd. Er werd een 'frequentierooster' gemaakt door alle roosters (matrices) op te tellen. De maximale score die in een cel kan voorkomen was dus 95 (als alle respondenten in een bepaalde cel een '1' zouden hebben ingevuld). Alle cellen van dit frequentierooster werden vervolgens gedeeld door 95 om een gemiddeld totaalrooster te bekomen. Alle scores in dit rooster lagen binnen het bereik van

nul tot één. Alle getallen kleiner dan 0,5 werden omgezet tot een '0' en de rest tot een '1' ('0,5' om het onderscheid te zien tussen de cellen waarin door meer dan de helft van de respondenten een '1' is gezet en de cellen waarin door meer dan de helft een '0' is gezet). Deze manier om roosters van meerdere personen te verwerken werd reeds bij ander HICLAS-onderzoek toegepast en adequaat bevonden (Van Mele, 1996; Nys, 1997). Een andere manier om aan dit gedichotomiseerd rooster te komen is om in het frequentierooster de waarden kleiner dan 47,5 (= 95/2) om te zetten in een nul en de waarden groter dan 47,5 om te zetten in een '1'. Deze werkwijze levert dezelfde resultaten op. Bij beide aangehaalde werkwijzen komt het er dus op aan om dat de combinaties van sorteergedragingen en sorteermotivaties die minder dan de helft van de respondenten als 'niet toepasselijk' scoorden, om te zetten tot een '0' en de andere combinaties tot een '1'. Het zo verkregen rooster, hierna 'globaal rooster' genoemd, was dus onmiddellijk geschikt om in te voeren in de HICLAS-software, omdat het enkel uit nullen en enen bestond.

Dit globaal rooster voldeed overigens ook aan het technisch criterium dat De Boeck & Maris (1990) opleggen in verband met de verhouding tussen het aantal nullen en enen. Als streefcijfer stellen zij dat een rooster niet meer dan 2/3 nullen mag bevatten, omdat een rooster met een groter overwicht aan nullen triviale en weinig interessante resultaten oplevert. In het globaal rooster waren 122 van de 216 cellen gevuld met een '0', wat neerkomt op 56%. Dit globaal rooster is opgenomen in bijlage 4.

2.2. Resultaten

Bij de bespreking van de resultaten beschrijven we eerst zeer beknopt de waardenoriëntaties van de groep respondenten. Dit dient als opstap naar de resultaten van de HICLAS-analyse, die in een tweede onderdeel uitvoerig behandeld worden. In een derde deel beschrijven we zeer beknopt de onderlinge vergelijking van telkens twee HICLAS-schema's. Eerst beschrijven we de vergelijking van de HICLAS-schema's van de groep respondenten die respectievelijk hoog en laag betrokken zijn op het milieu. Daarna de vergelijking van de groep respondenten die respectievelijk hoog en laag scoorden op burgerzin. Ten slotte geven we een zeer beknopt samenvattend overzicht van de

belangrijkste resultaten.

2.2.1. Waardenoriëntaties van de proefgroep

Om een eerste indruk te vormen van de gemiddelde respondent uit de proefgroep, geven we een beknopt overzicht van de verschillende waardenoriëntaties uit het tweede deel van de vragenlijst. We spreken vooral van de 'gemiddelde respondent' omdat deze ook de focus is van de HICLAS-analyse.

In tabel III hebben we de gemiddelde scores op de waarden die werden gemeten via een binaire schaal weergegeven. Het bereik van deze scores is van '0' tot en met '1' of van '0' tot en met '5', zoals aangegeven in de tabel. We hebben voor elke respondent eerst zijn totale waardenoriëntatie per waarde berekend en vervolgens dit totaal teruggebracht tot een gemiddelde per respondent door te delen door het aantal vragen die betrekking hadden op de respectievelijke waarde. Deze gemiddelde scores per respondent werden opnieuw opgeteld en gedeeld door het aantal respondenten om tot een gemiddelde score voor de proefgroep te komen. Het zijn deze scores die in tabel III vermeld zijn. Om een indruk te geven van de interne consistentie, zijn de Cronbach-alfa waarden van de verschillende schalen die we hebben gebruikt weergegeven in de laatste kolom van tabel III.

De gemiddelde respondent uit onze steekproef is dus zeer begaan met het milieu (0.82) en met zijn / haar buurt (0.80) zoals de scores uit tabel III aangeven. De identificatie met de buurt scoort duidelijk lager dan het buurtgevoel. Vertrouwen in de overheid en andere mensen scoort laag, net als het volgen van de wet. De waarden die gemeten werden op een vijfpuntenschaal werden over het algemeen eerder hoog gescoord. In volgorde van belangrijkheid komen we voor deze waarden tot de volgende rangschikking: altruïsme, moraliteit, biospheric value en burgerzin.

Tabel III: Waardenoriëntatie van de gemiddelde respondent.

(De cijfers tussen de haakjes geven het aantal vragen weer dat betrekking had de respectievelijke waarden.)

Waarde	Score	Bereik	Cronbach-alfa
Buurtgevoel (4)	**0.80**	[0-1]	0.78
Buurtidentificatie (5)	**0.43**	[0-1]	0.74
Volgen van de wet (4)	**0.50**	[0-1]	0.63
Bezorgdheid om milieu (4)	**0.82**	[0-1]	0.81
Vertrouwen in anderen (5)	**0.49**	[0-1]	0.56
Vertrouwen in de overheid (5)	**0.36**	[0-1]	0.81
Biospheric value (3)	**4.15**	[0-5]	0.77
Altruïsme (3)	**4.49**	[0-5]	0.83
Burgerzin (3)	**3.65**	[0-5]	0.79
Moraliteit (3)	**4.37**	[0-5]	0.83

Burgerzin is de enige waarde in deze reeks die geen gemiddelde score van vier haalt. Het sociaal waardegevoel geven we weer in percentages omdat het hier om nominale antwoordcategorieën ging en een gemiddelde dus geen zinvolle informatie bevat. De verdeling van de respondenten over de verschillende groepen was als volgt: coöperatief (66%), individueel (27%) en competitief (4%). Drie percent van de respondenten antwoordde inconsistent in verband met het sociaal waardegevoel. Na deze eerste kijk op de globale samenstelling van onze proefgroep, gaan we nu over naar de kern van het onderzoek, namelijk de HICLAS-analyse op het globaal (gemiddeld) rooster.

2.2.2. HICLAS-analyse van het globaal (gemiddeld) rooster

Het bespreken en vergelijken van HICLAS-structuren is in feite geen voor de hand liggende zaak omdat er een veelheid aan informatie in vervat ligt op een al dan niet complexe manier (zie introductie tot HICLAS). In onze bespreking zullen eerst de meer 'objectieve' of 'technische' criteria aangehaald worden zoals de goodness-of-fit-waarden, de organisatie van de hiërarchische structuur, het aantal klassen enz. om een eerste oriënterende indruk te krijgen van de HICLAS-structuur. Het meest belangrijk wordt echter de betekenislijn geacht, het profiel dat in de structuur zit. Het zullen dus vooral de interpretatieve kenmerken van de structuren zijn die de aandacht zullen wegdragen en de ruggengraat van het onderstaande betoog zullen uitmaken.

Bij de HICLAS-analyse op het globaal rooster, werd opdracht aan de software gegeven om de analyse uit te voeren tot en met rang 6. Bij een eerste blik op de goodness-of-fit-waarden valt meteen op dat er in rang 1 reeds een hoge goodness-of-fit-waarde tot uiting komt. Bij een strikte navolging van de 'elleboogregel' zou de oplossing in rang 2 gekozen moeten worden. Een oplossing in rang 1 of rang 2 geeft echter weinig differentiatiemogelijkheden omdat het aantal klassen in deze rangen zeer beperkt is. Er zijn immers maar zoveel bundels als dat de rang hoog is. Om toch enige differentiatie en een vertakte structuur te bekomen werd gekozen voor een oplossing in rang 3. Deze oplossing bezit een hoge goodness-of-fit-waarde (0.887) en is, zoals zal blijken, behoorlijk goed interpreteerbaar en niet te complex.

Het hiërarchische schema van de oplossing in rang 3 is weergegeven in figuur 3. Zoals in de introductie tot HICLAS reeds werd aangehaald, verwijzen de pijlen in dit schema naar hiërarchische relaties en worden de associatieve verbanden door de zigzaglijnen gerepresenteerd. De getallen tussen haakjes achter elk van de elementen van een klasse zijn prototypicaliteitswaarden. Zij geven dus de mate aan waarin het element een goed voorbeeld is van de klasse waartoe het behoort. Om de bespreking te vergemakkelijken zijn de klassen van de sorteergedragingen aangeduid met letters (bovenste deel van het schema) en zijn de klassen van de sorteermotivaties aangeduid met cijfers (onderste deel van het

schema). In beide gevallen begint de aanduiding aan de linkerkant van het schema en doet ze eerst de hiërarchisch laagst geplaatste klassen aan en daarna pas de klassen die het hoogst in de hiërarchie staan.
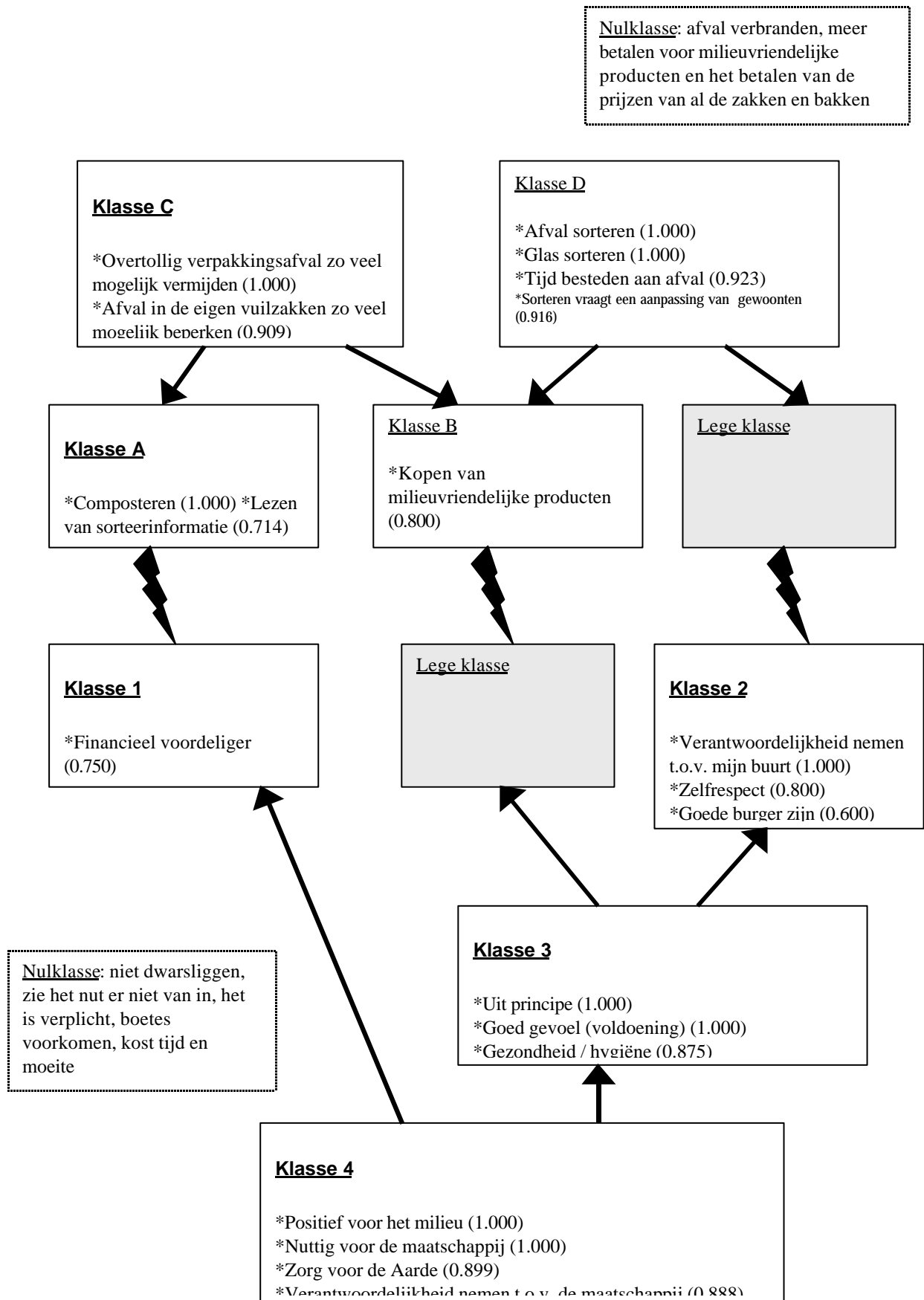
Bij de bespreking zal de hierna vermelde volgorde gerespecteerd worden. Eerst wordt elke hiërarchie apart besproken. Binnen elke hiërarchie wordt een overzicht gegeven van het aantal klassen en de structurele samenhang van de hiërarchie. Vervolgens wordt elke klasse apart besproken, te beginnen bij de laagst geplaatste klassen. Als laatste onderdeel van de weergave van de resultaten van één hiërarchie komt de nulklasse aan bod. Daarna wordt het globale schema onder de loep genomen en worden de eventuele associatieve verbanden aangehaald. De zuivere interpretatie van de HICLAS-structuur komt dus als laatste aan bod.

Het bovenste gedeelte van het schema bevat de hiërarchie van de sorteergedragingen. Deze hiërarchie bestaat uit 5 klassen. Van deze 5 klassen is er één klasse leeg. De hiërarchie bevat 2 niveaus, een derde hiërarchisch niveau ontbreekt hier dus. De hiërarchische structuur van de sorteergedragingen is echter wel volledig geïntegreerd, waarmee bedoeld wordt dat er geen klassen los staan van de rest van de hiërarchie.

Klasse A bevat 2 sorteergedragingen, namelijk 'composteren' en 'lezen van sorteerinformatie'. Een voor de hand liggend verband tussen deze twee gedragingen is moeilijk te duiden, maar in de perceptie van de gemiddelde respondent wordt bij deze gedragingen toch dezelfde motivationele achtergrond aangesproken (zie verder). Klasse B bevat slechts 1 element, 'kopen van milieuvriendelijke producten'. De derde klasse op het laagste hiërarchische niveau is een lege klasse. Een poging om deze een betekenis te geven volgt verder. Het volgende, en tevens hoogste, niveau in de hiërarchie bestaat uit 2 klassen. Klasse C is verbonden met klasse A en klasse B. Ze bevat 2 elementen die beide betrekking hebben op wat men zou kunnen omschrijven als 'afvalvermijdingsgedrag'. Klasse D bevindt zich eveneens op het hoogste niveau en ze is tevens ook de grootste klasse van sorteergedragingen met haar 4 elementen. Ze is verbonden met klasse B en met de lege klasse. Klasse D lijkt bestempeld te kunnen worden als 'sorteren en de energie die

dat kost'. De nulklasse bevat 3 elementen, namelijk 'afval verbranden', 'meer betalen voor milieuvriendelijke producten' en 'het betalen van de prijzen van al de zakken en bakken'. Deze 3 elementen hebben geen plaats gekregen binnen het totale schema. Mogelijke redenen hiervoor komen verder aan bod.

Figuur 3: HICLAS-schema in rang 3 van sorteergedragingen en sorteermotivaties met globale goodness-of-fit-waarde 0.887.

Nulklasse: afval verbranden, meer betalen voor milieuvriendelijke producten en het betalen van de prijzen van al de zakken en bakken

Klasse C

*Overtollig verpakkingsafval zo veel mogelijk vermijden (1.000)
*Afval in de eigen vuilzakken zo veel mogelijk beperken (0.909)

Klasse D

*Afval sorteren (1.000)
*Glas sorteren (1.000)
*Tijd besteden aan afval (0.923)
*Sorteren vraagt een aanpassing van gewoonten (0.916)

Klasse A

*Composteren (1.000) *Lezen van sorteerinformatie (0.714)

Klasse B

*Kopen van milieuvriendelijke producten (0.800)

Lege klasse

Klasse 1

*Financieel voordeliger (0.750)

Lege klasse

Klasse 2

*Verantwoordelijkheid nemen t.o.v. mijn buurt (1.000)
*Zelfrespect (0.800)
*Goede burger zijn (0.600)

Nulklasse: niet dwarsliggen, zie het nut er niet van in, het is verplicht, boetes voorkomen, kost tijd en moeite

Klasse 3

*Uit principe (1.000)
*Goed gevoel (voldoening) (1.000)
*Gezondheid / hygiëne (0.875)

Klasse 4

*Positief voor het milieu (1.000)
*Nuttig voor de maatschappij (1.000)
*Zorg voor de Aarde (0.899)
*Verantwoordelijkheid nemen t.o.v. de maatschappij (0.888)

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De hiërarchie van de sorteermotivaties bevat eveneens 5 klassen waarvan er één leeg is. Het aantal hiërarchische niveaus bedraagt hier echter 3. De structuur is ook hier volledig geïntegreerd.

Klasse 1 bevat slechts 1 element, 'financieel voordeliger'. De tweede klasse op het laagste niveau is een lege klasse. Klasse 2 heeft 3 elementen waarvan de aard op het eerste gezicht niet zo gelijkend is. 'Zelfrespect' lijkt, ondanks zijn hogere prototypicaliteit, minder aanknoping te vinden dan de andere twee elementen van deze klasse met elkaar doen. Klasse 3 is de enige klasse op het tweede hiërarchisch niveau. Ze bevat 4 elementen die ook vrij divers van aard zijn. 'Uit principe' en 'goed gevoel (voldoening)' hebben de hoogst mogelijke prototypicaliteit. Klasse 3 heeft connectie met de lege klasse en met klasse 2, maar niet met klasse 1. Op het derde en hoogste niveau vindt men klasse 4 terug. Dit is de grootste klasse binnen de hele structuur en bevat 5 elementen. De elementen die tot klasse 4 behoren, zijn eerder algemene, zeer brede waarden en motivaties met als thema milieu en maatschappij. Klasse 4 is verbonden met klasse 3 en met klasse 1. Op deze manier behoort klasse 4 dus tot alle drie de bundels van de structuur. Ze is dus 'alom aanwezig'. De nulklasse bij de sorteermotivaties bevat vijf elementen, namelijk 'niet dwarsliggen', 'zie er het nut niet van in', 'het is verplicht', 'boetes voorkomen' en 'kost tijd en moeite'. Mogelijke oorzaken waarom deze elementen niet in de structuur werden opgenomen komen verder aan bod.

Wat nu volgt is een tentatieve interpretatie van de globale structuur en haar klassen van de HICLAS-analyse in rang 3. Voor alle duidelijkheid willen we hier nog even aanhalen dat de inzichten die verworven worden door het interpreteren van een HICLAS-structuur hier aanzien worden als een geheel van hypothetische uitspraken die als inspiratiebron kunnen gebruikt worden voor nadere reflectie en verder onderzoek (cf. De Boeck & Maris, 1990).

Klasse A is geassocieerd met klasse 1. Beide klassen zijn basisklassen, dit wil zeggen klassen op het meest specifieke niveau. De gemiddelde respondent uit onze steekproef gaf dus blijk van te composteren en sorteerinformatie te lezen (klasse A) omdat dit in de eerste plaats financieel voordeliger (klasse 1) is. De gedragingen van klasse A zijn echter ook

gebed in algemenere waarden en motivaties zoals we die terug vinden in klasse 4. Deze zeer algemene waarden aangaande milieu en maatschappij zijn dus ook een motivationele bodem om te composteren en sorteerinformatie te lezen. Composteren en sorteerinformatie lezen werd door de gemiddelde respondent echter niet gerelateerd aan o.a. 'verantwoordelijkheid nemen t.o.v. mijn buurt', 'uit principe', 'gezondheid / hygiëne' en 'betere toekomst voor de kinderen'. De verantwoordelijke hiervoor is de onbestaande connectie met klasse 2 en klasse 3. Verder is het opmerkelijk dat klasse A en klasse 1 de enige klassen van het meest specifieke niveau zijn die met elkaar in verbinding staan, zonder dat één van beide leeg is (wat bij de twee andere bundels wel het geval is). Dit betekent dat dit de enige associatie op het meest specifieke niveau is die 'volledig' geëxpliciteerd is. Er moet namelijk geen hypothese meer gevormd worden over de mogelijke inhoud van één van beide klassen (van sorteergedragingen of van sorteermotivaties).

Klasse B ('kopen van milieuvriendelijke producten') is geassocieerd met een lege klasse op het meest specifieke niveau. Verder staat klasse B in verbinding met klasse 3 en klasse 4. Zoals De Boeck & Maris (1990) stellen, kan men vertrekkende van de inhoud van de uitbreidingsklassen (klasse 3 en klasse 4) een gissing maken van wat er in de lege basisklasse had kunnen staan. Mogelijke elementen die in deze lege basisklasse hadden kunnen voorkomen (als we ze in het rooster hadden aangeboden natuurlijk) zijn motivaties die inzake betekenis neigen naar elementen als: appreciatie van milieuvriendelijke producenten, tijd besparen bij het sorteren achteraf en goede (subjectief aangevoelde) verhouding tussen de prijs van het product en de belasting op het milieu. Het moet echter duidelijk gesteld worden dat deze voorstellen slechts tentatieve pogingen zijn en dat deze in dit stadium van het onderzoek niet 'hard' gemaakt kunnen worden. Het invullen van deze lege klasse is niet evident omdat de motivaties die gevat zitten in de term 'milieuvriendelijk' aan bod komen op een hoger hiërarchisch niveau. Inderdaad, de motivaties die behoren tot klasse 4 zijn intuïtief makkelijker en ook directer te koppelen aan het kopen van milieuvriendelijke producten. Klasse 3 staat ook in verbinding met klasse B. Een algemene noemer plakken op het soort motivaties van klasse 3 is niet gemakkelijk, juist omdat ze eerder heterogeen van aard zijn. Ondanks deze heterogeniteit inzake semantische betekenis, werden deze sorteermotivaties toch in dezelfde klasse ondergebracht en zijn ze dus van

toepassing op hetzelfde patroon van gedragingen. Wat mogelijks geopperd zou kunnen worden als een noemer van klasse 3, is een vorm van "persoonlijke motivatie". Met 'persoonlijk' bedoelen we dan betrekking hebbend op de zeer nabije omgeving van de persoon zelf. Zo hebben 'goed gevoel', 'uit principe' en 'gezondheid / hygiëne' hun effect op de persoon zelf en is 'betere toekomst voor de kinderen' van toepassing op de persoonlijke sociale omgeving van het subject. Men zou kunnen stellen dat deze motivaties niet ruimer georiënteerd zijn naar de maatschappij of het milieu toe. De elementen van klasse 4 zijn dit wel.

De derde basisklasse in de hiërarchie van de gedragingen is de tweede lege klasse in de totale structuur die invulling vraagt. Deze klasse staat in directe verbinding met klasse 2, die de elementen 'verantwoordelijkheid t.o.v. mijn buurt', 'zelfrespect' en 'goede burger zijn' bevat. Klasse D is de klasse die hiërarchisch boven de lege klasse staat. Mogelijke invullingen van deze lege klasse zijn misschien te zoeken in volgende richtingen: 'opruimen van straatafval', 'netjes houden van mijn trottoir' en 'respecteren van de aangelegde parkjes of pleintjes voor gemeenschappelijk gebruik in mijn wijk'. We formuleerden deze voorstellen vanuit de opinie dat als klasse 2 het meest specifiek van toepassing zou moeten zijn op de inhoud van deze lege klasse, de inhoud ervan duidelijk zou moeten (kunnen) wijzen op gedragingen die betrekking hebben op de woonomgeving van de respondenten. Klasse 2 lijkt inderdaad te maken te hebben met motiveringen die spruiten uit de eerder genoemde 'burgerzin' (Smeesters et al., 1998). De aanwezigheid van het element 'zelfrespect' is moeilijker te plaatsen binnen de betekeniscontext van klasse 2.

De vorige drie paragrafen zijn steeds gestart vanuit de basisklassen van de hiërarchie van de gedragingen. Nu wordt het 'gezichtsveld' opengetrokken naar de klassen die hoger in de hiërarchie staan en dus een uitbreiding vormen van de basisklassen. Klasse C heeft ondanks zijn hogere plaats binnen de hiërarchie toch een vrij specifieke inhoud als men zijn twee elementen nader bekijkt. 'Overtollig verpakkingsafval zo veel mogelijk vermijden' en 'afval in de eigen vuilzakken zo veel mogelijk beperken' zou men het label 'beperking van de afvalhoeveelheid' kunnen opplakken. Klasse C is verbonden met klasse A en klasse B, maar niet met de lege basisklasse. Een mogelijke logische verklaring hiervan zou kunnen zijn

dat zowel de elementen van klasse A als van klasse B als 'onderdelen' van de beperking van de hoeveelheid afval gezien kunnen worden. De aard van de onderdelen is echter te verschillend om in één klasse ondergebracht te kunnen worden. Klasse C incorporeert de eigenschappen van deze twee klassen en koppelt er afvalbeperking aan vast. Klasse C heeft dus ook een complexere samenhang met de motivatiezijde omdat ze zowel deel uitmaakt van de bundel gevormd door klassen C, A, 1 en 4, als van de bundel gevormd door klassen C, D, B, lege klasse (motivaties), 3 en 4. Zo goed als het volledige motivationele patroon is van toepassing op klasse C behalve de motivaties die aanwezig zijn in klasse 2. Dit kan verklaard worden door de impressie dat de gedragingen aanwezig in klassen A, B en C te zien zijn als gedragingen die ondersteund worden door meer individueel gerichte motivaties (cf. de redenering hierboven omtrent de "persoonlijke motivaties"). Er hoeven geen andere personen betrokken te zijn als men naar de inhoud van klasse 1, klasse 3 en de voorgestelde inhoud van de lege basisklasse bij de motivaties kijkt. Hoewel deze motivaties in ruimere effecten kunnen ressorteren, is hun eerste agendapunt toch de individuele persoon of de nabije omgeving. Echter niet de maatschappij. Klasse 4 staat ook in verbinding met klasse C en duidt de complementaire aanwezigheid aan van de meer algemene en ruimere motivaties bij de gedragingen van klasse C.

Klasse D staat op dezelfde hoogte als klasse C binnen de hiërarchie van de gedragingen en is verbonden met klasse B en de lege klasse van de gedragingen. Klasse D is algemener en ook diverser van inhoud dan klasse C. Klasse D lijkt de verzameling te zijn van de gedragingen die als gemene deler 'energie besteden aan sorteren' hebben. Klasse D zou impliciet ook iets moeten bevatten van het 'wijkgericht' gedrag dat voorgesteld werd als mogelijke invulling van de lege basisklasse, hoewel dit moeilijk af te leiden valt uit de semantische betekenis van de elementen van klasse D. Klasse D behoort tot twee bundels, namelijk deze gevormd door klassen C, D, B, lege klasse (motivaties), 3 en 4, en de bundel samengesteld uit klassen D, lege klasse (gedragingen), 2, 3 en 4. Ook hier dus een uitgebreid motivationeel patroon dat geassocieerd wordt met de gedragingen uit klasse D. Alleen klasse 1 ('financieel voordeliger') van de sorteermotivaties is niet gelinkt met klasse D. De algemenere categorieën van sorteergedrag lijken dus niet financieel gemotiveerd te (kunnen) zijn. Dat bijvoorbeeld klasse B niet gelinkt is met 'financieel voordeliger' is vanuit

de praktijk best te begrijpen aangezien men voor milieuvriendelijke producten vaak meer geld moet neertellen dan voor producten die het niet zo nauw nemen met het milieu. Hier is het dus duidelijk dat dit gedrag niet financieel gemotiveerd kán zijn. Van de algemene sorteergedragingen kunnen we vermoedelijk uitgaan dat ze intrinsiek niet gekoppeld zijn aan financiële motivaties hoewel ze dat wel hadden 'kunnen' zijn. Het complete repertoire van de individueel georiënteerde motivaties is aanwezig alsook de 'burgerzin' van klasse 2 en de dieperliggende algemene motieven betreffende milieu en maatschappij.

Klasse 4 is de hiërarchisch hoogst geplaatste klasse van de structuur. Haar 'invloed' verspreidt zich dan ook over alle klassen van gedragingen, zonder enige uitzondering. Deze motivaties hebben dus een wijdverspreide impact binnen de hiërarchie. Ze liggen als het ware aan de basis van de andere, vaak specifiekere, motivaties. Binnen klasse 4 kunnen we toch nog 2 'groepen' zien, namelijk een groep gevormd rond milieu en een groep gevormd rond maatschappij. De gedragspatronen die door de respondenten gekoppeld werden aan beide soorten motivaties waren dus klaarblijkelijk zeer gelijkend, zelfs zo gelijkend dat er één overkoepelende klasse van deze motivaties werd gevormd in de HICLAS-analyse.

Rest ons nog de nulklassen aan te halen. Aan de zijde van de gedragingen bevat de nulklasse drie elementen. 'Afval verbranden' is moeilijk te koppelen aan de vooral 'positieve' motivaties die in het rooster werden aangeboden, vandaar wellicht dat dit element geen plaats kreeg binnen de HICLAS-structuur. Voor 'afval verbranden' kon men reeds vanuit het niet-geanalyseerde globale rooster vaststellen dat het niet in de oplossing zou verschijnen, omdat de rij van 'afval verbranden' volledig uit nullen bestaat (zie bijlage 4). De twee andere elementen hebben nogal een vrij sterke financiële connotatie meegekregen in hun verwoording ('meer betalen voor milieuvriendelijke producten' en 'het betalen van de prijzen van al de zakken en bakken). Een mogelijke hypothese is dat de aanwezigheid van de term 'betalen' te sterk was en deze de respondenten enkel en alleen op het financiële spoor heeft gezet en tegelijkertijd de andere motivationele kanalen heeft omfloerst met 'ontoegankelijkheid'. Dit zou dan vervolgens aanleiding kunnen gegeven hebben tot het bijna niet scoren van toepasselijke motivaties voor dit gedrag, wat op zijn beurt dan de afwezigheid in de structuur met zich zou meebrengen.

Aan de zijde van de sorteermotivaties zijn er vijf elementen die behoren tot de nulklasse. Aangaande de inhoud van de nulklasse van sorteermotivaties gaf het niet-geanalyseerde globale rooster (zie bijlage 4) reeds een deel van zijn 'geheimen' prijs. Vier van de vijf elementen die uiteindelijk in de nulklasse zijn terechtgekomen, konden reeds geïdentificeerd worden in het globale rooster via de inhoud van hun respectievelijke kolommen. Deze kolommen bestonden namelijk volledig uit nullen. Alleen de kolom van 'kost tijd en moeite' vormde hierop een uitzondering. We trachten deze vaststellingen te verklaren vanuit een interpretatief standpunt. Aangaande de elementen 'niet dwarsliggen' en 'zie er het nut niet van in' kunnen we met een vrij grote zekerheid stellen dat deze niet in de HICLAS-structuur werden opgenomen omdat deze motiveringen negatief zijn geformuleerd en onvoldoende 'krachtig' waren ten opzichte van andere sorteermotivaties om zichzelf als het ware in de structuur te 'duwen'. Het 'overwicht' van de positief geformuleerde motivaties was wellicht te groot om de invloed van deze negatief geformuleerde motivaties zichtbaar te maken binnen de HICLAS-structuur. 'Het is verplicht' en 'kost tijd en moeite' kunnen aanzien worden als eerder zijnde vaststellingen dan echte motivaties om een sorteergedrag te stellen. Zeker bij 'kost tijd en moeite' gaat dit argument op. 'Boetes voorkomen' bleek ook geen plaats te krijgen in de HICLAS-structuur. Mogelijk is de regelgeving betreffende de boetes in de praktijk nog niet zichtbaar en hebben daarom vele respondenten deze motivatie als niet toepasselijk gescoord. Verder is deze motivatie ook eerder negatief en heeft ze bijvoorbeeld toch een andere bijklank dan 'financieel voordeliger'. Vooral aan de zijde van de sorteermotivaties is dus uit de inhoud van de nulklasse gebleken dat de woordelijke formulering van de elementen een belangrijke rol speelt. Verdere methodologische opmerkingen en andere kritieken komen uitgebreider aan bod in de algemene discussie.

Zoals bleek uit deze bespreking van de oplossing in rang 3, waren er sommige klassen die intuïtief eerder té omvattend en divers waren. Dit argument te samen met de nieuwsgierigheid wat een oplossing van een hogere rang ons aan extra's zou aanreiken, was de aanleiding om ook de oplossing in rang 4 op te nemen in de resultatensectie. We gaan deze oplossing niet in detail bespreken. We wensen enkel relevante verschillen en gelijkenissen even in de verf te zetten. Het HICLAS-schema van de oplossing in rang 4 is

weergegeven in figuur 4. De principes van de identificatie van de verschillende klassen binnen elk van de hiërarchieën zijn dezelfde als deze die bij de oplossing in rang 3 zijn aangewend (zie hoger). De klassen die betrokken zijn bij wijzigingen waarop we speciaal de aandacht willen vestigen, zijn ter verduidelijking cursief en op een grijze achtergrond afgedrukt in het schema.

In rang 4 hebben we ook een totaal geïntegreerde structuur, net zoals in rang 3. Opmerkelijk is dat er twee lege basisklassen bijkomen en dat er één basisklasse uit rang 3 ('kopen van milieuvriendelijke producten') een trap hoger is gaan staan om plaats te maken voor een basisklasse met een andere inhoud ('meer betalen voor milieuvriendelijke producten').

Figuur 4: HICLAS-schema in rang 4 van sorteergedragingen en sorteermotivaties, met globale goodness-of-fit-waarde 0.918.

(wijzigingen t.o.v. rang 3 die in de bespreking worden opgenomen zijn cursief en op grijze achtergrond afgedrukt)

Nulklasse: afval verbranden en het betalen van de prijzen van al de zakken en bakken

Klasse D
*Afval sorteren (1.000)
*Glas sorteren (1.000)
*Tijd besteden aan afval (0.923)
*Sorteren vraagt een aanpassing van gewoonten (0.916)

Klasse E
*Overtollig verpakkingsafval zo veel mogelijk vermijden (1.000)
*Afval in de eigen vuilzakken zo veel mogelijk beperken (0.900)

Klasse C
*Kopen van milieuvriendelijke producten (0.800)

Lege klasse

Klasse A
*Meer betalen voor milieuvriendelijke

Lege klasse

Klasse B
*Lezen van sorteerinformatie (0.714)

Lege klasse

Lege klasse

Klasse 1
*Verantwoordelijkheid nemen t.o.v.mijn buurt (1.000)
*Zelfrespect (0.800)
*Goede burger zijn (0.600)

Klasse 2
*Financieel voordeliger (0.750)

Klasse 3
*Uit principe (1.000)
*Goed gevoel (voldoening) (1.000)

Klasse 4
*Gezondheid / hygiëne

Klasse 5
*Positief voor het milieu (1.000)
*Nuttig voor de maatschappij (1.000)
*Verantwoordelijkheid nemen t.o.v. de maatschappij (0.888)

Klasse 6
*Zorg voor de Aarde (1.000)

Nulklasse: niet dwarsliggen, zie het nut er niet van in, het is verplicht, boetes voorkomen, kost tijd en moeite

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Als we onze aandacht richten naar de bovenzijde van het schema, dan merken we dat de twee klassen die het hoogst in de hiërarchie staan, onveranderd zijn gebleven inzake de inhoud en dat het motivatiepatroon waarmee ze geassocieerd zijn quasi gelijk is gebleven. 'Kopen van milieuvriendelijke producten' is een uitbreidingsklasse geworden en heeft nu twee klassen onder zich, namelijk een lege klasse en klasse A ('meer betalen voor milieuvriendelijke producten'). Het kopen van milieuvriendelijke producten draagt dus blijkbaar meerdere aspecten in zich. Een soort 'prijsaspect' (cf. klasse A) en andere aspecten die verholen zitten in de lege klasse. Het trachten invullen van deze lege klasse is hier extra moeilijk omdat deze lege klasse met een lege klasse van sorteermotivaties geassocieerd is, wat de interpretatie stellig bemoeilijkt.

De zijde van de sorteermotivaties heeft eveneens enkele veranderingen ondergaan. De klasse die we in rang drie bestempeld hadden als 'persoonlijke motivatie' hier uiteengevallen in 2 klassen (klasse 3 en klasse 4). Men zou kunnen spreken van een opdeling naar 'het fysische' en 'het psychische'. De elementen uit klasse 3 zijn inderdaad duidelijker te plaatsen binnen een emotioneel of cognitief geconnoteerde betekeniscontext, waar 'gezondheid / hygiëne' uit klasse 4 voornamelijk te zien is binnen de 'lichamelijke' context. De hiërarchisch hoogst geplaatste klasse uit rang 3 valt hier ook uit elkaar in 2 klassen (klasse 5 en klasse 6). Deze opsplitsing staaft deels het vermoeden dat er binnen deze klasse nog 2 groepen aanwezig waren. De aard van de groepen die we hierboven postuleerden was milieugericht en maatschappijgericht. Deze splitsing vinden we in rang 4 echter niet terug. Het lijkt er eerder op dat de splitsing die hier gebeurd is meer betrekking had op de dimensie algemeenheid en wijdverspreidheid. De elementen van klasse 6, 'zorg voor de Aarde' en 'milieubewustzijn', dragen inderdaad meer holistische kenmerken in zich dan de elementen van klasse 5. De sorteermotivaties van klasse 5 zijn ook algemene motivaties te noemen, maar hun aard is toch van een minder allesomvattend allooi dan de elementen van klasse 6. Een laatste opmerking bij de hiërarchie van de sorteermotivaties heeft betrekking op de nulklasse. Zowel het aantal elementen als de elementen zelf zijn gelijk gebleven bij de overgang naar een analyse in rang 4.

Als we de resultaten van rang 3 en rang 4 naast elkaar plaatsen, dan komen we tot de vaststelling dat de structuur van rang 3 "robuust" te noemen is in die zin dat de overgang naar de complexere analyse in rang 4 geen echt fundamentele veranderingen of verschuivingen naar voren brengt. De betekenislijnen die men door de beide schema's kan trekken zijn zo goed als dezelfde op een paar uitzonderingen na. Wat ons inzake interpretatie het meest aan bijkomende informatie heeft opgeleverd, is de ontdubbeling van enkele klassen waarvan de inhoud ons eerder al als zeer divers was overgekomen. Het aantal elementen (sorteergedragingen en sorteermotivaties) dat additioneel in de structuur werd opgenomen bij de overgang van rang 3 naar rang 4 bleef beperkt tot één ('meer betalen voor milieuvriendelijke producten'). De reeds hoge goodness-of-fit-waarde in rang 3 en de beperkte toename ervan waar rang 4 voor kon zorgen (+ 0,031) kunnen gezien worden als kwantitatieve staving van de verkregen stabiliteit tussen rang 3 en rang 4. Het vergelijken van de oplossingen in deze twee rangen heeft ons dus nuttige informatie opgeleverd aangaande: (1) de 'houdbaarheid' van de interpretaties op basis van rang 3, (2) de opname van de meest relevante elementen in rang 3 (slechts één element kwam erbij in rang 4) en (3) de uiteindelijke opsplitsing van klassen in rang 4 die ons in rang 3 reeds al het vermoeden deden vormen dat er binnen deze klassen nog groeperingen konden gebeuren. Deze bijkomende analyse in rang 4 heeft met ander woorden de draagwijdte van de interpretatieve denklijnen, geformuleerd in rang 3, vergroot en tevens sterker gefundeerd door te voorzien in een context waarin het schema van rang 3 naar waarde geschat kon worden.

2.2.3. Onderlinge vergelijking van HICLAS-schema's

Binnen deze paragraaf willen we zeer beknopt de resultaten weergeven van een vergelijking van HICLAS-schema's. De basis van de vergelijking is echter anders dan de korte vergelijking tussen het schema in rang 3 en in rang 4 hierboven, waar de ruwe data (het 'globaal rooster') dezelfde waren. De HICLAS-schema's die we hier naast elkaar gaan zetten, baseren zich niet langer op dezelfde dataset. We lichten dit even verder toe. Via een 'median split' op een bepaalde waardenoriëntatievariabele (tweede deel van de vragenlijst), bekwamen we twee groepen van respondenten. Voor elk van deze twee groepen

berekenden we een 'globaal rooster' op een volledig analoge manier aan diegene die we eerder hebben beschreven (p 40-41). Deze twee roosters werden dan onderworpen aan een HICLAS-analyse en de hieruit resulterende schema's worden hier besproken.

Deze aanvulling op het voorgaande 'hoofdonderzoek' heeft een drietal verantwoordingen. Ten eerste willen we, door te gaan differentiëren op bepaalde variabelen, de hypothesen en bevindingen verder verfijnen voor respondenten uit specifiekere groepen. Ten tweede willen we trachten om voor deze nauwer afgelijnde groepen het sorteergedrag verder te 'ontsluieren'. Ten slotte willen we nagaan of de waardenoriëntaties waarop we de groep hebben gesplitst zich ook als het ware 'doordrukken' in het uiteindelijke HICLAS-schema, waardoor we tevens een indicatie krijgen van de constructvaliditeit van de HICLAS-methode.

We hebben twee waarden van naderbij bekeken. Eerst vergelijken we de HICLAS-schema van de groep respondenten met een hoge betrokkenheid op het milieu ('environmental concern') met het schema van de groep respondenten met een lage betrokkenheid op het milieu. Deze waarde hebben we gekozen omdat we ons een beeld wilden vormen van de invloed ervan in ons onderzoek, vooral omdat deze waarde reeds zoveel aan bod is gekomen in eerder onderzoek. Vervolgens vergelijken we de HICLAS-schema's van de groepen met een hoge respectievelijk lage score op 'burgerzin'. De reden om deze waarde te kiezen was het verschil tussen de resultaten van Smeesters et al. (1999) en onze eigen resultaten. Een splitsing op basis van deze waarde zou wellicht meer inzicht kunnen verschaffen in deze waarde.

De bespreking die volgt is zeer beknopt gehouden. We richten ons onmiddellijk op relevante verschillen en gelijkenissen tussen de schema's zonder deze schema's eerst afzonderlijk te bespreken. Andere zaken die dit deel van het onderzoek completer hadden gemaakt, zoals een beschrijving van de respondenten van elke groep, het bespreken van verschillende rangen, et cetera, worden hier (bewust) achterwege gelaten omdat ze deze verhandeling te zeer zouden uitbreiden.

<u>2.2.3.1. Hoge en lage 'environmental concern' (EC)</u>

Met 'hoge' en 'lage' EC bedoelen we in deze resultatensectie respectievelijk boven de mediaan en onder de mediaan. In de totale proefgroep lagen de scores op EC hoog (gemiddeld 0.82). De mediaan voor EC was '1', wat ook de maximumscore was voor deze waardenschaal. Het is dus duidelijk dat hoog en laag in het juiste perspectief gezien moeten worden. We namen de respondenten die, gemiddeld over de 4 vragen met betrekking tot EC, een '1' scoorden samen tot de hoge EC groep (N=60) en de respondenten die niet het maximum scoorden tot de lage EC groep (N=35). Per groep werd een 'globaal rooster' samengesteld en op deze roosters werd HICLAS toegepast.

Om de vergelijkbaarheid te optimaliseren hebben we beide HICLAS-oplossingen in rang 3 weergegeven. Op die manier is het tevens ook eenvoudiger om deze oplossingen naast de algemene oplossing van de 'gemiddelde respondent' te leggen. Zonder volledigheid te willen ambiëren, halen we slechts een aantal markante aspecten uit de beide HICLAS-schema's. De figuren van de beide HICLAS-schema's vindt u in de Appendix.

In het het schema van de hoge EC groep valt het op dat er 2 grote klassen zijn (klasse A en klasse 3). Dit deed ons vermoeden dat in de hoge EC groep, de EC-waarde als het ware de andere waarden 'overschaduwt'. We bedoelen hiermee dat hoge EC respondenten voor bijna alle gedragingen een EC-motivatie zien. De vaststelling dat de nulklasse slechts één element ('afval verbranden') bevat, staaft ook deze redenering. Door deze neiging om zo goed als alles vanuit het EC-perspectief te zien, is hun HICLAS-schema ook duidelijk minder gedifferentieerd (minder klassen) dan het schema van de lage EC groep. Het is zeer opvallend hoe 'versnipperd' de sorteergedragingen georganiseerd zijn bij de lage EC groep. We zouden kunnen stellen dat de lage EC groep meer moet 'zoeken' naar een motivatie om bepaalde sorteergedragingen te stellen, daar waar de hoge EC groep er altijd één klaar heeft (EC dus).

Een tweede aandachtspunt betreft de mate van integratie binnen elk schema. Terwijl het schema van de lage EC groep volledig geïntegreerd is, bemerken we dat er bij de hoge EC groep een soort 'aftakking' bestaat. De bundel van de klassen 4, 2 en B vormt inderdaad een apart onderdeel. De redenering die hierachter zou kunnen zitten is dat mensen uit de hoge EC groep 'het betalen van de prijzen van al de zakken en bakken' zien als een soort 'verplicht' addendum bij de andere sorteergedragingen. De financiële incentieven schijnen niet belangrijk voor hen ('financieel voordeliger' zit bijvoorbeeld in de nulklasse). Deze incentieven 'horen nu eenmaal bij' al het sorteergedrag. Men zou dit kunnen zien als een soort vaststelling, eerder dan een motivatie op zich. 'Financieel voordeliger' zit bij de lage EC groep wél in de structuur, daar waar al de 'betaalgedragingen' hier in de nulklasse staan (wat we ook in het schema voor de totale groep respondenten konden zien). 'Composteren', 'afval beperken' en 'verpakkingsafval vermijden' zijn voor de lage EC groep verbonden met een financieel motief.

Zowel in de hiërarchie van de lage EC groep als van de hoge EC groep, kunnen we vaststellen dat de milieugerichte waarden bij beide structuren in de hoogste klasse zitten. Dit kan verklaard worden vanuit de sterke EC gerichtheid van de totale proefgroep. Dat de mediaan het maximum was, is hier een goed bewijs van. Ook het HICLAS-schema van de 'gemiddelde respondent' gaf dit immers ook duidelijk weer.

De klasse 4 bij de lage EC groep is eenvormiger samengesteld dan klasse 3 die bij de hoge EC groep dezelfde positie in de hiërarchie heeft. Ook in het schema voor de totale groep respondenten was deze klasse diverser en moeilijker om een noemer op te plakken. Bij de lage EC groep zou men klasse 4 de 'sociale bewogenheid' kunnen noemen. Binnen de klasse zelf zit trouwens een mooie overgang van zeer nabij in de sociale omgeving ('betere toekomst voor de kinderen'), via de buurt naar de algemenere maatschappij.

Samengevat kunnen we dus stellen dat de hoge EC groep meer zaken onder dezelfde noemer plaatst dan de lage EC groep die meer gedifferentieerd te werk gaat. De hoge EC groep blijkt weinig vatbaar te zijn voor financiële incentieven, daar waar de lage EC groep hier voor bepaalde sorteergedragingen wel gevoelig aan is. Beide groepen hebben sterke

EC gerichtheid wat bleek uit de waarde van de mediaan en de HICLAS-schema's. 'Hoog' en 'laag' moeten in deze context dus zeker niet 'absoluut' geïnterpreteerd worden.

<u>2.2.3.2. Hoge en lage burgerzin (BZ)</u>

BZ werd gemeten via drie items (telkens gescoord van 1 tot en met 5) in de vragenlijst. Op basis van deze drie scores werd voor elke respondent een gemiddelde score op BZ berekend. Deze gemiddelde score deed dienst als waardenoriëntatie op BZ. De mediaan voor de waardenoriëntatie op BZ was gelijk aan 3,66. De respondenten met een gemiddelde dat lager lag of gelijk was aan 3,66 werden opgenomen in de groep met lage BZ (N=48) en de anderen in de groep met hoge BZ (N=47). De verdeling van het aantal respondenten over de groepen is hier veel evenwichtiger dan bij de groepen voor EC (N=60 en N=35). De figuren van de beide HICLAS-schema's vindt u in de Appendix.

De hoge BZ groep heeft net als de lage BZ groep een volledig geïntegreerd schema. In het schema van de hoge BZ groep valt het op dat 'goede burger zijn' hiërarchisch tot het tweede niveau verheven is. Bij het schema van de totale groep stond dit element op het meest specifieke niveau en bij het schema van de lage BZ groep staat het zelfs in de nulklasse. Het criterium waarmee gesplitst werd (de score op de waarde BZ), wordt dus op het niveau van de HICLAS-schema's zeer goed weergegeven. Het element 'verantwoordelijkheid t.o.v. mijn buurt', waarvan we vermoeden dat ook onder BZ ressorteert (maar dit zou via bijkomend onderzoek gestaafd moeten worden), zit in beide structuren op het meest specifieke niveau.

Als we de zijde van de sorteermotivaties bekijken van beide HICLAS-schema's, dan krijgen we van de lage BZ groep de indruk dat zij meer op de 'nabije omgeving' (vooral persoon en gezin) gericht zijn dan de hoge BZ groep. Klasse 4 bevat 'betere toekomst voor de kinderen' en 'gezondheid / hygiëne', naast twee andere motivaties. Bij alle andere schema's die tot nu toe aan bod zijn gekomen hebben deze twee motivaties zich nooit op het hoogste schavot bevonden. In vergelijking met het schema op de totale groep respondenten (zie figuur 4) hebben deze twee individuelere motivaties twee meer prosociale

motivaties ('nuttig voor de maatschappij' en 'positief voor het milieu') naar een lager niveau verwezen. Het motivatiepatroon van de groep met hoge BZ ligt grosso modo in dezelfde lijn als het patroon dat we hebben gezien bij de analyse op de totale groep respondenten.

Samengevat bracht deze splitsing op basis van BZ aan het licht dat HICLAS het verschil in waardenoriëntatie inzake BZ zeer goed weergeeft en dat de lage BZ groep de impressie geeft (op basis van het HICLAS-schema) van motivaties met betrekking tot de 'nabije omgeving' hoger te plaatsen dan de respondenten uit de hoge BZ groep dat doen.

2.2.4. Samenvattend overzicht van de HICLAS-resultaten

In deze paragraaf willen we de voornaamste bevindingen opsommen zonder ze te nuanceren of met elkaar in verband te brengen (hiervoor verwijzen we naar de uitgebreide weergave van de resultaten en de algemene discussie). Volgende bevindingen waren opvallend bij de HICLAS-analyse van het 'globaal rooster' (van de gemiddelde respondent):

- Rang 3 gaf reeds een hoge goodness-of-fit-waarde (0.887)
- De hiërarchisch hoogst geplaatste klassen bij de sorteergedragingen kan men benoemen als 'afvalvermijdingsgedrag' en 'sorteren en de eraan gekoppelde energie'
- De hoogst geplaatste klasse bij de sorteermotivaties was gevuld met zeer holistische motivaties aangaande milieu en maatschappij
- Op het tweede hiërarchisch niveau werd bij de motivaties één klasse gegenereerd die we kunnen plaatsen onder de noemer 'individueler georiënteerde motivaties'
- Burgerzin bleek hier een specifiekere motivatie te zijn dan op basis van Smeesters et al. (1999) werd verwacht
- Financiële aspecten werden door de gemiddelde respondent als minder relevant beschouwd (alleen aanwezig op het meest specifieke niveau of in de nulklasse)
- De nulklassen werden ten dele gekoppeld aan het onderzoeksmateriaal (zie ook verder)

Met betrekking tot de splitsing in groepen op basis van de waardenoriëntatie kwamen we tot volgende vaststellingen:

- De hoge EC groep differentieert minder dan de lage EC groep

- De hoge EC groep heeft weinig boodschap aan financiële incentieven

- De lage BZ groep lijkt meer op de 'nabije omgeving' georiënteerd inzake sorteermotivaties

- De construct validiteit van HICLAS voor dit onderzoeksdomein werd gestaafd voor twee waardenvariabelen

2.3. Algemene en methodologische discussie

In deze discussiesectie willen we een aantal opmerkingen, ideeën en kritieken formuleren aangaande het hierboven beschreven onderzoek. Ten eerste worden de sorteergedragingen terug onder de loep genomen en in een ruimer kader geplaatst. Ten tweede komen de sorteermotivaties op nieuw aan bod. Ten derde geven we commentaar betreffende de gebruikte werkwijze en de HICLAS-methodologie. Ten slotte geven we een overzicht van de implicaties van dit onderzoek.

2.3.1. Sorteergedragingen

De 12 sorteergedragingen die in het HICLAS-onderzoek werden opgenomen, waren niet allemaal terug te vinden in het uiteindelijk schema. Een eerste algemene commentaar op de sorteergedragingen die we hebben aangeboden aan de respondenten, is dat ze vaak te algemeen van aard waren en / of te vaag werden geformuleerd. Uitzonderingen hierop waren bijvoorbeeld 'lezen van sorteerinformatie' en 'composteren'. Deze kritiek werd ook geformuleerd bij de eerder besproken studies die zich hadden toegelegd op het onderzoeken van de relaties tussen attitudes en gedragingen (Fransson & Gärling, 1999). Ook uit onderzoeken buiten de context van het sorteren, bleek dat de gedragingen en attitudes die werden gemeten vaak niet specifiek genoeg waren opdat de attitude een predictieve waarde zou kunnen hebben naar het gedrag toe (Ajzen & Fishbein, 1977). Een bijkomende aanduiding van een tekortkoming in ons aangeboden repertoire van sorteergedragingen is de aanwezigheid van een lege basisklasse in de HICLAS-structuur.

Dit wijst erop dat we bepaalde specificaties van een algemenere sorteergedraging niet hebben aangeboden, hoewel het uiteindelijke resultaat wel blijk gaf van de noodzakelijkheid hiervan.

Dat de formulering van de sorteergedragingen soms te breed of niet expliciet genoeg was, kunnen we illustreren met het element 'kopen van milieuvriendelijke producten'. Wat zijn namelijk milieuvriendelijke producten? Ten eerste zou men kunnen vermoeden dat de producten op een milieuvriendelijke wijze tot stand zijn gekomen. Ten tweede kan men denken dat de producten milieuvriendelijk verpakt zijn. Ten derde kan men vermoeden dat het natuurproducten zijn. En wellicht zijn er nog andere interpretaties aan deze termen te geven. Maar de concrete invulling die een respondent er aan geeft, is inderdaad afhankelijk van de interpretatie van de respondent. De mogelijke variabiliteit inzake interpretatie was in ons onderzoek te groot. De respondenten konden er te veel kanten mee op. Het meer specifiëren en expliciteren van de sorteergedragingen had de mogelijke variabiliteit beperkter kunnen houden.

Een tweede opmerking die betrekking heeft op het stellen van de sorteergedragingen, is het gebrek aan informatie over de situationele determinanten waaraan de respondenten worden blootgesteld. Het model van Thøgersen (1994) wees op het belang van deze externe condities die bepaalde sorteergedragingen kunnen bemoeilijken of juist vergemakkelijken. Thøgersen (1994) nam externe condities op in zijn model als een bijkomende determinant van sorteergedrag, naast de motivatie en de capaciteiten van het individu om te sorteren. In ons onderzoek hebben wij geen zicht op de mogelijke variabiliteit inzake deze situationele factoren die bij onze proefgroep aanwezig was, omdat deze factoren niet bevraagd werden. We denken hier aan factoren als de frequentie van afvalophaling, de mogelijkheden om afval te stockeren, GFT-bakken aangeboden door het gemeentebestuur, etc. Een vooronderzoek over welke van deze omgevingsfactoren een rol speelt, had ons kunnen helpen om een aantal factoren te bevragen in de vragenlijst. Op basis van deze variabelen hadden dan groepen gevormd kunnen worden, waarvan de HICLAS-structuren vergeleken konden worden om te zien welke veranderingen deze omgevingsfactoren te weeg brengen in het HICLAS-schema.

2.3.2. Sorteermotivaties

Net als een aantal sorteergedragingen waren de aangeboden sorteermotivaties vaak te vaag of te algemeen geformuleerd. Bijvoorbeeld 'zelfrespect' is een zeer brede term waar de respondenten verschillende zaken onder kunnen verstaan. Het expliciteren van de sorteermotivaties, te samen met het verder specifiëren van de sorteergedragingen, zou vermoedelijk meer aarde aan de dijk gebracht hebben. Een vaststelling die aan de zijde van de sorteermotivaties duidelijker te maken was dan aan de zijde van de sorteergedragingen, is dat de algemener geformuleerde elementen hoger in de hiërarchie staan. Aan de zijde van motivaties zijn er voorbeelden te vinden als 'milieubewustzijn' en 'zorg voor de Aarde'.

Dat ons aanbod van sorteermotivaties eigenlijk tekort schoot, kan men afleiden uit de lege basisklasse. Het verschijnen van deze lege klasse geeft aan dat er een 'missing link' is, iets wat er had moeten zijn, maar wat we in het rooster niet hebben aangeboden. Dit hoeft natuurlijk niet te wijzen op 'barstende funderingen' in ons onderzoek. Het geeft daarentegen wel aanleiding tot de vorming van hypothesen die in verder onderzoek kunnen getoetst worden op hun houdbaarheid.

Een tweede belangrijk aandachtspunt bij de sorteermotivaties is de waarde 'burgerzin'. In het onderzoek van Smeesters et al. (1999) waarop deze studie ten dele verder bouwt, werd burgerzin aan het licht gebracht als een algemene, diep aanwezige waarde. De ladders bij means-end chain van 'burgerzin' en 'milieubewustzijn' bleken namelijk zo goed als even sterk. Daarom hadden we het vermoeden dat deze waarde ook in de HICLAS-structuur hoger in de hiërarchie zou komen te staan. Dit vermoeden werd dus niet bevestigd. 'Goede burger' en 'verantwoordelijkheid t.o.v. mijn buurt' zagen wij als de duidelijkste vertegenwoordigers van deze waarde. Het bleek dat deze 2 elementen in dezelfde klasse stonden, maar wel op het meest specifieke niveau, het laagste dus. Hierdoor werd burgerzin dus in het HICLAS-schema verwezen tot de specifieke motivaties. Opmerkelijk hierbij is dat de klasse waartoe deze elementen behoorden direct geassocieerd was met de lege klasse van de sorteergedragingen. Dit wijst erop dat de gedragingen waarvoor burgerzin een

specifieke bijdrage levert, niet waren opgenomen in ons aanbod. Ook voor dit aspect vonden we geen steun bij de bevindingen van Smeesters et al. (1999).

Een derde vaststelling is dat de motivatie 'financieel voordeliger' het enige element aan de zijde van de motivaties was dat een basisklasse op zich vormde. Financieel voordeel is dus een zeer specifieke motivatie. Een echte waarde kan men deze motivatie niet noemen. De resultaten zijn vrijwel onmiddellijk en persoonlijk voelbaar. Hier zouden we de link kunnen leggen met de persoonlijke baten van een sociaal dilemma. We zouden dit ook als een soort 'instrumentele' motivatie kunnen bestempelen. Een hypothese die we naar aanleiding van deze redenering willen formuleren is: 'Als we meer instrumentele motivaties zouden aanbieden in het rooster, zouden deze motivaties dan ook vaker in de specifieke regionen van de HICLAS-structuur belanden?'. Andere mogelijke instrumentele motivaties die ons zo direct voor ogen komen zijn o.a.. 'bespaart plaats in mijn huis' en 'geeft te veel geurhinder'. Het zou een interessante vaststelling zijn om de meer instrumentele motivaties terug te vinden in de basisklassen van de sorteermotivaties (een voorwaarde hiervoor is natuurlijk ook het aanbieden van voldoende gespecifieerde waarden). Dit zou relevante aanwijzingen kunnen geven naar de praktijk van sociale marketing toe.

2.3.3. Werkwijze en HICLAS-methodologie

In deze paragraaf zal de opbouw en uitvoering van ons onderzoek van dichterbij bekeken worden. We vangen aan met een kritische analyse van ons onderzoeksinstrument en daarna met een evaluatie van de verwerking ervan via HICLAS.

Zoals reeds geponeerd werd bij de sorteergedragingen en de sorteermotivaties, konden we vaststellen dat de elementen die we in ons rooster tot scoring hebben aangeboden vaak te weinig specifiek of te weinig expliciet van aard waren. Soms gaf de formulering in woordelijke termen te veel aanleiding tot variabele interpretatie, waardoor de resultaten met een grotere omzichtigheid moesten behandeld worden.

De woordelijke formulering van de elementen die in het rooster betrokken worden, is in een intra-individuele onderzoekssetting veel minder een probleem. Bij intra-individueel onderzoek is dat zelfs een sterke kant van de HICLAS-methodologie (De Boeck & Maris, 1990; Van Mele et al., 1995; Van Mele, 1996; Nys, 1997). De face-validiteit voor het betrokken subject is inderdaad sterker als de verwoordingen, die het subject zelf gebruikt heeft tijdens het interview, ook terug te vinden zijn in het rooster dat hij / zij achteraf moet invullen. Vanuit het perspectief van sociale marketing is het inter-individueel onderzoeksstandpunt natuurlijk veel relevanter, zo ook dus in het voorliggend onderzoek.

Als de HICLAS-procedure strikt wordt gevolgd bij inter-individueel onderzoek, wordt er dus nog steeds van elk individu een interview afgenomen en een apart rooster (met de eigen bewoordingen van het individu) geanalyseerd Een mogelijkheid om deze individuele verwoordingen terug te brengen tot een hanteerbare set van elementen, zou erin kunnen bestaan om een soort weging te hanteren voor elk element dat de respondent vernoemt. Deze weging zou dan betrekking hebben op de associatie tussen dat bepaald element en de elementen die de onderzoekers in hun rooster (en dus in het uiteindelijke HICLAS-resultaat) willen terugzien. De wegingscoëfficiënten kan men via een ondersteunend onderzoek bekomen, waarin respondenten gevraagd worden om al de verkregen individuele verwoordingen te scoren op een schaal van nul tot tien. Deze schaal geeft de toepasselijkheid of associatie aan van de individuele terminologie met de terminologie van de onderzoekers. Nys (1997) heeft een gelijkaardig opzet gebruikt en kwam tot de bevinding dat deze gewogen methode geen duidelijke voordelen bood, omdat door de veelvuldige wegingen de verschillen tussen de scores werden 'uitgevlakt'. Een andere benadering voor dit probleem zal besproken worden bij de voorstelling van een nieuw onderzoeksparadigma (zie verder).

Het rooster dat de respondenten hebben ingevuld bevatte bij nadere inspectie ook te weinig 'conflicterende elementen'. We bedoelen hiermee dat de balans tussen de pro-sorteerelementen en de anti-sorteerelementen in het rooster duidelijk oversloeg naar de pro-sorteerzijde. Er waren inderdaad veel meer elementen in het rooster opgenomen die vanuit het standpunt van het aanmoedigen van sorteergedrag wenselijk tot noodzakelijk zijn, en

veel minder niet-wenselijke of storende elementen. 'Afval verbranden' was de enige vertegenwoordiger van gedragingen die indruisen tegen de sorteerprincipes. Aan de zijde van de sorteermotivaties was het enige negatief getinte element 'zie er het nut niet van in'. Als we het globaal rooster opnieuw bekijken, dan bemerken we dat de rij en de kolom die op deze 2 elementen van toepassing zijn volledig met nullen zijn gevuld. Geen wonder dus dat ze niet in de HICLAS-structuur werden opgenomen. Door deze eenzijdige aanbieding verkregen we natuurlijk wel een vrij gedifferentieerd beeld van de gedragingen en motivaties die aanleiding geven tot sorteren. De andere zijde van de medaille is dat we niet in staat waren om conflicterende stromen van motivaties bloot te leggen. Smeesters et al. (1998) hadden het vervolledigen van de inzichten in de ruimere motivationele achtergrond van sorteergedrag reeds als een belangrijk onderzoekspunt naar voren geschoven. Het was zeer interessant geweest om een beeld te verkrijgen van het completere motivatiepatroon dat ten gronde ligt aan sorteergedragingen en ook aan niet-sorteergedragingen. Voorbeelden van elementen die het plaatje hadden kunnen vervolledigen hadden o.a. 'afval op de straat gooien', 'sluikstorten', 'ik heb te weinig tijd', 'ik heb geen zin' en 'afval in de verkeerde zak of bak steken' kunnen zijn.

HICLAS is ongetwijfeld in staat om positieve en negatieve stromen van motivaties aan het licht te brengen, maar dan moet in het rooster een voldoende sterk evenwicht tussen de positieve en negatieve elementen aangeboden worden. Van Mele et al. (1995) en Nys (1997) hebben dit vermogen van HICLAS reeds aangesproken om zowel op intra-individueel als op inter-individueel niveau de gevoelswereld van topatleten in bepaalde competitiesituaties in kaart te brengen. Zij konden inderdaad conflicterende stromen van emoties waarnemen in de resultaten van hun onderzoek.

Tot zo ver de opmerkingen aangaande de samenstelling van het aangeboden rooster, nu gaan we ons wat meer toespitsen op de manier van scoren en de analyse van het globale rooster. Voor de scoring mochten de respondenten gebruik maken van een binair systeem (0 = '… is geen motivatie om …' en 1 = '… is een motivatie om …'). We hebben geopteerd voor deze aanpak om redenen van eenvoudigheid en tijdsinvestering voor de respondenten en om de respondenten te dwingen tot een keuze. Scores toewijzen aan de

cellen van het rooster, gebeurt, zoals eerder gezegd, vaak van nul tot en met tien. Bij gebruik van de HICLAS-analyse die wij hebben gekozen, gebeurt de analyse op een binair rooster en verdwijnt dus alle nuancering (gradatie van voorkomen) in de scores die door de respondenten werden gegeven (zij konden immers getallen van nul tot en met tien invullen). In 1997 is er aan de KULeuven echter een nieuw HICLAS-programma ontwikkeld (De Boeck, 1997). Het gaat hier om een HICLAS-analyse voor rating data (HICLASR), waarin wél in zekere mate rekening wordt gehouden met de gradaties van voorkomen van de verschillende elementen in de originele data. Met 'in zekere mate' bedoelen we dat ook HICLASR een 'extreem model' blijft aanhouden, net als de hierboven besproken vorm, omdat er nog steeds sprake is van dichotomisatie (0 of 1; alles of niets), maar er gaat minder informatie verloren, zoals zal blijken uit onderstaande uiteenzetting.

Het verschil met de 'oude' HICLAS (HICLAS) bestaat er hoofdzakelijk in dat bij HICLASR de heuristiek rekening houdt met de afwijking van de originele score ten opzichte van de dichotome waarde tot dewelke de originele score wordt omgezet. Zonder hierop gedetailleerd te willen ingaan, geven we de beschrijving van Nys (1997) weer van het omzettingsprincipe dat HICLASR gebruikt:

> *"De originele gegevens worden namelijk getransformeerd via de formule: (datawaarde - laagste score) / (grootste score - data waarde). Door deze formule worden alle gegevens omgezet tot waarden tussen 0 en 1. De cut-off score ligt op 0.5, waardoor de omgezette scores die kleiner zijn dan 0.5 nog eens omgezet worden tot 0 en de andere tot 1. HICLASR berekent dan voor elke datacel de absolute waarde van het verschil (=de discrepantie) tussen de dichotome score (0 of 1) en de originele score. Deze verschillen zijn bij HICLAS <u>niet</u> weergegeven." (p. 69)*

De som van al deze discrepanties is gelijk aan de minimale discrepantie-index. Deze index geeft met andere woorden de totale (numerieke) waarde van alle verschillen weer die steeds aanwezig zullen blijven. HICLASR streeft dus naar oplossingen in rangen waarbij de proportionele discrepantie-index (aantal discrepanties van een oplossing in een bepaalde rang) zo dicht mogelijk bij de minimale discrepantie-index ligt en die voldoen aan de eisen inzake complexiteit van structuur en interpreteerbaarheid. Als deze twee indices gelijk zijn, is er dus geen betere oplossing mogelijk.

Nys (1997) stelde vast dat de structuren verkregen via HICLAS en HICLASR (op dezelfde dataset) op inter-individueel niveau slechts 1 element in een andere klasse deed belanden en dat de twee structuren verder volledig gelijk waren (afgezien van de goodness-of-fit-waarden en de prototypicaliteitswaarden). Deze vaststelling te samen met de eerder geuite redenen heeft ons mede gesteund om in dit onderzoek vast te houden aan de 'oude' HICLAS.

Een praktisch en theoretisch gerichte methodologische evaluatie van de HICLAS-methodologie is tot dusver enkel verricht door Van Mele (1996) en dan wel in de context van de begeleiding van topatleten. Ondanks de intra-individuele aard van haar benadering, willen we toch de resultaten van deze methodologische evaluatie meegeven om een eerste houvast te bieden bij mogelijke kritieken omtrent deze materie. Van Mele (1996) stelde vast dat: (1) bij herhaalde afname van een volledig rooster of een deel ervan meestal redelijke tot hoge correlaties aanwezig waren, maar ook niet-significante resultaten kwamen voor, (2) voor het nagaan van de constructvaliditeit leverde de vergelijking van categorieën uit het rooster en soortgelijke vragenlijsten een goede overeenkomst op, hoewel deze vergelijking wellicht niet altijd gerechtvaardigd is, en (3) dat de resultaten voor de criteriumvaliditeit gunstig waren. In navolging van Harris (1980) argumenteerde Van Mele (1996) aangaande het gebruik van deze methode:

> *"Het gezamenlijk gebruik van deze methode met andere biedt vooral bij individuele diagnoses de mogelijkheid om van de sterke punten van elke methode gebruik te maken en tegelijkertijd de betrouwbaarheid van het eindresultaat op te drijven door het combineren van methodes." (p. 123)*

Indien wij dus de roosters van de respondenten individueel wilden bespreken was de aanvullende vragenlijst dus een hulpmiddel geweest om de conclusies daaruit kracht bij te zetten. Maar ook bij het door ons ingenomen inter-individuele standpunt biedt de aanvullende vragenlijst bijkomende staving voor de HICLAS-resultaten. Het splitsen in groepen van de proefgroep op basis van enkele in de vragenlijst bevraagde variabelen en nagaan in hoeverre deze verschillen zich doorzetten in de HICLAS-structuur, is hier een voorbeeld van. Ook op het niveau van de gemiddelde respondent kan dit uitgevoerd worden.

2.3.4. Implicaties van dit onderzoek

In deze paragraaf maken we een opsplitsing inzake de implicaties van het gevoerde onderzoek. Eerst komen de verworven inzichten aan bod. Vervolgens wordt een nieuw onderzoeksparadigma vooropgesteld waarin toekomstig onderzoek plaats zou kunnen vinden. Als laatste onderdeel worden de implicaties naar de praktijk van de sociale marketing aangeraakt.

2.3.4.1. Verworven inzichten

In het literatuuroverzicht aangaande sorteergedrag en de determinanten ervan, werd dit gedrag reeds geconcipieerd in de context van een sociaal dilemma. Als we de HICLAS-structuren bekijken die wij in rang 3 en rang 4 hebben verkregen, menen we hierin enkele aanduidingen te vinden van een sociaal dilemma. Zoals we in de resultatensectie reeds hebben aangehaald was er een rudimentair onderscheid te maken tussen meer 'persoonlijke' motivaties en meer 'collectieve' motivaties. Deze splitsing in de motivaties was tot op zekere hoogte ook waar te nemen in de opbouw van de HICLAS-structuur. De trend die in het HICLAS-schema naar voren komt, is dat de collectief geïnspireerde sorteermotivaties hoger in de hiërarchie staan dan de meer individualistische sorteermotivaties. Bovendien zijn de verschillende klassen vaak samengesteld uit één soort sorteermotivaties (collectief of individueel). Alleen de klasse [verantwoordelijkheid nemen t.o.v. mijn buurt, zelfrespect, goede burger zijn] geeft blijk van meer vermenging van de beide oriëntaties inzake sorteermotivatie. Zelfrespect lijkt inderdaad meer individueel georiënteerd te zijn dan de twee andere elementen van deze klasse. De klasse die het hoogst in de hiërarchie stond in rang 3 was overduidelijk een verzameling van collectief gefundeerde sorteermotivaties. Inzake inhoud was de differentiatie binnen deze klasse te maken op basis van milieugeoriënteerde aspecten of maatschappelijk georiënteerde aspecten. Samengevat kunnen we dus stellen dat 'het sociale' van het sociaal dilemma duidelijk werd

teruggevonden in de HICLAS-structuur.

Het 'dilemma' van het sociale dilemma was ons inziens niet terug te vinden in de schematische representatie van de HICLAS-oplossing. De oorzaak hiervan is te zoeken binnen de eerder vermelde verstoorde balans tussen de 'positieve' elementen (de baten binnen een sociaal dilemma) en de 'negatieve' elementen (de kosten binnen een sociaal dilemma). Als de elementen van deze polarisatie niet in evenredige hoeveelheden aanwezig zijn binnen het aangeboden rooster, is het evident dat deze dilemmastructuur niet werd gevonden. Naar aanleiding van alle opmerkingen die we reeds gemaakt hebben over het aanbod van sorteergedragingen en sorteermotivaties, kunnen we Vansteelandt & Van Mechelen (1998) citeren die duidelijk de invloed van de aangeboden elementen aangeven:

> *"…, the resulting model strongly depends on the samples of situations and behaviors chosen." (p. 764)*

Een tweede algemene vaststelling bij de verkregen resultaten, is dat de bevindingen van de oplossing in rang 3 zeer robuust zijn. Dit konden we bevestigen door de vergelijking met de oplossing in rang 4. Deze robuustheid was enigszins te verwachten in die zin dat de goodness-of-fit-waarde van de oplossing in rang 3 reeds dermate hoog was (0,887), dat de oplossing van deze rang zeker voldoende sterk zou aanleunen bij de structuur in de originele data (omdat het aantal discrepanties zo klein is). Deze 'onbuigzaamheid' van de rode draad uit rang 3, steunt ons vermoeden dat we het met dit onderzoek grotendeels 'bij het rechte eind hebben', maar dan vooral inzake de pro-sorteerelementen in afwezigheid van mogelijk conflicterende anti-sorteerelementen. We achten deze nuancering van onze resultaten nodig om deze resultaten in een correct daglicht te kunnen stellen.

De oplossing in rang 4 bracht evenwel nog waardevolle bijkomende informatie, zonder de kern van de oplossing van rang 3 te raken. De opvallendste bijkomende bevinding was de ontdubbeling van de hiërarchisch hoogst geplaatste klasse van rang 3 in twee aparte klassen (nog steeds behorend tot de hoge hiërarchische niveaus), bij de overgang naar rang 4. De klasse [zorg voor de Aarde, milieubewustzijn] is de 'topklasse' in rang 4 en bevat meteen ook de motivaties die de meest uitgesproken holistische betekenis in zich dragen. Algemeen,

en dus ook bij de stap van rang 3 naar rang 4, is te bemerken dat er met een stijging van de rang een stijging van het aantal lege klassen gepaard gaat (zie computeroutput in bijlage). Dit is een verschijnsel dat eigen is aan HICLAS en enkele andere statistische analyses zijn aan analoge tendensen onderworpen (vb. factoranalyse en de keuze van het aantal factoren). Hoe dichter men bij de originele data wil blijven en hoe minder informatie men verloren wil laten gaan, hoe complexer de structuur van de oplossing wordt. Vaak schaadt deze ambitie de interpreteerbaarheid van de uiteindelijke resultaten. De keuze van de rang van de HICLAS-oplossing is dus in zekere zin een arbitraire keuze van de onderzoeker. Dit arbitraire in deze keuze moet echter tussen aanhalingstekens gezet worden omdat de onderzoeker vaak wordt aangetrokken door de 'gulden middenweg' tussen de weergave van voldoende complexiteit en interpreteerbaarheid.

Bij het globaal inspecteren van de hiërarchie van de sorteermotivaties, valt vooral de suprematie van holistische waarden op als 'zorg voor de Aarde' en 'milieubewustzijn'. Met suprematie bedoelen we dat deze klasse van waarden de meest invloedrijke verspreiding over de klassen van sorteergedragingen geniet. Alle gedragsklassen zijn met deze 'holistische klasse' verbonden, zonder enige uitzondering. De weinige meer specifiek geformuleerde sorteermotivaties namen de laagste plaatsen binnen de hiërarchie in, hoewel er ook meer algemeen gepercipieerde waarden op dit lage niveau waren terug te vinden. De verrassing die we daar hebben ontmoet is het element 'goede burger zijn'. We menen te kunnen stellen dat de verwoording van dit element goed aanleunt bij de burgerzin-waarde. Smeesters et al. (1999) troffen deze 'civic duty'-waarde aan in de resultaten van hun kwalitatief onderzoek en de sterkte ervan benaderde deze van de 'environmental values'. Mede omdat ons onderzoek in grote mate gebaseerd is op Smeesters et al. (1999), hadden we de verwachting om deze bevinding te kunnen repliceren. Deze waarde kwam bij ons ook in het schema terug, maar de invloed ervan was niet zo ruim verspreid als deze van de milieuwaarden. Globaler getinte maatschappelijke waarden (bijvoorbeeld 'verantwoordelijkheid nemen t.o.v. de maatschappij' en 'nuttig voor de maatschappij') waren wel op een hoog niveau in de hiërarchie aanwezig. Dat burgerzin niet op het hoogste niveau staat, wil natuurlijk niet zeggen dat deze sorteermotivatie niet belangrijk zou kunnen zijn. De enige voorzichtig geformuleerde conclusie die we hieraan kunnen vastknopen, is dat

burgerzin een meer specifieke waarde blijkt te zijn die van toepassing is op een beperkt aantal sorteergedragingen. De implicaties voor de sociale marketing bespreken we verder in de gelijknamige paragraaf.

Een derde dimensie die we gerepresenteerd zagen in de grafische weergave van de HICLAS-oplossing in rang 3 en rang 4 is deze van milieuwaarden - maatschappelijke waarden, waarvan we reeds enkele keren melding hebben gemaakt. De andere twee dimensies waarvan sprake zijn: (1) collectief – individueel (cf. sociaal dilemma), en (2) holistisch – specifiek. De milieuwaarden bleken nog wat hoger in de hiërarchie te zitten dan de maatschappelijke waarden, zoals de overgang naar rang 4 deed vermoeden. Het verschil inzake het bereik van hun invloed op de sorteergedragingen bleef in rang 4 echter beperkt tot de klasse [meer betalen voor milieuvriendelijke producten], wat de vaststelling van het verschil in hiërarchisch niveau meteen nuanceert. Inderdaad, als men een louter functioneel standpunt inneemt (welke motivatie geeft aanleiding tot welk gedrag?) dan kan men de milieuwaarden en de maatschappelijke waarden als equivalent beschouwen.

De hiërarchie van de sorteergedragingen reikte eveneens enkele vaststellingen aan. Net als bij de sorteermotivaties werd hier evidentie gevonden voor het bestaan van algemenere gedragingen en specifiekere gedragingen. Zo bleek dat 'lezen van sorteerinformatie' en 'composteren' door de respondenten werden gezien als specifieke gedragingen. Hier hadden we 'glas sorteren' ook bij de meer specifieke gedragingen verwacht, maar ons vermoeden werd door de schematische oplossing in rang 3 en rang 4 tegengesproken. Het achterliggende motivationele patroon bij glas sorteren bleek volgens onze HICLAS-oplossing dus ruimer te zijn.

Binnen de hiërarchie van de sorteergedragingen valt het ook op dat er geen klasse aanwezig is die alle gedragscategorieën omvat. 'Afval sorteren' had hier een goede kandidaat voor kunnen zijn omwille van zijn algemeenheid, maar de data konden dit intuïtief aanvoelen niet bevestigen. In de hiërarchie van de gedragingen is er echter wel een soort tweesplitsing te zien. Er zijn namelijk twee klassen naast elkaar op het hoogste hiërarchische niveau. De twee patronen die aan deze klassen zijn verbonden verschillen enkel inzake de meest

specifieke gedragingen en motivaties. Een subjectieve indruk is dat de klasse [overtollig verpakkingsafval vermijden, afval in de eigen vuilzakken zo veel mogelijk beperken] een patroon bezit dat meer specifiek van oriëntatie is. De klassen waarmee deze klasse verbonden is binnen de hiërarchie van de sorteergedragingen zijn inderdaad van een meer specifieke aard. De tweede klasse op het hoogste niveau van de sorteergedragingen incorporeert algemenere gedragingen (met 'glas sorteren' als een uitzondering).

Aangaande de basisklassen kunnen we hier een opmerking maken die ook van toepassing is op de basisklassen van de sorteermotivaties. Op één uitzondering na waren namelijk alle basisklassen geassocieerd met een lege klasse. Wat we hieruit zouden kunnen afleiden is dat we geen klare kijk hebben verworven via ons onderzoek op de meest specifieke aspecten van sorteergedrag en de determinanten ervan. De relevantie hiervan is nochtans groot. We beschouwen dit dan ook als één van de grootste tekortkomingen aan ons onderzoek. Het vermijden van dit hiaat bij verder onderzoek wordt verder besproken bij het voorstellen van een nieuw onderzoeksparadigma.

De aaneenschakeling van beide hiërarchieën is een unieke bijdrage van de HICLAS-methodologie. We beschouwen deze associatieve koppeling tussen de hiërarchie van de sorteergedragingen en de hiërarchie van de sorteermotivaties als een sterk punt van het voorliggend onderzoek. Voor zover ons bekend, is er tot op heden nog geen onderzoek naar sorteergedrag op deze manier gebeurd. Het schema dat we bekomen hebben, geeft een interactionele, globale kijk op de samenhang en de organisatie van de sorteermotivaties en de sorteergedragingen die we hebben aangeboden. Ondanks de hiaten in het door ons verstrekte aanbod van elementen, mogen we stellen dat het schema waarin HICLAS ons heeft voorzien een rijke bijdrage heeft geleverd aan de onderzoeksstroom aangaande de determinanten van sorteergedrag. Niet zozeer een bijdrage aan de loutere identificatie van deze determinanten, maar eens te meer een bijdrage aan de inzichten omtrent de hiërarchie en de groepering van sorteergedragingen en sorteermotivaties. Verder leverde dit HICLAS-onderzoek fundamentele adviezen op naar toekomstig onderzoek binnen deze context.

2.3.4.2. Een nieuw onderzoeksparadigma voor het verwerven van inzichten aangaande sorteergedrag

Uit de hierboven gebundelde bevindingen van ons onderzoek bleek meermaals dat we een probleem hebben ervaren in het aanbieden van een treffelijk rooster dat meer inzicht kan geven in de determinanten van verschillende sorteergedragingen en hun onderlinge verhouding. Het zoeken van determinanten van gedrag is reeds gedurende enkele decennia een vooraanstaand onderzoeksthema in de persoonlijkheidspsychologie en de sociale psychologie. Vandaar vonden we het zinvol om eens een licht op te steken in deze onderzoeksvelden om mogelijke inspiratie te vergaren voor verder onderzoek aangaande sorteergedrag.

Jarenlang zijn onderzoekers op zoek geweest naar cross-situationele consistentie als bewijs voor een vorm van coherentie in de onderliggende persoonlijkheidsdisposities van een individu. De resultaten van deze zoektocht waren ontmoedigend (Vanden Auweele, De Cuyper, Van Mele & Rzewnicki, 1993). Maar hoe kan men dan verklaren dat onze intuïtie aan de ene kant zegt dat mensen brede gedragsdisposities hebben en dat we consistenties zien in het gedrag van anderen, en aan de andere kant dat de onderzoeksresultaten deze intuïtieve overtuigingen blijven tegenspreken? Shoda, Mischel & Wright (1994) zien een antwoord op deze paradox in een procesmatige conceptualisatie van persoonlijkheid. De redenering die we hier willen volgen is gebaseerd op de inzichten van Mischel & Shoda (1995) in de context van de ontwikkeling van een persoonlijkheidstheorie. Waar mogelijk zetten we hun constructen onmiddellijk in een sorteercontext.

Om verder te kunnen aanwenden als een mogelijke verbetering en / of aanvulling van het onderzoek naar determinanten van sorteergedrag, lichten we eerst hun ideeën over het concept 'situatie' toe. Shoda et al. (1994) werken niet langer met het behavioristische concept van een situatie als een simpele stimulus. Zij zien twee vormen van situaties en de hieraan gekoppelde psychologische kenmerken als fundamentele concepten binnen hun

aanpak: (1) nominale situaties (deze worden eerder bepaald door de setting dan door hun impact op de persoon, bijvoorbeeld 'in het containerpark'), (2) interpersoonlijke situaties (deze zijn soms gebed in verscheidene nominale situaties en bevatten saliënte psychologische kenmerken, bijvoorbeeld 'als de zakken gratis zijn' of 'als er veel volk in mijn buurt is') en (3) psychologische kenmerken van situaties (men zou deze kunnen zien als de 'ingrediënten' van een situatie, bijvoorbeeld 'positief voor mezelf'). Zij stellen dat nominale situaties de neiging hebben een zeer heterogene set van psychologische kenmerken te bevatten, daar waar de interpersoonlijke situaties meer homogene, onderscheiden sets van psychologische kenmerken hebben. De term 'interpersoonlijke situatie' komt in een context van sorteren misschien wat ongepast over, maar het punt dat we hier duidelijk willen stellen is dat Shoda et al. (1994) een onderscheid maken tussen algemene (nominale) en meer specifieke (interpersoonlijke) situaties. Shoda et al. (1994) zijn van mening dat het zinvoller is om situaties te bestuderen in termen van psychologische kenmerken dan in termen van nominale situaties.

De persoonlijkheidstheorie van Mischel & Shoda (1995) stelt dat respondenten verschillen in hoe ze selectief focussen op verschillende kenmerken van situaties, hoe ze deze kenmerken cognitief en emotioneel categoriseren en coderen, en hoe deze coderingen interageren met andere cognities en gevoelens in het persoonlijkheidssysteem. De naam die zij aan hun theorie hebben gegeven is 'cognitive-affective personality system theory' (CAPS-theorie). Zij zien vijf types van psychologische mediërende processen ('cognitive-affective units') die aan de basis liggen van verschillen in (sociaal) gedrag:

(1) individuele coderingen: categorieën voor mensen, gebeurtenissen en situaties
(2) verwachtingen en overtuigingen: over de sociale wereld, over gedragsuitkomsten in bepaalde situaties, en over eigen doeltreffendheid
(3) doelen en waarden: (on)wenselijke resultaten en affectieve toestanden, doelen, waarden en levensprojecten
(4) gevoelens: emoties en affectieve responsen

(5) <u>vaardigheden en zelfsturende plannen</u>: potentiële gedragingen die men kan uitvoeren, plannen en strategieën om acties te organiseren, om resultaten en eigen gedrag te beïnvloeden.

Als een persoon zich in een bepaalde situatie bevindt, dan activeren de actieve psychologische kenmerken van die situatie een set van deze 'cognitive-affective units'. Deze units activeren (of inhiberen) op hun beurt andere units en uiteindelijk bepaalde gedragingen. Figuur 5 stelt dit proces op een meer eenvoudige, schematische wijze voor.

Individuele verschillen komen dus voor omdat personen een verschillende activatiedrempel hebben voor cognities en affecten, en omdat personen een verschillende organisatie van 'cognitive-affective units' hebben (Mischel & Shoda, 1995). De theorie ziet een persoon niet als passief reagerend op situaties, maar wel als actief en doelgericht en ten dele als situaties creërend. Als een individu situaties ontmoet met verschillende psychologische kenmerken, dan zal het persoonlijkheidssysteem (CAPS) over de tijd heen een reeks van verschillende *'als (situatie) dan (gedrag)'*-profielen genereren. Mischel & Shoda (1995) zien deze conditionele probabiliteit van een gedraging gegeven de situatie of de psychologische voorwaarden als de fundamentele observatie-eenheid voor onderzoek.

Figuur 5: Vereenvoudigde illustratie van types cognitief-affectieve processen die de
onderscheiden gedragspatronen van een individu genereren.
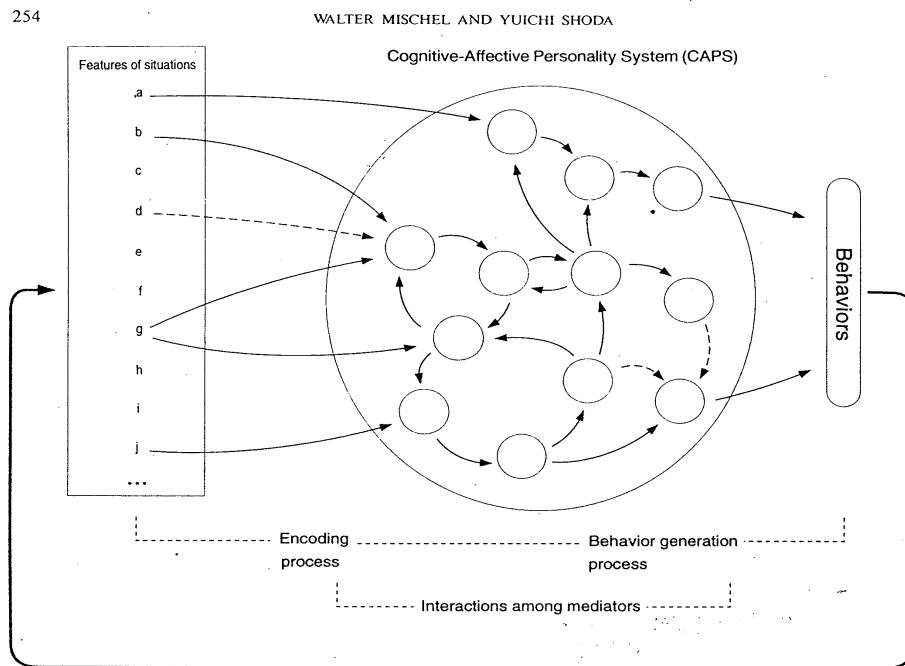(Mischel & Shoda, 1995, p. 254)

Figure 4.   Simplified illustration of types of cognitive–affective mediating processes that generate an individual's distinctive behavior patterns. Situational features are encoded by a given mediating unit, which activates specific subsets of other mediating units, generating distinctive cognition, affect, and behavior in

Met deze beknopte voorstelling van de CAPS-theorie hopen we een algemeen beeld opgehangen te hebben van deze zienswijze, zodat we deze theorie kunnen overplaatsen naar de context van het sorteergedrag.

De grondideeën van de CAPS-theorie uit de persoonlijkheidspsychologie leken ons uiterst zinvol om toe te passen op de context van het sorteren van afval. De kracht van de theorie situeert zich ons inziens vooral in de omvattende visie die ze propageert aangaande het tot stand komen van gedrag. Er wordt met verschillende soorten determinanten rekening gehouden om de verschillen in gedrag te verklaren.

De aanzet tot het zoeken naar een ruimer framework voor dit soort onderzoek vond tevens zijn oorsprong in enkele gelijklopende commentaren die de respondenten bij het indienen van hun vragenlijst hebben geuit. Vaak poneerden zij iets in de aard van 'Ik heb dat nu zo ingevuld, maar als ….', 'Als ik op kot zit …, maar als ik thuis ben …', enzovoort. Hierin vonden we een additionele aansporing om te zoeken naar een theoretisch kader dat situaties als belangrijke inputvariabelen ziet binnen het verklaren van gedrag. Dit is nu net een ander sterk punt van de CAPS-theorie. Ze conceptualiseert situaties en andere elementen op een

meer specifieke wijze. Mede hierdoor zou deze theorie kunnen bijdragen aan het inzicht in de determinanten van sorteergedrag, te meer daar ze de kritiek aangaande de specificiteit (cf. attitudeonderzoek en ons onderzoek) reeds vanuit haar fundamentele veronderstellingen countert.

De achterliggende reden waarom we deze theorie naar voren schuiven als een interessant onderzoeksparadigma voor sorteergedrag ligt niet alleen in de theoretische sterkte en omvattendheid. Een reden die ook belangrijk is om voor de CAPS-theorie te pleiten is dat deze theorie en haar concepten nagenoeg perfect in te passen zijn binnen een HICLAS-onderzoeksstrategie. Inderdaad, een gepaste theorie vinden is één zaak, een manier om ze operationeel te krijgen in onderzoek is een andere. De principes van HICLAS leken vrijwel samen te vallen met de theoretische implicaties van de CAPS-theorie. We zijn van oordeel dat dit een bijkomend argument is om de CAPS-theorie te verdedigen, omdat we de voordelen van HICLAS als onderzoeksmethodologie zo sterk en uniek inschatten. De HICLAS-filosofie is met andere woorden te kostbaar om over boord te gooien.

Vansteelandt & Van Mechelen (1998) hebben de link tussen de persoonlijkheidstheorie van Mischel & Shoda (1995) en de door HICLAS geïnspireerde onderzoeksmethode reeds gelegd. Zij hebben de driedimensionele variant van HICLAS gebruikt bij hun studie. Deze data-analysetechniek (individual differences hierarchical classes analysis, INDCLAS) combineert drie typologieën, namelijk van personen, situaties en gedragingen. Daarenboven koppelt ze, analoog aan HICLAS, de drie geconstrueerde hiërarchieën aan elkaar. Samengevat vinden we bij INDCLAS, net als bij HICLAS, 3 componenten (klassen, hiërarchieën en associatieve structuur) in het model terug. INDCLAS neemt echter één dimensie meer op dan HICLAS. Andere principes zijn volledig analoog aan HICLAS.

Conform aan de CAPS-theorie, worden de drie typologieën aan elkaar gelinkt zodat elke persoonsklasse gekarakteriseerd kan worden in termen van een set van 'als (situatie) dan (gedrag)'-regels. Vansteelandt & Van Mechelen (1998) geven volgende betekenis aan een 'als (situatie) dan (gedrag)'-regel:

"An if (situation class) then (behavior class) rule indicates that whenever a person of the person class in question faces a situation of the situation class, this person will display all behaviors from the behavior class." (p 752)

Verschillende klassen van personen binnen dit drievoudig typologiemodel kunnen dan gezien worden als representaties van verschillende 'cognitive-affective personality systems'. De verdere opdracht bestaat er dan in om de relevante cognities, affecten en drempels te bepalen die eigen zijn aan een bepaalde klasse van personen. Binnen de context van sorteeronderzoek zou dit eruit kunnen uitzien als een aantal klassen van personen, gevormd op basis van bepaalde 'als (sorteersituatie) dan (sorteergedrag)'-regels.

Een mogelijk, cumulatief onderzoeksopzet waarin INDCLAS en de CAPS-theorie betrokken zijn in het kader van sorteergedrag zou, beknopt geformuleerd, volgende onderdelen kunnen hebben: (1) een aantal klassen van personen, gevormd op basis van bepaalde 'als (sorteersituatie) dan (sorteergedrag)'-regels (via INDCLAS), (2) vervolgens onderzoek naar de determinanten van deze sorteergedragingen per klasse van personen (via HICLAS op de respondenten van elke afzonderlijke persoonsklasse), (3) theoretisch concipiëren van voor sorteergedrag relevante verschillende 'persoonlijkheden' (via CAPS als kader), (4) aanduiden van manieren waarop de determinanten van sorteergedrag kunnen beïnvloed worden in de pro-milieurichting, zodanig dat personen na blootstelling aan deze veranderingstechnieken van persoonsklasse kunnen veranderen (via sociale marketing), (5) beïnvloeden van de sorteersituaties en de invloed hiervan op gedrag en het soort verkregen persoonsklassen nagaan (experimenten en sociale marketing).

We zijn ons terdege bewust van het feit dat het voorgestelde opzet zeer ambitieus opgevat is en dat het uitvoeren ervan zeer arbeidsintensief, moeilijk en tijdsrovend zou zijn. Toch zijn we van mening dat de wetenschappelijke en andere investeringen in zulk een onderzoeksopzet hun vruchten zouden afwerpen op het wetenschappelijk domein en op het sociaal-maatschappelijk en milieuniveau door de effecten op de praktijk van het sorteren.

2.3.4.3. Sociale marketing

Betreffende het aanzetten tot meer en beter sorteergedrag, zijn burgers moeilijker te bereiken dan bedrijven. Van bedrijven kan men vermoeden dat zij meer rationeel beslissen dan individuen. Daarom zijn bedrijven wellicht makkelijker aan te sporen via het kanaal van de financiën dan mensen. Binnen de bedrijven zal de variabiliteit in de manier van reageren op mogelijke financiële incentieven eerder klein zijn (omwille van de hogere rationaliteit inzake beslissingen) in vergelijking met individuen. Omwille van deze verschillen tussen bedrijven en individuele mensen (minder rationaliteit en meer onderlinge verschillen van reactiepatronen bij mensen), is het van groot belang dat we meer inzicht krijgen in het individu als we de individuele persoon ook adequaat willen aanspreken. Het begrijpen van de reactiepatronen en de mogelijke verschillen tussen mensen, kan een waardevol middel zijn ten bate van de sociale marketing. Via deze inzichten zou men inderdaad tot een betere segmentatie kunnen komen en de targetpopulatie beter kunnen bereiken. Zowel in de commerciële marketing als in de sociale marketing zijn dit twee noodzakelijke voorwaarden om een campagne te doen slagen.

De typische structuur die HICLAS aanbiedt, kan bepaalde inzichten in de individuele mens aanreiken. Zeker indien men de HICLAS-structuren van bepaalde segmenten naast elkaar gaat leggen, kan men waardevolle informatie bekomen. We zijn van oordeel dat we met HICLAS-analyse een zicht kunnen krijgen op welke motivaties er bij de respondent *'aanwezig'* zijn. Of deze dan ook daadwerkelijk worden aangesproken in alledaagse sorteersituaties kunnen we vanuit ons onderzoek echter niet hard maken. Met de vergelijking van de HICLAS-structuren van de hoge en de lage EC groep menen we een illustratie te kunnen geven van enkele sociale marketingadviezen die uit deze vergelijking kunnen ressorteren.

De HICLAS-structuur van de hoge EC groep lijkt aanwijzingen te bieden om te stellen dat het marketingmechanisme 'priming' in dit segment voldoende zou moeten zijn om sorteergedrag te bekomen. Omdat sorteren een gedrag is waarbij vaak weinig of geen bewuste denkactiviteit te pas komt (net als een aankoop met lage betrokkenheid), wordt 'priming' hier als een adequaat middel gezien. 'Priming' verwijst naar de activatie van kennisstructuren door de aanwezige situationele context. 'Priming' is in staat om bij een

individu de *aanwezige* concepten (hier motivaties) ook *beschikbaar* te maken via subtiele boodschappen. Pas als concepten beschikbaar zijn, kunnen ze hun invloed uitoefenen. Een motivatie of een doel dat consistent geactiveerd wordt in een algemene situatie, kan geactiveerd worden door de algemene kenmerken van deze situatie (Bargh, 1990). Om deze reden kunnen de motieven van een recycleerder, die door gewoonte zijn gevormd, aangesproken worden telkens er een confrontatie is met de situationele kenmerken van een typische sorteersituatie. Men zou kunnen vermoeden dat er in de meeste sorteersituaties, voor mensen met hoge EC, reeds een sterke 'chronische' tendens (gevoed vanuit hun hoge oriëntatie op EC) aanwezig is om sorteergedragingen te stellen. De hoge EC groep scheert als het ware alle gedragingen 'over dezelfde kam', wat we konden zien aan het kleine aantal grote klassen. Het merendeel van de sorteergedragingen is voor de hoge EC groep gemotiveerd, ja zelfs overschaduwd, door de holistische milieugerichte waarden en ook door de maatschappelijk georiënteerde waarden. Het 'actief' maken van deze aanwezige motivaties via 'priming' zou dus voldoende moeten zijn om in dit segment sorteergedrag te (blijven) bekomen.

In de HICLAS-structuur van de lage EC groep konden we vaak vaststellen dat verschillende motivaties aan de basis lagen van verschillende sorteergedragingen. Vanuit het standpunt van de sociale marketing is de situatie hier dus wat moeilijker. Het lijkt aangewezen om meer uitleg te geven aan de individuen van dit segment (de identificatie hiervan is andere zaak die in ons onderzoek niet aan bod komt), omdat de verschillende motivaties niet grotendeels dezelfde gedragingen steunen (wat bij de hoge EC groep wel het geval was). HICLAS geeft ons hier dus wel een beeld van de aanwezige sorteermotivaties voor bepaalde sorteergedragingen, maar er is minder 'generaliseerbaarheid' inzake sorteermotivaties dan bij de hoge EC groep. Hun HICLAS-schema is veel gedifferentieerder. De respondenten uit deze groep geven de indruk dat ze soms 'op zoek moeten gaan' naar een motivatie om een bepaalde sorteergedraging te stellen. Bij hen zijn de motivationele patronen, die verbonden zijn met de verschillende sorteergedragingen, onderling meer verschillend. Zeker indien deze verscheidenheid in het HICLAS-schema zou wijzen op een vorm van onzekerheid bij de respondenten uit deze groep (wat we met onze gegevens niet konden nagaan), dan is het werkzaam om via het kanaal van de

informatieverschaffing te werken aan het aanwakkeren van sorteergedrag. 'Priming' kan hier misschien wel gebruikt worden als een aanvulling, maar zeker niet als het centrale marketingwerktuig.

Een laatste mogelijkheid die we hier willen toelichten is dat er geen link is tussen bepaalde sorteergedragingen en sorteermotivaties in het HICLAS-schema. Het verschaffen van informatie lijkt hier minder zin te hebben omdat het 'creëren van een link' tussen een gedrag en een motivatie een uiterst moeilijke zaak is. Situationele kenmerken kunnen hier dus geen sorteermotivaties 'triggeren' omdat het verband tussen motivatie en gedrag niet aanwezig. In deze gevallen stellen we voor om te werken met een beleid van boetes en beloningen.

We willen deze beknopte reflectie over sociale marketing voor sorteergedrag besluiten met een stellingname van Warlop et al. (in pers) die ons inziens goed aansluit bij de theorie van Mischel & Shoda (1995) en die steun kan vinden in enkele resultaten van ons onderzoek. Rothschild (1979) definieerde 'selling brotherhood' als één van de belangrijkste taken van sociale marketing. Warlop et al. (in pers) gebruiken deze vergelijking als volgt om hun idee over sociale marketing aangaande sorteren duidelijk te maken:

> *"Ethical imperatives are supported by 'ten commandments', by simple stories and parables, or by simplified life histories of remarkable people. All these are easily accessible as guides for brotherhood. Just like religions, social marketers may be better off just by 'priming brotherhood'. (p. 23)*

ALGEMENE CONCLUSIE

Het onderzoek uit deze verhandeling verhoopte een bijdrage te kunnen leveren aan de inzichten in sorteergedrag en haar determinanten. We hebben dit onderzoek laten aansluiten bij de onderzoeksstroom van Smeesters et al. (1999) om een cumulatie van resultaten en een houvast voor toekomstig onderzoek te bekomen. Dit onderzoek mikte niet zozeer op een bijdrage aan de identificatie van sorteerdeterminanten, maar eens te meer op een bijdrage aan de kennis omtrent de hiërarchie binnen, de groepering van, en de associaties tussen sorteergedragingen en sorteermotivaties.

De bekomen resultaten waren zeer robuust van aard en boden een aanzienlijke hoeveelheid informatie alsook enkele aanbevelingen voor verder onderzoek. Zo scheen de sociaal dilemma structuur van sorteergedrag door in het HICLAS-schema. Verder konden in het schema grosso modo drie dimensies erkend worden, namelijk 'collectief – individueel', 'holistisch – specifiek', en 'milieu – maatschappij'. In onze groep respondenten kwam de suprematie van de pro-milieuwaarden sterk naar voren, alsook de breed maatschappelijk georiënteerde sorteermotivaties. Een opvallend resultaat betrof 'burgerzin'. Hiervan hadden we, conform de bevindingen van Smeesters et al. (1999), verwacht dat deze waarde een gelijk(w)aardige kracht zou hebben als de pro-milieuwaarden. Onze resultaten wezen aan 'burgerzin' echter een eerder specifieke rol toe.

De opsplitsing naar waardenoriëntatie van de totale groep bracht ook relevante inzichten die tevens een hoge waarde kunnen hebben voor de praktijk van de sociale marketing. Zo bleek dat de respondenten die sterk betrokken zijn op het milieu zo goed als alle sorteergedragingen in de lijn van hun betrokkenheid zien en weinig differentiëren naar andere sorteermotivaties. De groep met een lagere betrokkenheid op het milieu bleek juist wel sterk te differentiëren naar sorteermotivatie en sorteergedrag toe. Hier vonden we een aangrijpingspunt voor het aanbevelen van 'priming' in deze groep van respondenten. De tweede opsplitsing was volgens hoge of lage burgerzin. Hier knoopten we het vermoeden aan vast dat de respondenten met een lage burgerzin meer ingesteld zijn op hun 'nabije omgeving' inzake sorteermotivaties dan de respondenten met een hoge burgerzin. Zeker bij

deze splitsing bleek de HICLAS-methode die de rode draad door ons onderzoek vormde zijn validiteit te bewijzen.

Met betrekking tot HICLAS kunnen we besluiten dat deze methodologie aanzienlijke mogelijkheden biedt voor onderzoek naar sorteergedrag en haar determinanten, zowel op intra-individueel als op inter-individueel niveau. De focus van ons onderzoek lag op het inter-individuele niveau. Deze methodologie geeft simultaan drie zaken weer: (1) groepering van elementen in klassen, (2) hiërarchische relaties tussen de klassen van elk type element (attribuut of object), en (3) een associatieve relatie die beide hiërarchieën aan elkaar koppelt. De bundeling van deze drie kenmerken is uniek aan deze methode en is meteen ook een grote sterkte ervan. De incorporatie van zowel kwantitatieve als kwalitatieve kenmerken is een ander onmiskenbare troef van HICLAS.

De verwoordingen van de sorteergedragingen en de sorteermotivaties die voorkwamen in het rooster dat we hebben gebruikt, bleken onvoldoende gespecifieerd en geëxpliciteerd te zijn. Ook het gebrek aan informatie over de situationele sorteercontext van de verschillende respondenten ervoeren we als een gemis in onze studie. Deze twee hiaten in het opzet van ons onderzoek hebben ons er toe aangezet aanbevelingen te doen naar verder onderzoek toe. Onze individuele aanbevelingen kunnen allen geplaatst worden in het nieuwe onderzoeksparadigma dat we hebben voorgesteld onder de vorm van de CAPS-theorie van Mischel en Shoda (1995). Situationele kenmerken krijgen hier een belangrijke plaats in de verklaring van gedrag. Naast de theoretisch interessante uitgangspunten van de CAPS-theorie is er nog een ander voordeel aan deze theorie verbonden. Er bestaat namelijk een onderzoeksmethodologie die haar op het lijf geschreven is en die alle kenmerken van HICLAS behoudt, namelijk INDCLAS.

Vanuit de resultaten en de commentaren op ons onderzoek, menen we dat er interessante en bruikbare handvaten zijn aangereikt voor het vervolledigen van de kennis van sorteergedrag en haar determinanten en voor het verhogen van de methodologische kwaliteit van toekomstig onderzoek. Op termijn zal dit ook bijdragen aan de optimalisatie van sociale marketingprogramma's voor het verhogen van de accuraatheid en de consistentie van

sorteergedrag.

Bibliografie

Ajzen, I. (1985). From intentions to actions: a theory of planned behavior. In: Kuhl, J. & Beckmann, J. (Eds) *Action control: from cognition to behavior*. New York: Springer Verlag, pp. 11-39.

Ajzen, I. & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice Hall.

Antonides, G. & van Raaij, W.F. (1994). *Consumentengedrag: een sociaal-wetenschappelijk benadering*. Utrecht: Lemma BV.

Bagozzi, R.P. & Dabholkar, P.A. (1994). Consumer recycling goals and their effect on decisions to recycle: a means-end chain analysis. *Psychology and Marketing*, 11(5), pp. 313-340.

Bargh, J.A. (1990). Auto-motives: preconscious determinants of thought and behavior. In: Higgins, E.T. & Sorrentino, R.M. (Eds.). *Handbook of motivation and cognition (Vol.2)*. New York: Guilford.

Batra, R., Myers, J.G., & Aaker, D.A. (1996). *Advertising Management (Fifth Edition)*. Prentice Hall International, Inc.

Batson, C.D., Bolen, M.H., Cross, J.A., & Neuringer-Benefiel, H.E. (1986). Where is the altruism in the altruistic personality? *Journal of Personality and Social Psychology*, 50, pp. 212-220.

Berger, I.E. & Corbin, R.M. (1992). Perceived consumer effectiveness and faith in others as moderators of environmentally responsible behaviors. *Journal of Public Policy and Marketing*, 11(2), pp. 79-100.

Brechin, S.R. (1999). Objective problems, subjective values, and global environmentalism: evaluating the postmaterialist argument and challenging a new explanation. *Social Science Quaterly*, 80(4), pp. 793-809.

Cialdini, R. (1985). *Influence: Science and practice.* Glenview, IL: Scott-Foresman.

Cohen, J.B. & Warlop, L. (in pers). A motivational perspective on means-end chains. In: Reynolds, T.J. & Olson, C. (Eds.) *Understanding your customers: means-end chain theory and practice*. Hillsdale, NJ: Lawrence Erlbaum.

Dawes, R.M. (1980). Social dilemmas. *Annual Review of Psychology*, 31, pp. 169-193.

De Boeck, P. (1992). HICLAS-program (version 2.0) [Computer Software]. Leuven: Department of Psychology (KULeuven).

De Boeck, P. (1997). HICLASR-program (version 1.0) [Computer Software]. Leuven: Department of Psychology (KULeuven).

De Boeck, P. & Maris, E. (1990). *Individueel roosteronderzoek en hiërarchische klasse-analyse: basisprincipes en leidraad voor toepassingen*., Leuven, KULeuven.

De Boeck, P. & Rosenberg, S. (1988). Hierarchical classes: Model and data analysis. *Psychometrika*, 53, pp. 361-381.

De Boeck, P., Rosenberg, S., & Van Mechelen, I. (1993). The hierarchical classes approach: A review. In Hampton, J., Michalski, R.S., & Theunis, P. *Categories and concepts: Theoretical views and inductive data analysis*. London: Academic Press, pp. 265-286.

De Boeck, P. & Van Mechelen, I. (1990). Traits and Taxonomies: A hierachical classes approach. *European Journal of Personality*, 4, pp. 147-156.

De Young, R. (1985-1986). Encouraging environmentally appropriate behavior: the role of intrinsic motivation. *Journal of Environmental Systems*, 14(4), pp. 281-291.

De Young, R. (1986). Some psychological aspects of recycling. *Environment and Behavior*, 18, pp. 435-449.

Dietz, T. & Stern, P.C. (1995). Toward a theory of choice: socially embedded preference construction. *Journal of Socio-economics*, 24, pp. 261-279.

Fishbein, M. & Ajzen, I. (1975). *Belief, attitude, intention and behavior: an introduction to theory and research.* Reading, Mass.: Addison-Wesley.

Fransson, N. & Garling, T. (1999). Environmental concern: conceptual definitions, measurement methods, and research findings. *Journal of Environmental Psychology*, 19(4), pp. 369-382.

Gara, M.A., Woolfolk, R., Cohen, B., Goldston, R., Allen, L., & Novlany, J. (1993). Perception of self and other in major depression. *Journal of Abnormal Psychology*, 102, pp. 93-100.

Gengler, C.E. & Reynolds, T.J. (1993). *LADDERMAP: a software tool for analyzing laddering data.*

Gutman, J. (1982). A means-end chain model based on consumer categorization processes. *Journal of Marketing*, 46(1), pp. 60-72.

Hampson, S.E., John, O.P., & Goldberg, L.R. (1986). Category breath and hierarchical structure in personality: Studies of asymmetries in judgments of trait implications. *Journal of Personality and Social Psychology*, 51, pp. 37-54.

Harland, P., Staats, H., & Wilke, H.A.M. (1999). Explaining proenvironmental intention and behavior by personal norms and the theory of planned behavior. *Journal of Applied Social Psychology*, 29(12), pp. 2505-2528.

Harris, J.G. (1980). Nomovalidation and idiovalidation: a quest for the true personality profile. *American Psychologist*, 35(8), pp. 729-744.

Hopper, J. & Nielsen, J.M. (1991). Recycling as altruistic behavior: normative and behavioral strategies to expand participation in a community recycling program. *Environment and Behavior*, 23(2), pp. 195-220.

Hornik, J., Cherian, J., Madansky, M., & Narayana, C. (1995). Determinants of recycling behavior: A synthesis of research results. *The Journal of Socio-Economics*, 24(1), pp. 105-127.

Huffman, C., Ratneshwar, S., & Mick, D.G. (1996). *An integrative framework of consumer goals: structure, goal determination processes and applications*. Working paper, University of Pennsylvania, Whorton School.

Kinnear, T.C., Taylor, J.R., & Ahmed, S.A. (1974). Ecologically concerned consumers: who are they? *Journal of Marketing*, 38, pp. 20-24.

Kotler, P. & Roberto, E.L. (1989). *Social Marketing: strategies for changing public behavior.* The Free Press. New York.

Lansana, F.M. (1992). Distinguishing potential recyclers from nonrecyclers: a basis for developing recycling strategies. *Journal of Environmental Education*, 23, pp. 16-23.

Lee, Y.J. & De Young, R. (1993). Intrinsic satisfactions derived from office recycling behavior: a case study in Taiwan. *Social Indicators Research*, 31, pp. 63-76.

Lindsay, J.J. & Strathman, A. (1997). Predictors of recycling behavior: An application of a

modified health belief model. *Journal of Applied Social Psychology*, 27(20), pp. 1799-1823.

McCarty, J.A. & Shrum, L.J. (1993). A structural equation analysis of the relationships of personal values, attitudes and beliefs about recycling, and the recycling of solid waste products. *Advances in consumer research*, 20, pp. 641-646.

McKenzie-Mohr, D., Nemiroff, L.S., Beers, L., & Desmarais S. (1995). Determinants of responsible environmental behavior. *Journal of Social Issues*, 51 (4), pp. 139-156.

Messick, D.M. & Brewer, M.B. (1983). Solving social dilemmas: A review. In: Wheeler, L. & Shaver, P. (Eds.) *Review of Personality and Social Psychology* (Vol. 4, pp. 11-44). Beverly Hills, CA: Sage.

Mischel, W. & Shoda, Y. (1995). A cognitive-affective system theory of personality: Reconceptualizing situations, dispositions, dynamics, and invariance in personality structure. *Psychological Review*, 102, pp. 246-268.

Mohai, P. & Twight, B.W. (1987). Age and environmentalism: an elaboration of the Buttel Model using national evidence. *Social Science Quaterly*, 68, pp. 798-815.

Nys, K. (1997). *Categorisering van gevoelens van jonge, beloftevolle atleten: vergelijking van twee benaderingswijzen.* Niet gepubliceerde licentiaatsverhandeling, Leuven, KULeuven.

Oskamp, S., Harrington, M.J., Edwards, T.C., Sherwood, D.L., Okuda, S.M., & Swanson, D.C. (1991). Factors influencing household recycling behavior. *Environment and Behavior*, 23(4), pp. 494-519.

Pieters, R. (1989). *Attitudes and behavior in a source separation program. A*

garbology approach. Delft: Euburon.

Pieters, R. (1991). Changing garbage disposal patterns of consumers: motivation, ability, and performance. *Journal of Public Policy and Marketing*, 10(2), pp. 59-76.

Pieters, R. & Verhallen, T. (1986). Participation in a source separation projects: design characteristics and perceived costs and benefits. *Resources and Conservation*, 21, pp. 95-111.

Pieters, R., Bijmolt, T., van Raaij, F., & de Kruijk, M. (1998). Consumer's attributions of proenvironmental behavior, motivation, and ability to self and others. *Journal of Public Policy & Marketing*, 17(2), pp. 215-225.

Reynolds, T.J. & Gutman, J. (1988). Laddering theory, method, analysis, and interpretation. *Journal of Advertising Research*, 28, pp. 11-31.

Rokeach, M. (1973). *The nature of human values*. New York: The Free Press.

Rosch, E.L. (1978). Principles of categorization. In: Rosch, E.L. & Lloyd, B.B. (1978). *Cognition and Categorization*. Erlbaum, Hillsdale, NJ, pp. 27-48.

Rosch, E.L., Mervis, C.B., Gray, W.D., Johnson, D.M., & Boyes-Bream, P. (1976). Basic objects in natural categories. *Cognitive Psychology*, 8, pp. 382-439.

Rosenberg, S. (1989). A study of personality in literary autobiography: an analysis of Thomas Wolfe's "Look Homeward Angel". *Journal of Personality and Social Psychology*, 56, pp. 416-430.

Rotschild, M.L. (1979). Marketing communications in nonbusiness situations or why it's so hard to sell brotherhood like soap. *Journal of Marketing*, 43(Spring), pp. 11-20.

Samdahl, D.M. & Robertson, R. (1989). Social determinants of environmental concern: specification and test of the model. *Environment and Behavior*, 21(1), pp. 57-81.

Schultz, P.W. & Zelezny, L.C. (1998). Values and proenvironmental behavior: a five-country survey. *Journal of Cross-Cultural Psychology*, 29(4), pp. 540-558.

Schwartz, S.H. (1968). Words, deeds, and the perception of consequences and responsibility in action situations. *Journal of Personality and Social Psychology*, 10, pp. 232-242.

Schwartz, S.H. (1994). Are there universal aspects in the structure and contents of human values? *Journal of Social Issues*, 50, pp. 19-45.

Shoda, Y., Mischel, W., & Wright, J. (1994). Intraindividual stability in the organization and patterning of behavior: incorporating psychological situations into the idiographic analysis of personality. *Journal of Personality and Social Psychology*, 67(4), pp. 674-687.

Smeesters, D., Warlop, L. & Vanden Abeele, P. (1998). *The state-of-the-art on domestic recycling research*. Onderzoeksrapport nr 13, Brussel: OSTC.

Smeesters, D., Warlop, L., Vanden Abeele, P., & Ratneshwar, S. (1999). *Exploring the recycling dilemma: consumer motivation and experiences in mandatory garbage recycling programs*. Onderzoeksrapport nr. 9924, Departement Toegepaste Economische Wetenschappen, België, Leuven, K.U.Leuven.

Søndergaard, H. & Jensen, J. (1990). *Forbrugernes holdninger til grønne systemer. Resultatet af spørgeskemaundersøgelse blandt 1600 husstande I København, Odense, Vejle og Frederikssund vedrørende disses affaldsorteringssystemer* (The consumers' attitudes toward green systems. Results from a questionnaire analysis of 1600 households in Copenhagen, Odense, Vejle, and Frederikssund concerning their waste sorting systems.)

Working report No. 18 / 1990. Copenhagen: The National agency of Environmental Protection.

Storms, G., Van Mechelen, I., & De Boeck, P. (1994). Structural analysis of intension and extension of semantic concepts, *European Journal of Cognitive Psychology*, 6(1), pp. 43-75.

Swenson, M.R. & Wells, W.D. (1997). Useful correlates of pro-environmental behavior. In: Goldberg, M.E., Fishbein, M., & Middlestadt, S.E. (Eds). *Social Marketing, theoretical and practical perspectives*. Mahwah, New Jersey: Lawrence Erlbaum Associates, Publishers. pp. 91-111.

Taylor, S. & Todd, P. (1995). An integrated model of waste management behavior: a test of household recycling and composting intentions. *Environment and Behavior*, 27(5), pp. 603-630.

ter Hofstede, F., Audenaert, A., Steenkamp, J-B.E.M., & Wedel, M. (1998), An investigation into the association pattern technique as a quantitative approach to measuring means-end chains, *International Journal of Research in Marketing*, 15, pp. 37-50.

Thøgersen, J. (1994). Monetary incentives and environmental concern: effects of a differentiated garbage fee. *Journal of Consumer Policy*, 17(4), pp. 1-36.

Vanden Auweele, Y., De Cuyper, B., Van Mele, V., & Rzewnicki, R. (1993). Elite performance and personality: From description and prediction to diagnosis and intervention. In Singer, R.N., Murphey, M., & Tennant, L.K. (Eds*.), Handbook of research on sport psychology.* New York: Macmillan. pp. 257-289.

Vanden Auweele, Y., Nys, K., Rzewnicki, R. & Van Mele, V. (in pers). Personality and the athlete. In: Singer R., Hausenblas H. & Janelle C. (Eds.) *Handbook of Sport*

Psychology, Second Edition. John Wiley & Sons.

Van Liere, K.D. & Dunlap, R.E. (1980). The social bases of environmental concern: a review of hypotheses, explanations and empirical evidence. *Public Opinion Quaterly*, 44, pp. 181-197.

Van Mechelen, I., De Boeck, P., & Rosenberg, S. (1995). The conjunctive model of hierarchical classes. *Psychometrika*, 60, pp. 505-521.

Van Mele, V. (1996). *Intra-individuele, kwantitatieve persoonlijkheidsdiagnostiek bij de begeleiding van atleten*. Niet gepubliceerde doctoraatsverhandeling. Leuven. KULeuven.

Van Mele, V., Vanden Auweele, Y., & Rzewnicki, R. (1995). An integrative procedure for the diagnosis of an elite athlete: a case study. *The Sport Psychologist*, 9, pp. 130-147.

Vansteelandt, K. & Van Mechelen, I. (1998). Individual differences in situation-behavior profiles: A triple typology model. *Journal of Personality and Social Psychology*, 75, pp. 751-765.

Vining, J. & Ebreo, A. (1990). What makes a recycler? A comparison of recyclers and nonrecyclers. *Environment and Behavior*, 22(1), pp. 55-73.

Warlop, L. & Ratneshwar, S. (1993). The role of usage context in consumer choice: a problem solving perspective. *Advances in Consumer Research*, 20, pp. 377-382.

Warlop, L, Smeesters, D., & Vanden Abeele, P. (in press). On selling brotherhood like soap: influencing everyday disposal decisions. In: Ratneshwar, S., Mick, D.G., & Huffman, C. (Eds.) *The why of consumption*. London: Routledge.

APPENDIX

HICLAS-schema in rang 3 van sorteergedragingen en sorteermotivaties van de groep met een **hoge betrokkenheid op het milieu** (N=60). Globale goodness-of-fit-waarde 0.905 (p. 208).

HICLAS-schema in rang 3 van sorteergedragingen en sorteermotivaties van de groep met een **lage betrokkenheid op het milieu** (N=60). Globale goodness-of-fit-waarde 0.905 (p. 209).

HICLAS-schema in rang 3 van sorteergedragingen en sorteermotivaties van de groep met een **hoge oriëntatie op burgerzin** (N=60). Globale goodness-of-fit-waarde 0.905 (p. 210).

HICLAS-schema in rang 3 van sorteergedragingen en sorteermotivaties van de groep met een **lage oriëntatie op burgerzin** (N=60). Globale goodness-of-fit-waarde 0.905 (p. 211).
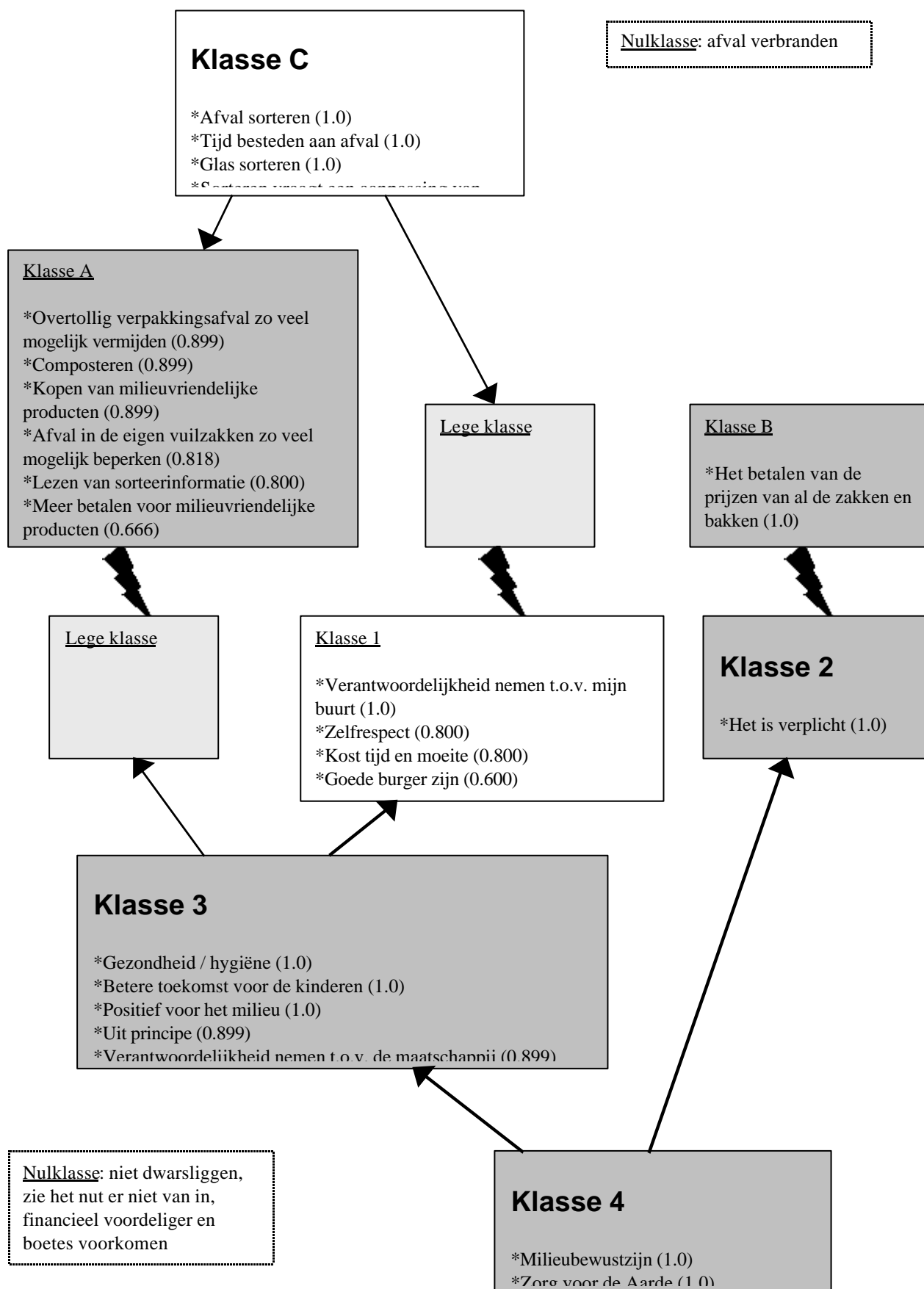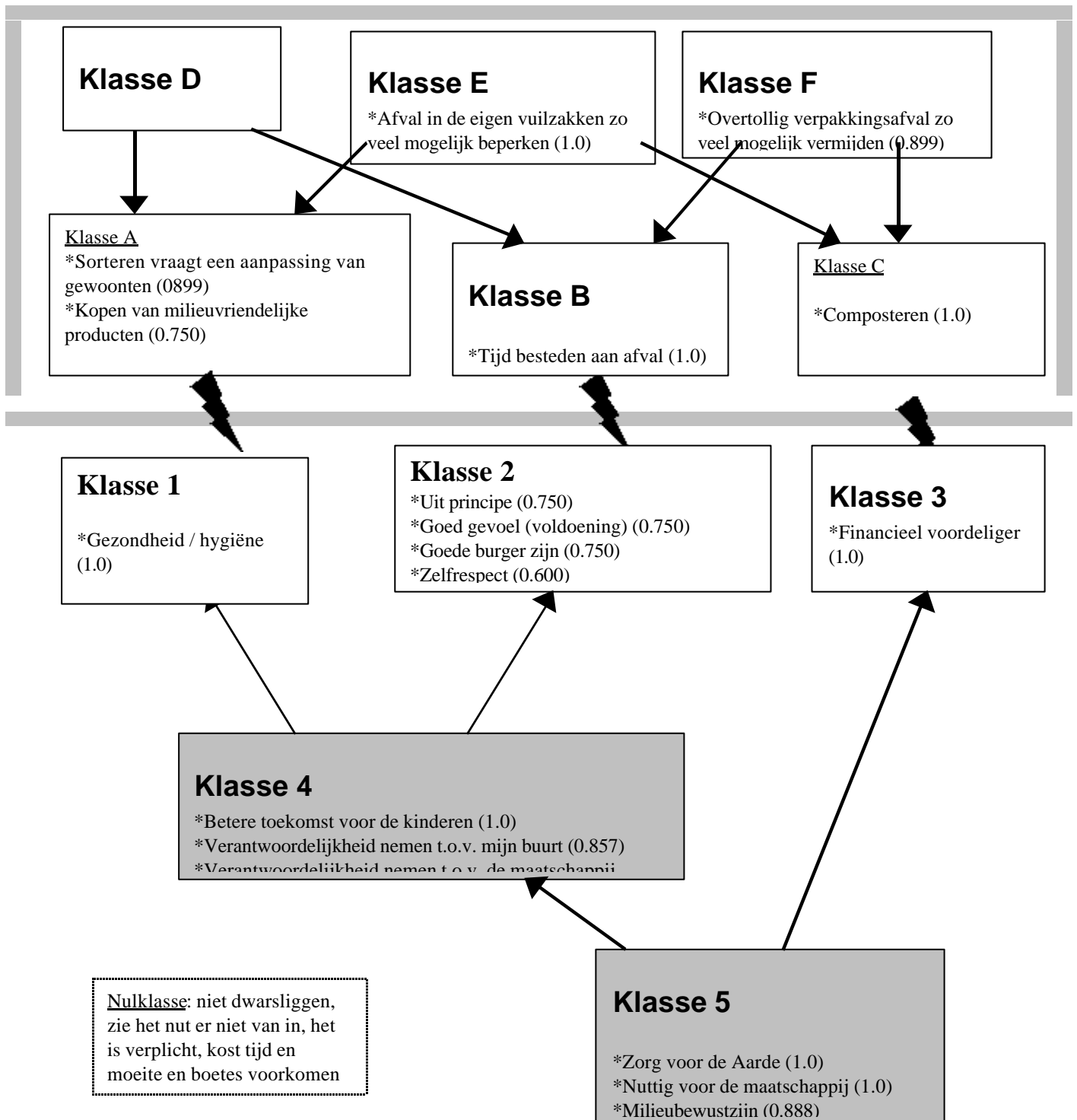
HICLAS-schema in rang 3 van sorteergedragingen en sorteermotivaties van de groep met een **hoge betrokkenheid op het milieu** (N=60). Globale goodness-of-fit-waarde 0.905.

Klasse C

*Afval sorteren (1.0)
*Tijd besteden aan afval (1.0)
*Glas sorteren (1.0)
*Sorteren vraagt aan aanpassing van

Nulklasse: afval verbranden

Klasse A

*Overtollig verpakkingsafval zo veel mogelijk vermijden (0.899)
*Composteren (0.899)
*Kopen van milieuvriendelijke producten (0.899)
*Afval in de eigen vuilzakken zo veel mogelijk beperken (0.818)
*Lezen van sorteerinformatie (0.800)
*Meer betalen voor milieuvriendelijke producten (0.666)

Lege klasse

Klasse B

*Het betalen van de prijzen van al de zakken en bakken (1.0)

Lege klasse

Klasse 1

*Verantwoordelijkheid nemen t.o.v. mijn buurt (1.0)
*Zelfrespect (0.800)
*Kost tijd en moeite (0.800)
*Goede burger zijn (0.600)

Klasse 2

*Het is verplicht (1.0)

Klasse 3

*Gezondheid / hygiëne (1.0)
*Betere toekomst voor de kinderen (1.0)
*Positief voor het milieu (1.0)
*Uit principe (0.899)
*Verantwoordelijkheid nemen t.o.v. de maatschappij (0.899)

Nulklasse: niet dwarsliggen, zie het nut er niet van in, financieel voordeliger en boetes voorkomen

Klasse 4

*Milieubewustzijn (1.0)
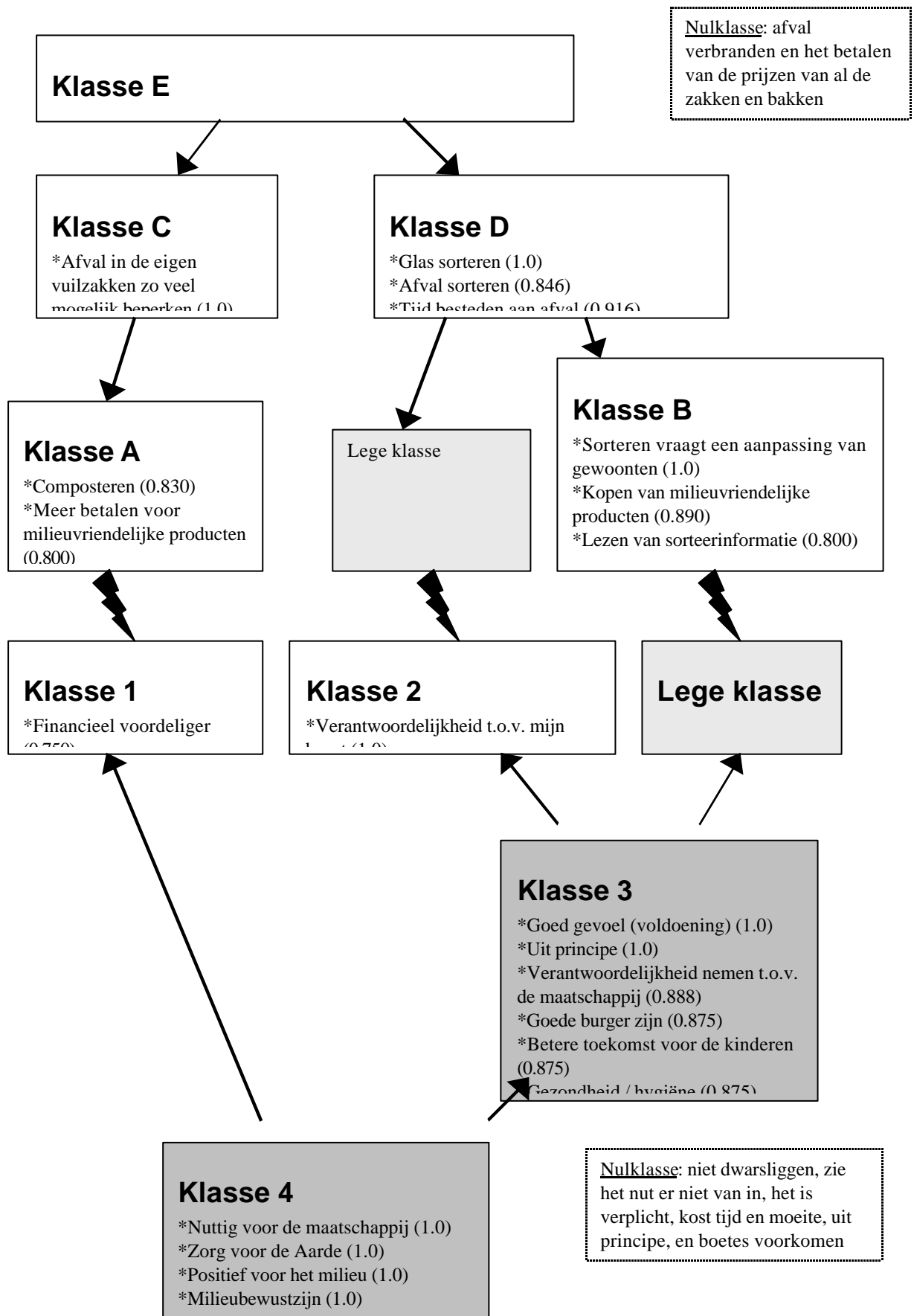*Zorg voor de Aarde (1.0)

HICLAS-schema in rang 3 van sorteergedragingen en sorteermotivaties van de groep met een **lage betrokkenheid op het milieu** (N=35). Globale goodness-of-fit-waarde 0.875.
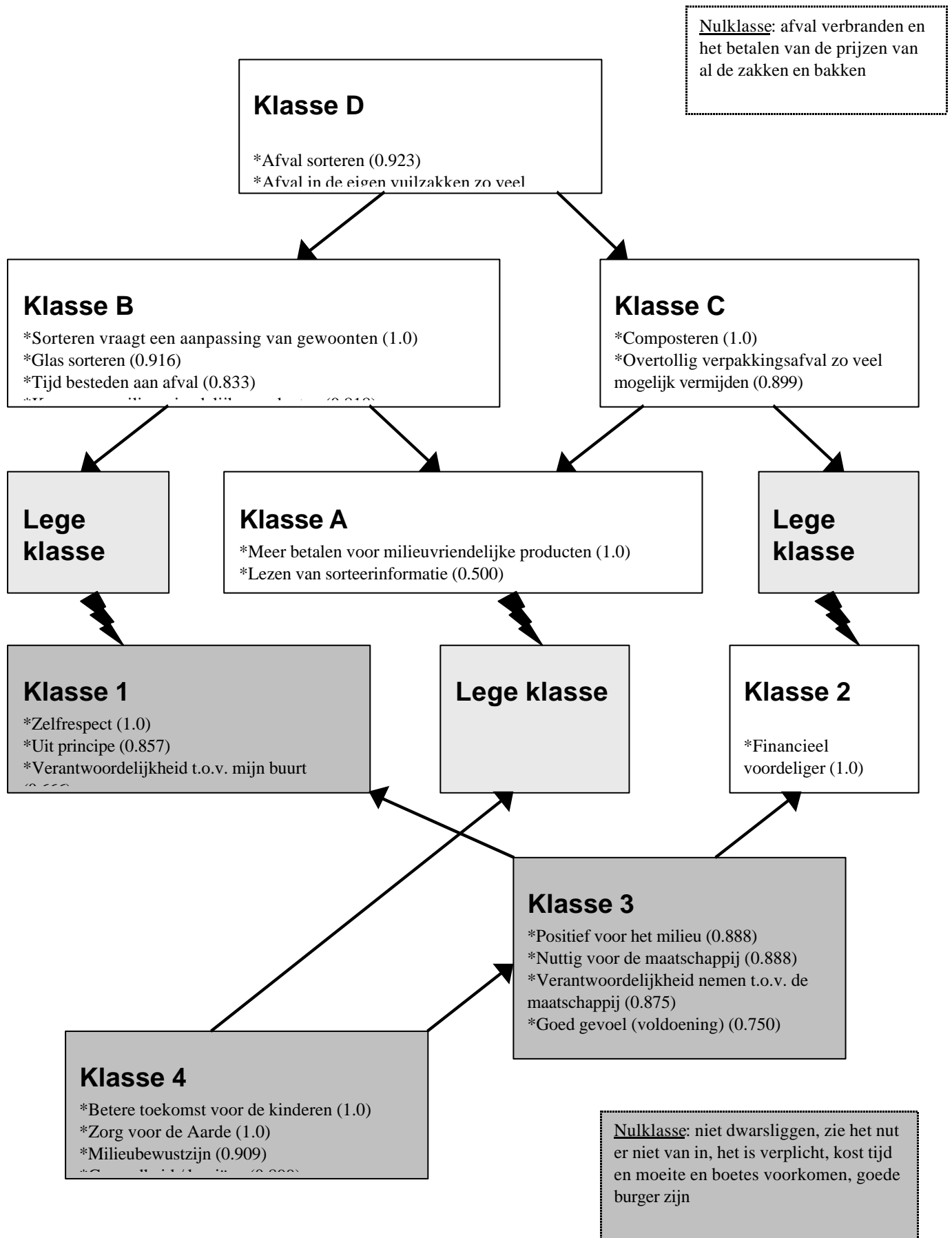
Klasse D

Klasse E
*Afval in de eigen vuilzakken zo veel mogelijk beperken (1.0)

Klasse F
*Overtollig verpakkingsafval zo veel mogelijk vermijden (0.899)

Klasse A
*Sorteren vraagt een aanpassing van gewoonten (0899)
*Kopen van milieuvriendelijke producten (0.750)

Klasse B
*Tijd besteden aan afval (1.0)

Klasse C
*Composteren (1.0)

Klasse 1
*Gezondheid / hygiëne (1.0)

Klasse 2
*Uit principe (0.750)
*Goed gevoel (voldoening) (0.750)
*Goede burger zijn (0.750)
*Zelfrespect (0.600)

Klasse 3
*Financieel voordeliger (1.0)

Klasse 4
*Betere toekomst voor de kinderen (1.0)
*Verantwoordelijkheid nemen t.o.v. mijn buurt (0.857)
*Verantwoordelijkheid nemen t.o.v. de maatschappij

Klasse 5
*Zorg voor de Aarde (1.0)
*Nuttig voor de maatschappij (1.0)
*Milieubewustzijn (0.888)

HICLAS-schema in rang 3 van sorteergedragingen en sorteermotivaties van de groep respondenten met een **hoge oriëntatie op burgerzin** (N=48). Globale goodness-of-fit-waarde 0.920.

Klasse E

Klasse C
*Afval in de eigen vuilzakken zo veel mogelijk beperken (1.0)

Klasse D
*Glas sorteren (1.0)
*Afval sorteren (0.846)
*Tijd besteden aan afval (0.916)

Klasse A
*Composteren (0.830)
*Meer betalen voor milieuvriendelijke producten (0.800)

Lege klasse

Klasse B
*Sorteren vraagt een aanpassing van gewoonten (1.0)
*Kopen van milieuvriendelijke producten (0.890)
*Lezen van sorteerinformatie (0.800)

Klasse 1
*Financieel voordeliger (0.750)

Klasse 2
*Verantwoordelijkheid t.o.v. mijn buurt (1.0)

Lege klasse

Klasse 3
*Goed gevoel (voldoening) (1.0)
*Uit principe (1.0)
*Verantwoordelijkheid nemen t.o.v. de maatschappij (0.888)
*Goede burger zijn (0.875)
*Betere toekomst voor de kinderen (0.875)
*Gezondheid / hygiëne (0.875)

Klasse 4
*Nuttig voor de maatschappij (1.0)
*Zorg voor de Aarde (1.0)
*Positief voor het milieu (1.0)
*Milieubewustzijn (1.0)

HICLAS-schema in rang 3 van sorteergedragingen en sorteermotivaties van de groep respondenten met een **lage oriëntatie op burgerzin** (N=48). Globale goodness-of-fit-waarde 0.871.

Nulklasse: afval verbranden en het betalen van de prijzen van al de zakken en bakken

Klasse D

*Afval sorteren (0.923)
*Afval in de eigen vuilzakken zo veel

Klasse B
*Sorteren vraagt een aanpassing van gewoonten (1.0)
*Glas sorteren (0.916)
*Tijd besteden aan afval (0.833)

Klasse C
*Composteren (1.0)
*Overtollig verpakkingsafval zo veel mogelijk vermijden (0.899)

Lege klasse

Klasse A
*Meer betalen voor milieuvriendelijke producten (1.0)
*Lezen van sorteerinformatie (0.500)

Lege klasse

Klasse 1
*Zelfrespect (1.0)
*Uit principe (0.857)
*Verantwoordelijkheid t.o.v. mijn buurt

Lege klasse

Klasse 2

*Financieel voordeliger (1.0)

Klasse 3
*Positief voor het milieu (0.888)
*Nuttig voor de maatschappij (0.888)
*Verantwoordelijkheid nemen t.o.v. de maatschappij (0.875)
*Goed gevoel (voldoening) (0.750)

Klasse 4
*Betere toekomst voor de kinderen (1.0)
*Zorg voor de Aarde (1.0)
*Milieubewustzijn (0.909)

Nulklasse: niet dwarsliggen, zie het nut er niet van in, het is verplicht, kost tijd en moeite en boetes voorkomen, goede burger zijn

Part 5

Heterogeneity in sustainable consumption: A segmentation analysis of waste sorting behavior

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Disposal activities are increasingly important components of the total consumption behavior of individuals and households, and receive increasing attention from consumer researchers. The government as a social marketer tries to influence consumers to engage in sustainable forms of waste production, and organizes and even mandates sorting of household garbage in fractions amenable to recycling. Government's interest in doing so is primarily motivated by the increasing strain on the existing waste processing capacity (incinerators, landfills) of society. Sustainable consumption by consumers is a priority for achieving sustainable development.

For most people in most circumstances, sustainability will conflict with self-interest. Unsustainable means of disposal are less effortful and cheaper. The individual consumer is confronted with a social dilemma (Dawes, 1980; Messick & Brewer, 1983): the choice between an easy solution that hurts society at large, and a sustainable alternative for which the individual pays a price. The government (at different levels) acts as a social marketer, assuming the difficult responsibility of promoting individual consumer choices in favor of the collective (sustainable) interest, and against one's personal interest. To promote sustainable consumption the government disposes of two kinds of marketing instruments: communication instruments and instruments for direct behavioral control.

Direct behavioral control instruments try to create a structural solution for the social dilemma. Government uses carrots and sticks to change the nature of the dilemma such that individuals will choose the cooperative option, even if they are motivated by self-interest. It can influence the consumer prices for goods (like water and fuel) and public transportation, controls how much the consumer pays for the processing of different kinds of garbage, grants subsidies, fines and penalizes. So, the government can reward consumers for sustainable behavior and punish them for unsustainable behavior. In principle, it can forge a behavioral change without an underlying change in mentality. In the long run, this kind of policy cannot be maintained. Forced compliance would require airtight control. Moreover, a democratic system cannot afford to implement rules that are opposed by a majority of the population. Therefore, the social marketing task is to foster a change in mentality, which is also an explicit purpose of Agenda 21 of the United Nations. For this task, the government has the classic advertising channels at its disposition, but also some control over messages on product packaging, on garbage containers, etc... Other involved parties, like the NGOs, can also use some of these communication channels, and can receive government support to do so.

According to Kotler & Zaltman (1971), social marketing refers to the design, implementation, and control of programs calculated to influence the acceptability of social ideas, in order to promote more cooperation in society (e.g., more accurate recycling). The beneficial ideas of recycling behavior should be marketed to the general public of consumer. This

marketing effort may be directed in the same way to all consumers (as an undifferentiated strategy), or alternatively, the market may be segmented on various dimensions and the marketing effort may then targeted toward specific segments. Marketing efforts may use a variety of different promotional techniques, including advertising, to communicate to the target audience. This conceptualization makes it clear that developing a cohesive strategy for marketing waste sorting behavior[1] is a complex proposition that involves addressing many different aspects of the problem. In order to be successful in changing the mentality of our fellow citizens, one should very thoroughly investigate which communication strategies may achieve the highest rate of success. As already indicated an overall undifferentiated strategy may not be the most successful strategy. Citizens are not all the same: they may differ according to their socio-demographic characteristics or they may have different values and goals that drive their waste sorting behavior. Therefore, some communication strategies may be most appropriate for one group of individuals but other communication strategies may be most appropriate for another group of individuals. In the present paper, we like to contribute to the recycling literature by classifying individuals into qualitatively different segments. Knowledge of various existing recycling segments of individuals may provide useful information for developing adequate social marketing strategies for promoting cooperative recycling behavior in each segment.

A first step in our segmentation approach is to decide which basis we will use to classify our participants into different segments. Starting points for segmentation classifications typically fall into two categories: socio-demographic characteristics and motivational (goal) characteristics. However, socio-demographic characteristics (e.g., age, education, or income) have been found to operate as poor predictors of waste sorting behavior, and consequently are poor candidates for segmentation (see Shrum et al., 1994; Van Liere & Dunlap, 1980). Research on the relationship between socio-demographic characteristics and recycling behavior has published very inconsistent and contradictory findings. On the other hand, motives and goals have been found to strongly predict recycling behavior (e.g., Balderjahn, 1988; McCarty & Shrum, 1993; Vinning & Ebreo, 1990) and, consequently, serve as an adequate basis for classifying individuals into qualitatively different segments.

Thus, for social marketing purposes classification of individuals on basis of their recycling goals may be the best and most accurate segmentation method to use. In our research, we like to investigate which personal goals drive people's waste sorting behavior and use these goals as a basis for segmentation. However, little is known about which goals drive people's waste sorting behavior in the presence of mandatory recycling programs. Until now, the recycling literature has mainly focused on motives and goals in the context of voluntary recycling programs. These studies basically found that only ecological goals drive people's waste sorting

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[1] We use the terms 'recycling' and 'waste sorting' interchangeably.

behavior. In the context of mandatory recycling programs, however, other goals may also drive people's recycling activities.

In the present paper we like to conduct two studies. In a first study, we like to make an inventory of all possible personal goals driving people's waste sorting behavior. In order to achieve that, we used a means-end chain framework (Reynolds and Gutman 1988) to explore this issue. In a second study we used the obtained goal inventory, from Study 1, as a basis for segmentation. Subsequently, the retained segments will be further described and typified through socio-demographic characteristics, several psycho-graphics and self-reported recycling accuracy.

Study 1
Method

We collected means-end chains data through laddering. This is an in-depth interview technique that tries to uncover which personal values drive individuals' consumption behavior (Reynolds & Gutman, 1988). Laddering is often practiced to reveal how consumers' product knowledge is hierarchically organized. It is assumed that consumers translate concrete product attributes into personal consequences of using the products and the personal value they satisfy (Peter & Olson, 1987; Olson & Reynolds, 1983). These different levels of abstraction linked to one another form the complete ladder[2]. In research one tries to force consumers to construct ladders starting with concrete product attributes and ending at the highest levels of his/her product knowledge motivation hierarchy. Laddering can also be used to unveil people's goal-directed consumer behavior in terms of a hierarchical structure of increasingly more abstract goals (Pieters, Baumgartner, & Allen, 1995).

In the present study we used the laddering technique to create a hierarchical map of consumers' higher-level goals underlying recycling behavior. The laddering procedure followed two steps. First, we conducted depth-interviews with each of our respondents to detect various recycling related behaviors, which can be used as starting points for the construction of the ladders. Second, we conducted individual laddering interviews starting from this inventory of

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[2] The term 'ladder' refers to elicitations from individuals, whereas the term 'means-end chains' refer to the sequences of elements which emerge from the aggregate implication matrix.

elicited recycling behaviors and behavioral attributes. We encouraged our respondents to engage in higher levels of thinking about abstract recycling goals.

Participants

Thirty-five respondents took part in this preliminary study. They were equally selected from different regions: urban, suburban and rural regions. In all these regions, waste recycling is mandatory. Thus, like in most Belgian cities, all our respondents are obliged to recycle. They have to follow very specific rules and violations of these rules can results in monetary penalties. Respondents' ages ranged between 25 and 70, with a majority between 40 and 60. Respondents were individually interviewed with an average interview taking about 70 minutes. All interviews were conducted in Dutch. They have been recorded on tape and completely transcribed.

Data collection

During the first part of the interview, respondents were questioned about which recycling related behaviors they practiced (e.g., sorting waste, composing, littering, burning waste, purchasing less packaged products, reading recycling information.). Subsequently, the elicited recycling related behaviors were used as starting points for the construction of the ladders. Respondents were asked for reasons why they wanted to exhibit a particular recycling related behavior. For each reason given, participants were asked to specify why that reason was important to them. Respondents were also encouraged to be as complete as possible

Results

Before extracting a hierarchical goal map of recycling behavior, the raw data from the interviews had to be re-organized (see Reynolds & Gutman, 1988). First of all, responses had to be classified into three basic levels: recycling behavior, consequences and goals. Second, raw data had to be classified into a limited number of meaningful response categories. Laddering interviews typically provide fairly idiosyncratic material and participants often express the same meaning but differently phrased.

Next, an implication matrix was constructed. In this matrix, all categories are included both as a row and as a column. The cell values of this matrix reflect how often a concept (in the rows) is followed by another concept (in the columns). Both direct and indirect links between the concept are considered. A direct link between two concepts exists when the concepts are mentioned in the same ladder, and not separated by another concept. An indirect link between two concepts exists when the concepts are mentioned in the same ladder, but separated by one or

more other concepts. Reynolds & Gutman (1988) argued that it is useful to examine both types of links in determining which paths are dominant in an aggregate map of relationships among concepts. Without examining direct links, a situation might exist where there are many paths by which two concepts may be indirectly connected but where none of the paths are represented enough times to represent a significant connection. Furthermore, we did not correct for multiple mentions as only two participants mentioned the same direct relations twice (in different ladders).

In the present study, participants elicited a total of 235 ladders, with an average of 6.7 ladders per participant. In order to construct a hierarchical goal map of recycling behavior, the laddering data were analyzed with the Laddermap program (Gengler & Reynolds, 1993). In the implication matrix, individual respondent's ladders are decomposed in direct and indirect components. Constructing a goal map, however, occurs on the basis of aggregated data from the implication matrix. The hierarchical map shows the interrelationship between the recycling behaviors, consequences and goals. Presentation of the concepts is typically cast into a tree structure, which the abstract goals at the top and the concrete recycling behaviors at the bottom. The hierarchical map reflects all significant relationships between relevant concepts. In order to decide which relationships are significant, one can determine a cutoff level. This cutoff refers to the minimal number of relationships that has to occur between two concepts. For instance, a cutoff of 5 means that only the relationships that appear 5 or more times are reproduced in the hierarchical map. Some heuristics are proposed to for choosing a cutoff level (see Reynolds & Gutman, 1988). First, the most typical approach is to try to map all relationships above several cutoff levels. The use of multiple cutoffs permits one to evaluate several possible solutions, choosing the solution that appears to be the most informative and most stable set of relationships. Second, the number of relationships mapped in relation to the number of relationships in the square implication matrix can be used as a goodness-of-fit index of the completeness of the hierarchical goal map. Using both heuristics, a cutoff level of 5 appeared to be the most appropriate. At this cutoff level, we could also account for 62% of all relationships using only 6% of all possible cells and only 16% of all active cells (i.e., nonzero cells) in the implication matrix. This means that with a minimum of (active) cells we could account for two-thirds of all relationships.

Once an appropriate cutoff has been chosen, the goal hierarchy underlying recycling behaviors can be represented graphically. The goal map was constructed from the implication matrix by graphing all relations that met or exceeded the chosen cutoff level of 5. Using this cutoff level, we could reveal the following hierarchical goal map (Figure 1). Inspection of this map, revealed that participants basically started from 4 recycling behaviors: reading recycling

information, sorting waste[3], avoid illegal waste handling, and purchasing less packaged products. These various recycling behaviors revealed 7 major goals that motivated people's recycling behavior and which could be broadly categorized into three categories of goals. A first category was saving money. Some people like to purchase less packaged products to reducing redundant packaging material, which could save them money. People that are driven by a saving money goal sort their waste because it is cheaper than not sorting[4] or because they do not like to be fined for violating recycling rules. A second category of goals existed of intrinsic motives (self-respect, environmental concern, a better future for next generations, and civic duty). Some people thoroughly read information about sorting rules because they like to learn to sort accurately their waste, which may serve their self-respect. Some people like to avoid illegal waste handling (e.g., illegal dumping, littering, burning waste etc.) because it is unhealthy and harmful for future generations. Some people like to pursue intrinsic motives in sorting their waste because it has positive consequences for the environment, because it is healthy, because they like to take their responsibility for the neighborhood and for society but also because the government asks them to. A third category of recycling goals refers to social norms. Some people like to sort their waste because they like to conform to what other people do or because cooperating to society is fair to everybody.

Discussion

A laddering approach was followed to reveal consumers' dominant hierarchical goal map of recycling behavior. We found that basically three important categories of goals drive people's recycling behavior. Some people recycle only for extrinsic reasons, because it benefits them more than not recycling. Assuming that recycling requires more physical effort and time than not recycling, these people seem to place more value on monetary outcomes, which may be the decisive factor to opt for recycling or not. Other people may be more intrinsically motivated to recycle. They may be driven by environmental values, civic duty, self-respect or by a pursuit for a better future for next generations. Although these people were obliged to recycle, they might even recycle in case of voluntary, non-mandatory recycling programs. A third category of goals related to social norms. People driven by conformism or fairness might be very sensitive to what other people do. Previous qualitative research (Smeesters, Warlop, Vanden Abeele, & Ratneshwar, 1999) also indicated that the decision to recycle or not might be heavily influenced by social norms. Some people may recycle because they want to behave like the majority of the

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[3] Sorting waste was a starting category for most ladders. During the interviews, actual starting concepts referred to sorting in general, and to sorted waste categories (organic waste, paper, glass, nonrecyclables,…), which were then aggregated in one response category.

[4] In Belgium bags for recyclable waste are very cheap and bags for nonrecyclable rest waste are expensive. Accurate waste sorting is therefore cheaper than throwing all your materials in the nonrecyclable waste bag.

people do, but unfairness perceptions (e.g., littering, waste burning in the backyard) might urge them to also defect on the recycling system.

The hierarchical goal map we retrieved contained 15 complete ladders. These 15 ladders and the goal map they shaped can be conceived as the dominant goal structure of recycling behavior (see Reynolds & Gutman, 1988). Quite a few researchers have suggested that means-end chains provide a suitable basis for market segmentations (Gutman, 1982; Kamakura & Novak, 1992; Reynolds & Gutman, 1988). In the next study, we like to use our hierarchical goal map of recycling behavior as the basis for classifying participants in segments with respect to their responses. Furthermore, we also like to gather data about socio-demographics and psychological measures to describe each segment. Finally, we like to investigate the influence of these segments on self-reported waste sorting behavior.

Study 2

Method

In this study, respondents had to respond to four types of measures. First of all, participants' answers on each of the 15 ladders revealed in Study 1 were measured. Each ladder was split up in two separate statements: a behavior-consequence statement and a consequence-goal statement. Participants had to indicate for each statement whether it could be applied to them. Based on the scores on each separate statement, we binary scored whether a ladder could be applied to a participant. A ladder received a non-zero score when the two statement of a ladder could be applied to a participant. A ladder received a zero score when one of the two statements of a ladder could not be applied to a participant. Next, participants' responses to several scales were measured. Third, participants had to fill in questions about socio-demographic characteristics. Finally, respondents had to indicate the accuracy of their waste sorting behavior through self-report. Assessments of people's waste sorting behavior through self-report have been extensively used in the literature (e.g., see Arbuthnot, 1977; De Young, 1986, 1990; Gamba & Oskamp, 1994; Goldenhar & Connell, 1993; Grunert, 1996; Kok & Siero, 1985; McCarty & Shrum, 1993, 1994; Oskamp, Harrington, Edwards, Sherwood, Okuda, & Swanson, 1991; Reschovsky & Stone, 1994; Simmons & Widmar, 1988; Thøgersen & Grunert, 1997; Vining & Ebreo, 1990).

Participants

The study is based on a sample of 317 residents in Flanders. Respondents were equally divided over rural and urban parts of Flanders. Half of our respondents lived in single-family

dwellings, the other half of our respondents lived in multi-family dwellings (e.g., apartment, flats). Taking urbanization (rural versus urban) and type of dwelling (single-family versus multi-family) into account, respondents were randomly chosen. Within each household, an adult was randomly selected for interview. Interviews were completed by trained interviewees at each resident's house. On average, interviewing respondents lasted for about fifty minutes.

Questionnaire

Respondents were told that the survey was conducted by the Catholic University of Leuven and that their answers would help us understand how the waste and recycling problems should be handled. As mentioned before, the questionnaire existed of four types of measures. First of all, people had to respond to 23 statements. The 15 dominant ladders of Study 1 were split up in behavior-consequence statements and consequence-goal statements. This resulted in 23 statements (some ladders had overlapping chains). It is largely assumed in means-end chain literature that there exists a conditional independence between the two parts of a ladder (i.e., the behavior-consequence link and the consequence-goal link, see Gutman, 1982). Peter & Olson (1987) suggested that numerous combinations of attributes, consequences and goals are possible. Imagine, for instance, that Behavior$_1$ leads to a Consequence, which leads to Goal$_1$ and that Behavior$_2$ leads to the same Consequence, which leads to Goal$_2$. According to the conditional independence principle, Behavior$_1$ should then also lead to Goal$_2$ via Consequence and Behavior$_2$ should also lead to Behavior$_1$ via Consequence. Also, Walker & Olson (1991) argued that consequences are intermediating concepts, separating the attributes (behaviors) from the self (values, goals) without any conditional dependence. Finally, ter Hofstede, Audenaert, Steenkamp, & Wedel (1998) found strong support for conditional independence of the two parts of a ladder.

Second, participants had to answer several response items, which constituted several scales (social value orientation, biospheric values, altruism, morality, civic duty, constraint occurrence, trust in authority, neighborhood defection, recycling efficacy, obligation to authority, and recycling knowledge). Response items for each of the scales were randomly ordered but were generally positioned in each other's proximity.

Third, participants had to answer several questions about their socio-demographic characteristics (gender, diploma, diploma of father, urbanization, type of dwelling, dwelling location, size of family, surface of house, number of people per square meter, and income).

Finally, respondents were asked to indicate for several waste materials the accuracy of sorting it in recyclable waste bags.

Measures

Means-end statements

Participants had to respond to 23 statements. These 23 statements were constructed from 15 ladders depicted in the hierarchical goal map of Study 1. Ladders were split up, resulting in 10 behavior-consequence statements and 13 consequence-goal statements[5] (see Appendix A for the statements). Respondents could indicate whether they totally agreed, moderately agreed, or whether they agreed not all with a specific statement. Only when a participant totally agreed with a statement, then this statement received a nonzero score, otherwise it received a zero score. In Appendix A, you also find for each statement the percentage of respondents that totally agreed with that statement.

Afterwards, we reconstructed the original ladders from Study 1. A ladder for a participant received a nonzero score as the participants totally agreed with <u>both</u> the behavior-consequence and the consequence-goal statement of that ladder. In all other cases, a ladder for a participant received a zero score. Segmentation would be based upon the zero/nonzero scores of the ladders. In Appendix B, you find for each ladder the percentage of participants that totally agreed with that ladder.

Psycho-graphics

After scoring the statements, respondents had to score response items of the following scales.

<u>Social Value Orientation</u>

Social value orientation refers to a personal disposition that is assumed to reflect preferences in the ways in which outcomes for the self and outcomes for other are evaluated (McClintock, 1972, 1978; McClintock & Liebrand, 1988; Messick & McClintock, 1968). The concept of social value orientation is rooted in research on experimental games, a tradition largely inspired by game theoretical principles (Luce & Raiffa, 1957). Challenging the original assumptions underlying game theory, this research has revealed that individuals' preferences and behavior do not directly reflect the logic dictated by self-interest. Indeed, research by Messick & McClintock (1968) revealed that a substantial number of individuals approach experimental games by considering not only their own outcomes but also the outcomes afforded to others. Although a variety of social value orientations can be identified (cf. Griesinger & Livingstone, 1975; McClintock, 1972), basically three orientations are considered in research. Other orientations

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[5] Some ladders had overlapping parts.

(e.g., aggression, nihilism) are only very rarely found. Therefore, research has only focused on three groups of social value orientations: cooperation, individualism, and competition (e.g., Kramer, McClintock, & Messick, 1968; Van Lange & Kuhlman, 1994). Individuals with cooperative orientations are often referred to as prosocials. It is also very usual to combine individuals with individualistic orientations and individuals with competitive orientations into a group with proself orientations (called proselfs). Prosocials tend to maximize the outcomes for the self and the outcomes for others and, at the same time, they tend to minimize differences between the outcomes for the self and the outcomes for the others. Proselfs tend to maximize their own outcomes, either in an relative manner (by maximizing the differences between outcomes for the self and outcomes for the others) or in a absolute manner (by maximizing the outcomes for the self with little or no attention for the outcomes for others). Social value orientations have been found to be very predictive in various types of experimental games (e.g., Kramer et al., 1985; Liebrand, 1984; Liebrand, Jansen, Rijken, & Suhre, 1986; Sattler & Kerr, 1991; Van Lange & Liebrand, 1989, 1991a, 199b; Van Lange & Kuhlman, 1994), for helping behavior (McClintock & Allison, 1988), for willingness to sacrifice in close relationships (Van Lange, Agnew, Harinck, & Steemers, 1997a), for negotiation behavior (De Dreu & Van Lange, 1995), and for behavior relevant to environmental pollution and commuting decisions (Van Vugt, Meertens, & Van Lange, 1995).

Differences in social value orientation are often assessed by using a series of decomposed games (Messick & McClintock, 1968), which involve making choices among combinations of outcomes for the self and outcomes for another person. In the present study, we used the Triple-Dominance Test (see Kuhlman & Marshello, 1975; Van Lange, Otten, De Bruin, & Joireman, 1997b), which is an efficient and easy to administer instrument. Appendix B presents this decomposed game measure. As can be seen in the Appendix, an example of a decomposed game is the choice among three options: Option A, 480 points for the self and 80 points for the other; Option B, 540 points for the self and 280 points for the other; and Option C, 480 points for the self and 480 points for the other. In this example, Option A typically presents the competitive choice, because it provides a larger difference between outcomes for the self and outcomes for the other than Option B and Option C. Option B represents the individualistic option, because the outcomes for the self are larger than those in Option A and in Option C. Option C represents the prosocial choice, because it provides a larger joint outcome than does either Option A or Option B. Moreover, Option C represents a smaller discrepancy between outcomes for the self and outcomes for the other than does either Option A or Option B.

Participants were classified as either prosocial, individualistic, or competitive if at least six choices were consistent with one of these social value orientations. Following this criteria, we identified 171 participants as prosocial, 57 as individualistic, and 89 as competitive.

Participants with individualistic and competitive orientations were integrated into one category participants with proself orientations. As a result, we had 171 prosocials and 146 proselfs.

Biospheric Values

The questions used were drawn from Stern, Dietz, & Guagnano (1998). Respondents were asked to indicate for each response item the degree of importance to them. Items were: "Protecting the environment, preserving nature", "Unity with nature, fitting into nature", and "Respecting the earth, harmony with other species". Participants had to rate each item on a 5-point scale ranging from 'non important at all' (1) to 'very important' (5). The Cronbach's α of the Biospheric Value scale was 0.86.

Altruism

The questions used for the Altruism scale were also drawn from Stern et al. (1998). Respondents had to rate on the same 5-point scale as used for the Biospheric Value scale the following response items: "A world at peace, free of war and conflict", "Social justice, correcting injustice, care for the weak", and "Equality, equal opportunity for all". The Cronbach's α for the Altruism scale was 0.81.

Morality

The Morality scale was constructed from a pilot study with 104 participants. In that study, we generated an item pool on which we applied exploratory and confirmatory factor analysis to determine which latent variables underlay a set of items (see DeVellis, 1991). The following three response items were retained, which participants had to rate on a 5-point importance scale: "Acting on my conscience", "Behaving in a moral responsible manner", and "Acting just, righteous". The Cronbach's α for the Morality scale was 0.84.

Civic Duty

The Civic Duty scale was also constructed from the same pilot study. Participants rated on the same 5-point scale the degree of importance of following response items: "Fulfilling my duty as a citizen", "Behaving in a way that my country requests of me", and "Acting as a good citizen", "Behaving in a moral responsible manner", and "Acting just, righteous". The Cronbach's α for the Civic Duty scale was 0.88.

Constraint Occurrence

Constraint Occurrence items were also retained from our pilot study. Respondents were asked to agree or disagree that: "They had not enough space in their house to store all recycling bags and boxes", "There were not enough opportunities in their municipality to dispose their waste", "The distance to the container park was too large", "Sorting waste is too expensive", and "Sorting waste causes a dirty house". The Cronbach's α for the Civic Duty scale was 0.66.

Trust in authority

The response items used were drawn from the "Trust in Authority" scale (Tyler, 1990; Tyler & Degoey, 1995). Respondents were asked to agree or disagree that: "The authorities in our country do their job well", "The decisions made by the authorities in our country are not influenced by political pressures", "The authorities in our country can be trusted to make decisions that are good for everyone", "The authorities in our country treat their citizens well", and "Laws and regulations in our country are applied in a fair manner and equal to everybody". The Cronbach's α for the Trust in Authority scale was 0.86.

Neighborhood defection

Neighborhood Defection items were also retained from our pilot study. Respondents were asked to say Yes or No to the following items: "Are there any neighbors that burn waste in their backyard?", "Are there any neighbors that do not recycle and put everything with their nonrecyclable rest waste?", "Are there any neighbors that illegally dump their waste?", and "Are there any neighbors that put their waste in public waste bins?". The Cronbach's α for the Neighborhood Defection scale was 0.61.

Recycling Effectiveness

The response items were adapted from Ellen, Wiener, Cobb-Walgren (1991). Respondents were asked to agree or disagree that: "There is not much that any one individual can achieve about the environment with recycling", and "The recycling efforts of one person are useless as long as other people refuse to recycle". The Cronbach's α for the Recycling Effectiveness scale was 0.61.

Obligation to Authority

The response items were drawn from the "Obligation to Authority" scale (Tyler & Degoey, 1995). Respondents were asked to agree or disagree that: "Respect for government authority is an important value for people to have", "People should obey laws even when they go against what they think is right", "Disobeying the law is seldom justified", and "It is important for people to learn when to question authority". The Cronbach's α for the Obligation to Authority scale was 0.58.

Recycling Knowledge

We also tried to assess participants' knowledge about recycling. We asked for several waste materials (butter-dishes, bulbs, mussel shells, foil, cans en tins, spray cans, paper or cardboard packaging, tetra-bric, and empty detergent flasks) in which bag it belonged[6]. For each waste material, participants had 5 possible bags or boxes. For each material, there was only one good answer.

<div align="center">

Socio-demographic characteristics

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Next, revenant socio-demographic information was gathered including gender, age category, diploma, diploma of father, urbanization, type of dwelling, location of dwelling, size of family, surface of house, number of people per square meter, and income. Respondents were equally distributed among gender, age, urbanization, and type of dwelling categories. Approximately 48% of the respondents were men, and 52% are women. In terms of age, 33.4% of the respondents were between 18 and 34 years, 33.7% of the respondents were between 35 and 49 years, and 32.9% were between 50 and 70 years. In terms of urbanization, 53.3% of the respondents lived in rural regions whereas 46.7% lived in urban regions. Furthermore, 51.4% of the respondents lived in a single-family dwelling, and 48.6% lived in a multi-family dwelling.

Respondents also had to answer question about their diploma (no diploma, primary school, low degree secondary school, high degree secondary school, higher non-university education, university diploma), diploma of father (same diploma categories), location of dwelling (city center, urban conglomeration, corporate town, village, countryside), size of family, surface of house (0-36 m², 37-64 m², 65-100 m², 101-150 m², 151-200 m², 201-250 m², 251-300 m², over 300 m²), number of people per square meter (calculated by size of family divided by surface of house), and income (less than 25.000 BEF., between 25.000 and 35.000 BEF., between 35.001 and 45.000 BEF., between 45.001 and 55.000 BEF., between 55.001 and 70.000 BEF., between 70.001 and 85.000 BEF., between 85.001 and 100.000 BEF., and over 100.000 BEF.).

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[6] In Belgium, one has to sort one's waste into several waste fractions: a nonrecyclable rest waste fraction, a compostable waste fraction, paper and cardboard waste fractions, small hazardous waste fraction, and a fraction of cans and plastic bottles. Each waste fraction has an own bag or box.

Self-reported accuracy of waste sorting

Finally, respondents had to answer questions about the accuracy of sorting recyclable waste materials in their allocated waste bags. Participants had to indicate for 8 recyclable waste materials (tetra-bric packed beverages, paper and cardboard packing, plastic bottles, cans and tins, newspapers and magazines, compost waste like vegetables or fruit, batteries, glass, and small hazardous garbage like spray cans or halogens) how many times out of 10 they accurately sorted their waste.

Results and Discussion

Mediation analysis

One part of our research project was to explain the difference in people's waste sorting behavior. First, we tested the influence of socio-demographic characteristics of our respondents on the self-reported accuracy of their waste sorting. We ran a regression analysis with self-reported accuracy of waste sorting as a dependent variable and a vector of the socio-demographic characteristics as predictors. Among all variables, only age happened to be a significant predictor of waste sorting accuracy. The regression coefficient is 0.2. It implies that older people reported more accurate waste sorting than younger respondents. All other variables were not significant.

In order to look at the relationship in more details, we tested the mediation effect of the psycho-graphics on the link between socio-demographic characteristics and waste sorting accuracy. In our analysis we followed guidelines to mediation analysis proposed by Kenny, Kashy, & Bolger (1998).

First, we tested the correlation between socio-demographic characteristics and waste sorting accuracy. Again, we found that among all variables only age was a significant predictor of recycling behavior. Second, in order to test whether different psycho-graphics mediated the link between age and waste sorting accuracy, we checked the correlation between age variable and all potential mediators. We found a significant correlation between age and Civic Duty (β = 0.27), Morality (β = 1.46), and Obligation To Authority (β = -0.28). Third, we checked whether the mediators affected the outcome variable. We used waste sorting accuracy as the criterion variable in a regression equation and initial (age) and mediator variables (Civic Duty, Morality, and Obligation To Authority) as predictors. We estimated three regression equations for three mediators separately. The results are presented in Table 1.

Table 1. Results of mediation analysis

Mediator	Mediator-Outcome path (β_1)	Initial variable-Outcome path controlling for mediators (β_2)
Civic Duty	0.13	0.26
Morality	0.17	0.23
Obligation To Authority	0.13	-0.25

Note: All coefficients are significant at 0.05 level.

Finally, our analysis also showed that all mediators did not *completely* mediate the link between age and recycling behavior. All β_2 coefficients were significantly different from zero, which implies only partial mediation effect.

The results showed that the age of respondents influence their recycling behavior via different paths. First, the age influenced the behavior directly, that is the older people are, the more accurate they sort their waste. However, age also had an indirect influence via three psycho-graphic constructs namely Civic Duty, Morality and Obligation to Authority. This indirect influence was twofold. On the one hand, older people had higher sense of Civic Duty and Morality, which influenced recycling accuracy in a positive way. On the other hand, our results suggested that older people feel more obligated to authority and this leads to lower recycling accuracy.

We argue that our findings provided somewhat limited managerial relevance. Similar to findings of a number of previous studies we found a limited value of socio-demographic variables for the prediction of people's behavior. We managed to add additional explanation of recycling behavior by adding several psycho-graphic constructs. Although, it provided deeper understanding of underlying processes, we still believe that the results are not relevant enough for managerial decision making.

We decided to look deeper into the structure of responses and tried to segment the respondents on the base of their values. We hypothesized that people with different values might report different accurate recycling behaior and therefore must be considered as separate segments.

Based on participants' answers on the means-end statements, we reconstructed participants' answers on the 15 ladders. We used these answers as a basis for the segmentation. In our segmentation analysis we considered the consumer's response process in a probabilistic framework (Gutman, 1991). In this framework, segments are represented by a finite mixture formulation (Titterington, Smith, & Markov, 1985) in which each respondent has a probability to belong to one or several segments. Mixture distributions have been widely used in the field of cluster analysis. It has been shown that mixture models enable marketing researchers to cope with many restrictions typical for classical segmentation approaches, such as heterogeneity in samples and stability of results. Moreover, the model-based approach to clustering connects classical clustering to conventional statistical estimation methods.

The finite mixture model assumes that the objects on which the variables $\mathbf{y_n} = (\mathbf{y_{nk}})$ are measured arise from a population that is a mixture of **S** segments, in proportions $\mathbf{p_1, \ldots p_S}$. The probabilities $\mathbf{p}s$ are subjects t the following constraints:

$$\sum_{s=1}^{S} p_s = 1, \quad p_s \geq 0, i = 1, \ldots I \tag{1}$$

Given that $\mathbf{y_{nk}}$ comes from segment **s**, the conditional distribution function of the vector $\mathbf{y_n}$ is represented by the general form $\mathbf{f_s(y_n|q_s)}$, where $\mathbf{q_s}$ is a vector of all unknown parameters associated with the specific form of the density chosen. If the distributions conditional upon knowing the segments have been formulated, the unconditional distribution of $\mathbf{y_n}$ is obtained as:

$$f(y_n \mid f) = \sum_{s=1}^{S} p_s f_s(y_n \mid q_s)$$

where $\mathbf{f} = (\mathbf{p}, \mathbf{q})$.

An estimate of $\mathbf{f}$ can be obtained my maximizing the likelihood function with respect to $\mathbf{f}$ subject to the restrictions in Equation 1. The purpose of the likelihood estimation is to find a parameter of vector $\mathbf{f_o}$ such that the observations $\mathbf{y}$ are more likely to have come from $\mathbf{f(y|f_o)}$ that from $\mathbf{f(y|f)}$ for any other value of $\mathbf{f}$. Once an estimate of $\mathbf{f}$ has been obtained, estimates of the posterior probability $\mathbf{p_{ns}}$ that observation $\mathbf{n}$ comes from

mixture component s can be calculated for each observation vector $\mathbf{y_n}$ by means of Bayes' theorem. The posterior probability is given by:

$$p_{ns} = \frac{\boldsymbol{p}_s f_s(y_n | \boldsymbol{q}_s)}{\sum_{s=1}^{S} \boldsymbol{p}_s f_s(y_n | \boldsymbol{q}_s)}$$

The $\mathbf{p_{ns}}$ estimates provide a probabilistic allocation of the objects to the mixture components and can be used to classify a sample into segments.

For our research purposes we used the GLIMMIX program (Wedel & Kamakura, 1998) which allowed us to estimate the finite mixture model on binary data. The program used the ladder data for each respondent as an input. As an output, the program provided a set of indices to help identifying a number of segments. In our analysis, we used an Akaike Information Criterion (AIC), Pseudo Consistent Akaike Information criterion (CAIC), and Bayesian Information Criterion (BIC). We chose the number of segments for which these criteria have a minimum value. Moreover, the program provided segment membership posterior probabilities for each respondent.

We applied the segmentation model to the ladder data from Study 2. The model was estimated for the number of segments from 2 till 4. To overcome local optima, we ran each model from ten sets of random starting values. The results indicated the absence of local optima problems. The solutions with the highest likelihood values out of the ten repeated analyses and the information criteria for all possible segment solutions are given in Table 2.

Table 2. Segmentation criteria

Number of Segments	Likelihood Function	AIC	CAIC	BIC
2	-3221.93	6449.879	6469.281	6469.28
3	-3207.1	**6424.207**	**6456.543**	**6456.541**
4	-3207.1	6428.206	6473.477	6473.475

The results indicate that all information criteria have minimal values (in bold font) for a *three-segment* solution. This solution is chosen for the future analysis.

The next step of our research was to describe the segments. First, we obtained the segment membership by assigning each respondent to one of the three segments based on the largest value of posteriori probability of the membership. We constructed profiles of the three segments using series of ANOVAs with socio-demographic and psycho-graphic variables from the Study 2. The results are presented in Table 3.

Table 3. Segmentation profiles

Variable	Segment 1 (24%)	Segment 2 (42%)	Segment 3 (34%)
Recycling accuracy	High	Moderate	Low
Psycho-graphics			
SVO	Prosocial	Prosocial	Proself
Biospheric Values	High	Moderate	Low
Altruism	High	Low	Low
Civic Duty	High	Moderate	Low
Morality	High	Moderate	Low
Obligation to authority	Low	Moderate	High
Constraint Occurrence	High	High	Low
Recycling Effectiveness	High	Moderate	Low
Socio-demographics			
Age Category	Old	Young	Young
Sex *	Mostly males	Mostly females	Mostly males
Diploma *	Lower degree	Higher degree	Higher degree
Number of People	Low	High	Low
Number of people per sq. meter	Low	High	Low
Income	High	High	Low

Note: * - significant at 0.1 level. All others – at 0.05 level.

Consumers in Segment 1 (24% of respondents), the "ecologists", are the most accurate recyclers. They are older, less educated males with relatively high income, living in small families. They are prosocial people with low obligation to authority and with high altruistic, biospheric, moral, and civic duty values. They believe in the effectiveness of recycling regardless reporting the highest recycling constraints. This group of individuals seems to be the most 'classical' group, according to the literature on voluntary recycling programs. This literature basically found that <u>ecological values</u> drive people's sorting waste behavior and that only people endorsing these values sorted their waste properly.

The second segment (42% of respondents), the "majority", consisted of medium accurate recyclers. They are younger people, mostly females, with a high level of education and higher income. They live in numerous families with higher concentration of people. They are also prosocials but take a middle position in the majority of psycho-graphic scales. However, they seem to experience as mush as constraints as the other group of prosocials (i.e., segment 1). Furthermore, individuals in segment 2 feel themselves more obliged to authority than individuals in segment 1. Thus, although they are also prosocials, segment 2 respondents seem to be less intrinsically motivated than segment 1 respondents but instead feel themselves more obliged to authority.

Consumers in Segment 3 (34% of respondents), the "obliged", are the less accurate recyclers. The segment consists of predominantly young males with high level of education with low level of income and who live in small families. They are proself people with low scores on biospheric values, civic duty, altruism and morality. They do not believe in effectiveness of recycling but nevertheless feel highly obliged to do it. Individuals in the third segment do not seem to have any intrinsic reasons to sort their waste but, instead, recycle merely for mandatory reasons.

General Discussion and Social Marketing Strategies

In the present research, we had two major purposes. First, we wanted to map people's goals driving their recycling behavior in the context of mandatory recycling programs. Second, we used these goals to classify people in qualitatively different segments.

In our first study we used a Means-End chain approach to uncover people's recycling goals. Our study was one of the first studies that tried to map people's goals in a context of mandatory recycling programs. We started from several waste sorting related behaviors and

asked our participants to build up ladders via personal consequences of these behaviors and finally ending at the most abstract level, the terminal goals underlying sorting waste related behaviors. Previous studies, conducted in a context of voluntary recycling programs, mainly found that ecological values are the most important goals driving people's waste sorting behavior. Our study indicated that ecological goals are not the only goals driving people's waste sorting behavior in a mandatory context. We found that ecological values belong to a larger group of intrinsic motives (e.g., with also civic duty, self-respect) and that also goals like 'saving money' and 'social norms' drive people's recycling. Thus, our research indicated that mandatory recycling programs elicit a more divers pattern of goals than voluntary recycling programs (in which only ecological values are found to be important).

Because it has been largely found that socio-demographic characteristics are very weak predictors of waste sorting behavior and motives and goals not, we based our segmentation approach on the latter factor. The hierarchical goal map (existing of the 15 most dominant ladders) underlying waste sorting behavior was used as a basis for segmentation in Study 2. In this study, we asked our participants to indicate for each of the 15 ladders (obtained through scores on separate behavior-consequence and consequence-goal statements) whether a ladder could be applied to them. Subsequently, these scores were used to classify our participants in various segments through finite mixture modeling. This analysis revealed three segments which were further described by psycho-graphics and socio-demographic characteristics.

Individuals in Segment 1 are more older people and are very prosocial in nature. They reported to sort their waste very accurately and are intrinsically motivated to do so. Furthermore, they feel no obligation to authority to sort their waste. Apparently, these individuals do not need any extrinsic motivations to sort their waste because they are strongly intrinsically motivated to recycle. The results for this group of individuals seem to correspond with results obtained in previous studies on recycling behavior in voluntary recycling programs. These studies found that only people with intrinsic goals volunteered to recycle. This suggests that the individuals in Segment 1 may also be motivated to sort their waste in case of a voluntary recycling program in their municipality. Social marketing strategies for these people seem to be obsolete. Although it might be wise to keep them informed about recycling issues. Smeesters, Warlop, & Vanden Abeele (1998) found that intrinsically motivated people are more willing to read about recycling issues than other people.

Individuals in Segment 2 are younger people and are also prosocial in nature. They score lower on several psycho-graphics like altruism, civic duty, morality and bio-speric values than individuals in Segment 1. Individuals in the second segment recycle moderately accurate. Thus, although these individuals have a prosocial value orientation and sort moderately well, they are less intrinsically motivated than individuals in the first segment but feel more obligation to

authority. Their high score on constraint occurrence suggest that these individuals might be very sensitive to their environment (e.g., to perceived unfairness and to perceived defection by their fellow citizens). For instance, defective behavior may be elicited when these people think that the recycling policy in their city is unfair. Perceived (non)cooperation by their fellow citizens might also influence their own behavior: if their fellow citizens cooperate they may also cooperate; if their fellow citizens defect they may also defect. Several social marketing strategies might be successful for this group of individuals. A first strategy might be to standardize all recycling programs in Belgium. In Belgium, there exist several communal recycling organizations with each a different policy. Policies may differ regarding the prizes of the waste bags and boxes or the collection frequency of waste. People seem to intensively engage in making comparisons between the policy in their own city or municipality and policies in neighboring cities or municipalities and thereby assuming that the policy in their own city or municipality disadvantages them compared to people living in these neighboring cities or municipalities, whether this is true or not (see Smeesters et al., 1998). Thus, people perceive themselves always as worse off than people living close by in other cities or municipalities. Therefore, standardizing all recycling policies may take away these unfairness perceptions. Second, Smeesters, Warlop, Van Avermaet, Corneille, & Yzerbyt (2001) demonstrated that when individuals perceive their environment as noncooperatie, they also start to behave in a noncooperative manner. Even individuals with strong prosocial orientations started to behave noncooperatively. This suggests that even individuals in Segment 1 might be sensitive to defection by their fellow citizens. Prosocial recycling behavior might be achieved through removal of these defection perceptions. One could, for instance, lead a more severe policy of punishing and penalizing defective citizens. Or one could remove defective infractions like litter very rapidly to avoid that other people will follow bad examples of recycling. Third, one should not ignore that these people are at least to some extent intrinsically motivated. However, compared to individuals in Segment 1 their intrinsic motivations are more labile. An appropriate social marketing strategy might be to directly appeal to these labile intrinsic motivations. Psychological means like emphasizing the moral aspects of recycling or the importance of our bio-sphere, appealing to civic duty, emphasizing the invaluable contributions of everybody etc.. might directly activate the intrinsic motivations of individuals in Segment 2. However, psychological means might not be sufficient to encourage more accurate sorting behavior. Perceptions of unfairness and defections should be removed. We suggest that a combination of standardization and psychological means might be a good strategy to encourage more recycling for individuals in Segment 3. This might positively work on their mentality.

Individuals in Segment 3 have a proself orientation. They are inaccurate recyclers and they score low on psycho-graphics. The only reason they might ever recycle for is obligation to

authority. Smeesters et al. (2001) found that this group of people is very resistant to efforts for changing their behavior or mentality. They demonstrated that if these people know that most citizens in their neighborhood display a cooperative behavior, they react themselves in a noncooperative manner! This suggests that even prosocial communication might not work to change these people's behavior. Instead, one might achieve a pervert reaction: they might even react with more noncooperative behavior instead with cooperative behavior. The ineffective capacities of psychological means or even removal of defection and unfairness cause a hard to conquer problem in society. Until now, no effective strategies have been found to promote sustainable cooperation in this group of individuals. One of the only strategies that might work is to directly control each of these individuals' behavior and consistently punish them for each defection. However, in practice this airtight control is an utopia. Therefore, future research should search for adequate marketing strategies to change this group of individuals' mentality.

Managerial Implications

Governments are often forced to adopt a more forceful approach to sustainable consumption problems, and will try to modify the behavior directly. Causes are the presence of a segment that would not be responsive to any other measure (Segment 3), and the difficulty to transform occasional sustainable behavior into a habit, even for individuals who are intrinsically motivated. Direct modification by setting prices (eco-taxes, eco-boni, etc…) or by implementing regulations are central in the sustainable consumption approaches of economists and legal scholars, because they start from the a prior assumption that the whole population has a proself orientation. However, this approach, though necessary for some, is not sufficient to foster persistent sustainable consumption patterns for most of the population. They may lead to behavioral change, but may prevent a change in mentality (a 'change of heart'), or even disrupt an existing pro-sustainable consumption mentality. There are also many sustainable behaviors for which the government does not want or can intervene. Organizations promoting these causes can build-in temporary behavior modification measures (like price promotions), but in the long run they have to hope for a change in mentality.

The great challenge is therefore to crystallize a temporary and externally induced behavior change and to induce a change in mentality. Two central questions should be considered in future reserch: (1) is it possible to create a more profound change in mentality in individuals which are a priori more self-oriented, and (2) is it possible to avoid the pernicious influence of behavioral induction in those who were a priori intrinsically motivated? The latter problem in particular is under-appreciated in public discussions about the issue. The policy maker can manipulate rules and prices, but she cannot make a distinction between those

consumers for whom this is necessary and those who would have performed the sustainable behavior spontaneously.   Any time people will respond with sustainable behavior to an instigation from the environment (regulations, fear of fines, or temporarily subsidized prices) they will tend to attribute their own behavior to these instigating forces, even if they were intrinsically motivated in the first place (Frey 1993). Instead of inducing a profound sustainable consumption motivation, these generally applied methods are highly likely to have the perverse effect of disrupting existing pro-sustainable motivations!

References

Arbuthnot, J. (1977). The roles of attitudinal and personality variables in the prediction of environmental behavior and knowledge. <u>Environment and Behavior</u>, <u>4</u>, 217 - 232.

Balderjahn, I. (1988). Personality variables and environmental attitudes as predictors of ecologically responsible consumption patterns. <u>Journal of Business Research</u>, <u>17</u>, 51-56.

Dawes, R.M. (1980). Social dilemmas. <u>Annual Review of Psychology</u>, <u>31</u>, 169-193.

De Dreu, C.K.W., & Van Lange, P.A.M. (1995). The impact of social value orientation on negotiator cognition and behavior. *Personality and Social Psychology Bulletin*, *21*, 1178-1188.

DeVellis, R.F. (1991). <u>Scale development: Theory and applications</u>. California: Sage Newsbury Park.

De Young, R. (1986). Some psychological aspects of recycling. <u>Environment and Behavior</u>, <u>18</u>, 435 - 449.

De Young, R. (1990). Recycling as appropriate behavior: A review of survey data from recycling education programs in Michigan. <u>Resources, Conservation and Recycling</u>, <u>3</u>, 1 - 13.

Ellen, P.S., Wiener, J.L., & Cobb-Walgren, C. (1991). The role of perceived consumer effetiveness in motivating environmentally conscious behaviors. <u>Journal of Public Policy and Marketing</u>, <u>10</u>, 102-117.

Gengler, C. E and T. J. Reynolds, 1993. LADDERMAP: <u>A software tool for analyzing laddering data</u>.

Gamba, R.J., & Oskamp, S. (1994). Factors influencing community residents' participation in commingled curbside recycling programs. <u>Environment and Behavior</u>, <u>26</u>(5), 587 - 612.

Goldenhar, L.M., & Connell, C.M. (1992 - 1993). Understanding and predicting recycling behavior: An application of the Theory of Reasoned Action. <u>Journal of Environmental Systems</u>, <u>22</u>(1), 91 - 103.

Griesinger, D.W., & Livingston, J.W. (1973). Toward a model of interpersonal orientation in experimental games. <u>Behavioral Science</u>, <u>18</u>, 173-188.

Grunert, S. (1996). Antecedents of source separation behavior: A comparison of two Danish municipalities. In: J. Berács, A. Bauer & J. Simon (Eds.), <u>Marketing for an expanding Europe. Proceedings of the 25th Annual Conference of the European Marketing Academy</u>, <u>Vol. 1</u>, pp. 525-538. Budapest: Budapest University of Economic Sciences. Grunert, S. (1996).

Gutman, J. (1982). A means-end chain model based on consumer categorization processes. <u>Journal of Marketing</u>, <u>46</u>, 60-72.

Gutman, J. (1991). Exploring the Nature of Linkages Between Consequences and Values. Journal of Business Research, 22, 143-8.

Kamakura, W.A., & Novak, T.P. (1992). Value-system segmentation: Exploring the value of LOV. Journal of Consumer Research, 19, 119-132.

Kenny, D. A., Kashy, D.A., & Bolger, N. (1998). Data Analysis in Social Psychology. In D.T. Gilbert, S.T. Fiske, & D. Lindzey (Eds.), The Handbook of Social Psychology (Vol. 1, pp. 233-265). McGraw-Hill Companies, Inc.

Kok, G., Siero, S. (1985). Tin recycling: Awareness, comprehension, attitude, intention and behavior. Journal of Economic Psychology, 6, 157 - 173.

Kotler, P., & Zaltman, G. (1971). Social marketing: An approach to planned social change. Journal of Marketing, 35, 3-12.

Kramer, R.M., McClintock, C.G., & Messick, D.M. (1986). Social values and cooperative response to a simulated resource conservation crisis. Journal of Personality, 54, 101-117.

Liebrand, W.B.G. (1984). The effect of social motives, communication and group size on behavior in an N-person multi-stage, mixed-motive game. European Journal of Social Psychology, 14, 239-246.

Liebrand, W.B.G., Jansen, R.W.T.L., Rijken, V.M., & Suhre C.J.M. (1986a). Might over morality: The interaction between social values and the interpretation of decision-making in experimental games. Journal of Experimental Social Psychology, 22, 203-215.

Luce, R.D., & Raiffa, H. (1957). Games and decisions. New York: Wiley.

McCarthy, J.A., & & Shrum, L.J. (1993). A structural equation analysis of the relationships of personal values, attitudes and beliefs about recycling, and the recycling of solid waste products. In L. McAlister & M. Rothschild (Eds.), Advances in consumer research (Vol. 20, pp. 641 - 646). Provo, UT: Association for Consumer Research.

McCarthy, J.A., & Shrum, L.J. (1994). The recycling of solid wastes: Personal values, value orientations, and attitudes about recycling as antecedents of recycling behavior. Journal of Business Research, 20, 53 - 62.

McClintock, C.G. (1972). Social motivation - A set of propositions. Behavioral Science, 17, 438-454.

McClintock, C.G. (1978). Social values: Their definition, measurements and development. Journal of Research and Development in Education, 12, 121 - 137.

McClintock, C.G., & Allison, S.T. (1989). Social value orientation and helping behavior. Journal of Applied Social Psychology, 19, 353-362.

Messick, D.M., & Brewer, M.B. (1983). Solving social dilemmas: A review. In L. Wheeler & P. Shaver (Eds.), Review of Personality and Social Psychology (Vol. 4,

pp. 11-44). Beverly Hills, CA: Sage.

Olson, J.C., & Reynolds, T.J. (1983). Understanding consumers' cognitive structures: Implications for advertising strategy. In L. Percy & A. Woodside (Eds.), <u>Advertising and consumer psychology</u> (Vol. I, pp. 77-90). Lexington, MA: Lexington Books.

Oskamp, S., Harrington, M.J., Edwards, T.C., Sherwood, D.L., Okuda, S.M., & Swanson, D.C., (1991). Factors influencing household recycling behavior. <u>Environment and Behavior</u>, <u>23</u>(4), 494 - 519.

Peter, J.P., & Olson, J.C. (1987). <u>Consumer behavior: Marketing strategy perspectives</u>. Richard Irwin, Homewood, Illinois.

McClintock, C.G., & Liebrand, W.B.G. (1988). Role of interdependence structure, individual value orientation and another's strategy in social decision making: A transformational analysis. <u>Journal of Personality and Social Psychology</u>, <u>55</u>, 396-409.

Messick, D.M., &.McClintock, C.G. (1968). Motivational bases of choice in experimental games. <u>Journal of Experimental Social Psychology</u>, <u>4</u>, 1 - 25.

Pieters, R.GM., Baumgartner, H., & Allen, D. (1995). A means-end chain approach to consumer goal structures. <u>International Journal of Research in Marketing</u>, <u>12</u>, 227-244.

Reschovsky, J.D., & Stone, S.E. (1994). Market incentives to encourage household waste recycling: Paying for what you throw away. <u>Journal of Policy Analysis and Management</u>, <u>13</u>(1), 120 - 139.

Reynolds, T.J., & Gutman, J. (1988). Laddering theory, method, analysis, and interpretation. <u>Journal of Advertising Research</u>, <u>28</u>, 11-31.

Sattler, D.N., & Kerr, N.L. (1991). Might versus morality explored: Motivational and cognitive bases for social motives. <u>Journal of Personality and Social Psychology</u>, <u>60</u>, 756-765.

Simmons, D., & Widmar, R. (1988). Motivations and barriers to recycling: Toward a strategy for public education. <u>Journal of Environmental Education</u>, <u>20</u>, 13 - 18.

Shrum, L.J., Lowrey, T.M., & McCarty, J.A. (1994). Recycling as a marketing problem: A framework for strategy development. <u>Psychology and Marketing</u>, <u>11</u>, 393-416.

Smeesters, D., Warlop, L., & Vanden Abeele, P. (1998). <u>A qualitative research analysis of household garbage recycling behavior</u>. OSTC Research Report, OSTC, Brussels.

Smeesters, Warlop, L., Van Avermaet, E., Corneille, O., & Yzerbyt, V. (2001). Subtle influences on cooperative behavior. OSTC Research Report, OSTC, Brussels.

Smeesters, D., Warlop, L., Vanden Abeele, P., & Ratneshwar, S. (1999). <u>Exploring the recycling dilemma: Consumer motivation and experiences in mandatory garbage recycling programs</u>. Research Rapport No. 9924, Department of Applied Economics. Belgium, Leuven, Catholic University of Leuven.

Stern, P.C.., Dietz, T., & Guagnano, G.A. (1998). A brief inventory of values. <u>Educational and</u>

psychological measurement, <u>58</u>, 984-1001.

Ter Hofstede, F., Audenaert, A., Steenkamp, J.B.E.M., & Wedel, M. (1998). An investigation into the association pattern technique as a quantitative approach to measuring means-end chains. <u>International Journal of Research in Marketing</u>, <u>15</u>, 37-50.

Thøgersen, J. and Grunert, S.C. (1997). Values and attitude formation towards emerging attitude objects: From recycling to general, waste minimizing behavior. <u>Advances in Consumer Research</u>, <u>24</u>, 182 - 189.

Titterington, D.M., Smith, A.F.M., & Markov, U.E. (1985). <u>Statistical Analysis of Finite Mixture Distributions</u>. New York: John Wiley & Sons.

Tyler, T.R. (1990). <u>Why people obey the law</u>. New Haven: Yale University press.

Tyler, T.R., & Degoey, P. (1995). Collective restraint in social dilemmas: Procedural justice and social identification effects on support of authorities. <u>Journal of Personality and Social Psychology</u>, <u>69</u>, 482-497.

Van Lange, P.A.M., Agnew, C.R., Harinck, F., & Steemer, G.E.M. (1998). From game theory to real life: How social value orientation affects willingness to sacrifice in ongoing close relationships. <u>Journal of Personality of Personality</u>, <u>73</u>, 1330-1344.

Van Lange, P.A.M., & Kuhlman, D.M. (1994). Social value orientations and impressions of a partner's honesty and intelligence: A test of the might versus morality effect. <u>Journal of Personality and Social Psychology</u>, <u>67</u>, 126-141.

Van Lange, P.A.M., & Liebrand, W.B.G. (1989). On perceiving morality and potency: Social values and the effects of person perception in a give-some dilemma. <u>European Journal of Personality</u>, <u>3</u>, 209-225.

Van Lange, P.A.M., & Liebrand, W.B.G. (1991a). Social value orientation and intelligence: A test of the goal-prescribes-rationality principle. <u>European Journal of Social Psychology</u>, <u>21</u>, 273-292.

Van Lange, P.A.M., & Liebrand, W.B.G. (1991b). The influence of other's morality and own social value orientation on cooperation in the Netherlands and the U.S.A. <u>International Journal of Psychology</u>, <u>26</u>, 429-449.

Van Lange, P.A.M., Otten, W., De Bruin, E.N.M., & Joireman, J.A. (1997a). Development of prosocial, individualistic, and competitive orientations: Theory and preliminary evidence. <u>Journal of Personality and Social Psychology</u>, <u>73</u>, 733-746.

Van Liere, K.D., & Dunlap, R.E. (1980). The social bases of environmental concern: A review of hypotheses, explanations and empirical evidence. <u>Public Opinion Quarterly</u>, <u>44</u>, 181-197.

Van Vugt, M., Meertens, R.M., & Van Lange, P.A.M. (1995). Car versus public transportation? The role of social value orientations in a real-life social dilemma. <u>Journal of Applied Social Psychology</u>, <u>25</u>, 258-278.

Vining, J., & Ebreo, A. (1990). What makes a recycler? A comparison of recyclers and nonrecyclers. <u>Environment and Behavior</u>, <u>22</u>(1), 55 - 73.

Walker, B.A., & Olson, J.C. (1991). Means-end chains: Connecting products with self. <u>Journal of Business Research</u>, <u>22</u>, 111-118.

Wedel, M., & Kamakura, W.A. (1998). <u>Market Segmentation: Conceptual and Methodological Foundations</u>. Kluwer Academic Publishers.

Figure 1: Hierarchical goal map underlying recycling behavior
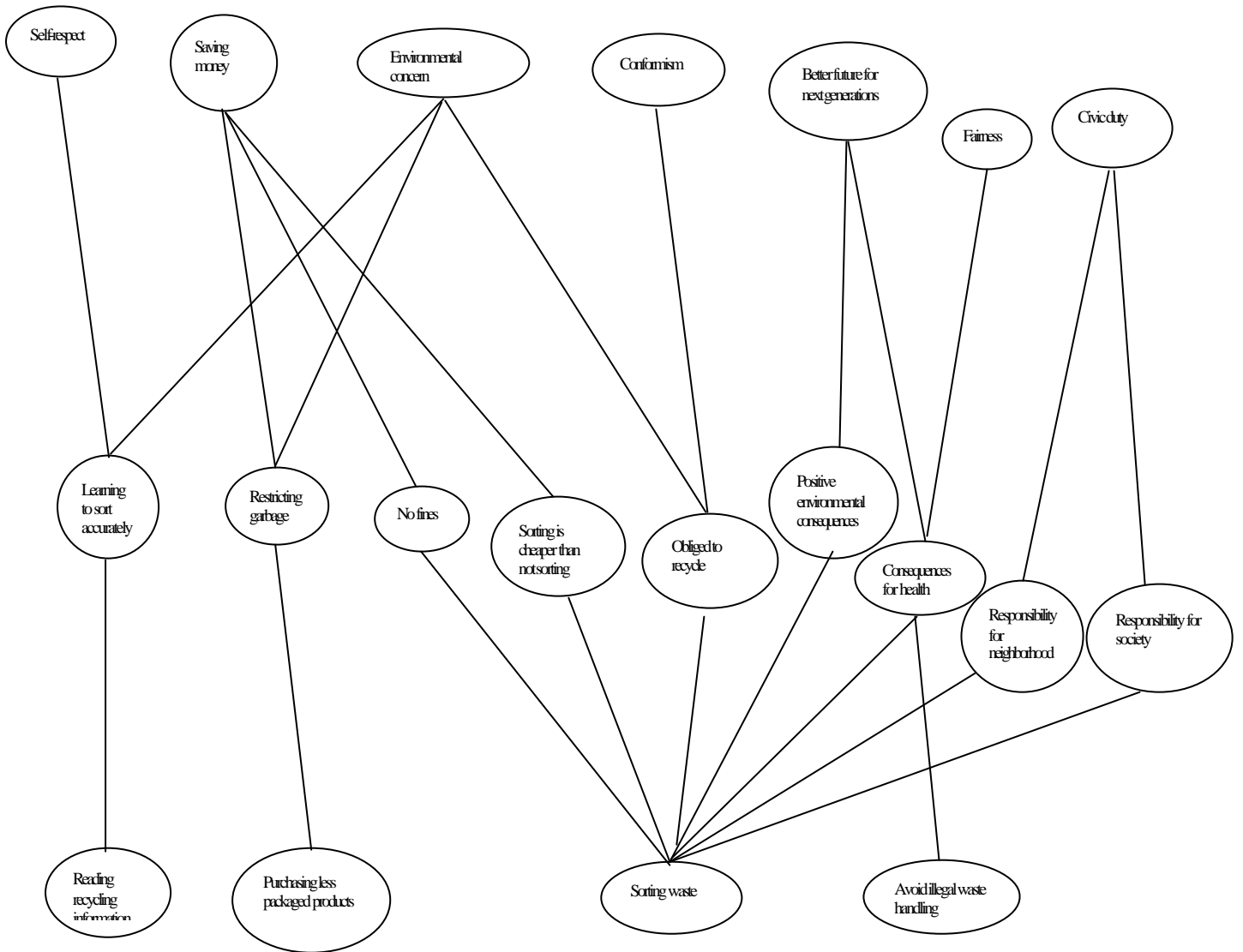
Twenty-three statements

After each statement you find in brackets the percentage of participants that totally agreed with that statement

1. I purchase less packaged products to restrict my garbage (35%)

2. I restrict my garbage to save money (31%)

3. I sort my waste in different waste categories because it is obliged to recycle (53%)

4. I carry out the obliged recycling tasks to conform to what other people do (38%)

5. I sort my domestic waste because it is cheaper than putting all my waste in the nonrecyclable rest waste bag (36%)

6. I put all my waste in the nonrecyclable rest waste bag because I like to save money (28%)

7. I sort my waste because it benefits global health (58%)

8. I contribute to global health because it guarantees a better future for next generations (66%)

9. I read information about sorting waste to learn to sort accurately (50%)

10. I like to learn to sort accurately because I like to protect the environment (71)

11. I sort my domestic waste to take my responsibility towards the other people in our society (54%)

12. I take my responsibility towards the other people in our society because that is my duty as a good citizen (54%)

13. I carry out the obliged recycling tasks because the environment is important (67%)

14. I restrict my garbage because I care about the environment (56%)

15. I like to learn to sort accurately because it is important for my self-respect (39%)

16. I avoid illegal waste handling because it goes against a global health (55%)

17. I do not want to do something that goes against a global health because that is unfair (48%)

18. I compost because it has positive environmental consequences (47%)

19. I contribute to positive environmental consequences because it guarantees a better future for next generations (53%)

20. I sort waste to take my responsibility for the other people in my neighborhood (49%)

21. I take my responsibility for the other people in my neighborhood because that is my civic duty (44%)

22. I do not put recyclable waste in the rest waste bag because I do not want any fines (46%)

23. I do not want any fines because I like to save money (41%)

Combined ladders

After each ladder you find in brackets the percentage of participants that totally agreed with that ladder (i.e., totally agreed with the behavior-consequence link <u>and</u> the consequence-goal link). Ladders are ranked according to the frequency people totally agreed with a ladder, with the most frequently agreed ladder first.

1. Sorting waste → Positive consequences for health → Better future for next generations (53%)

2. Reading recycling information → Learning to sort accurately → Environmental concern (47%)

3. Sorting waste → Responsibility for society → Civic duty (43%)

4. Sorting waste → No fines → Saving money (43%)

5. Avoiding illegal waste handling → Positive consequence for health → Better future for next generations (43%)

6. Sorting waste → Obliged to recycle → Environmental concern (41%)

7. Sorting waste → Positive consequences for health → Fairness (37%)

8. Sorting waste → Responsibility for neighborhood → Civic duty (36%)

9. Avoid illegal waste handling → Positive consequences for health → Fairness (35%)

10. Composting (sorting waste) → Positive environmental consequences → Better future for next generations (35%)

11. Sorting waste → Obliged to recycle → Conformism (33%)

12. Reading recycling information → Learning to sort accurately → Self-respect (31%)

13. Purchasing less packaged products → Restricting garbage → Environmental concern (28%)

14. Sorting waste → Sorting is cheaper than not sorting → Saving money (17%)

15. Purchasing less packaged products   Restricting garbage   Saving Money (17%)

DIENSTEN VAN DE EERSTE MINISTER
DE FEDERALE DIENSTEN VOOR WETENSCHAPPELIJKE,
TECHNISCHE EN CULTURELE AANGELEGENHEDEN
(DWTC)

Plan voor wetenschappelijke ondersteuning van een beleid gericht
op duurzame ontwikkeling (1996-2001)

Hefbomen voor een beleid gericht op duurzame ontwikkeling

LUIK C

Part 6: **Selling brotherhood like soap: Influencing everyday**

disposal decision

Part 7: **Subtle influences on cooperative behavior**

Promotoren:
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Inhoudstafel Luik C

Hefbomen voor een beleid gericht op duurzame ontwikkeling:

Tussen groene woorden en groene daden …: De relatie tussen milieubesef en

milieuzorg bij individuele consumenten (HL/DD/24)

Part 6

Selling brotherhood like soap: influencing everyday disposal decisions

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Sorting garbage during disposal is effortful for the individual and the household, but beneficial to society in the long run. This makes recycling a typical example of a social dilemma, and a prime target for social marketing interventions. Household disposal acts are relatively mindless routine behaviors embedded in daily housekeeping tasks of a well-managed household. Higher-order goals to support compliance with recycling guidelines are readily available for reflection, but so are justifications for defection. We argue that the current theoretical basis for social marketing in social dilemmas is not well suited for this class of prosocial behaviors. Social marketing may benefit from strategies that make values and higher order goals accessible as a basis for decision making without promoting further elaborative thought.

Religious and ethical thinkers of all times have taught us that "being your brother's keeper" is the most honorable goal for any human being. We all know, however, that we often fail to act as our brother's keeper. Most of the Western societies' continuing social problems can be reduced to the dilemma facing every individual between choosing for one's own short term gain and the long term gain of society as a whole. Selfish goals have tended to dominate. Dietz and Stern (1995) have called the individualistic value orientation the "dominant social paradigm". Religious and ethical systems, and finally also the government has tried to influence our selfish behaviors to protect the common good. Rothschild (1979) defined "selling brotherhood" as one of the most important tasks for social marketers.

One threat to the common good is the household production of waste. In industrialized nations, the annual production per capita of household garbage ranges between approx. 400 kilograms in Europe (Bogaert and Van Ootegem 1997), and 800 kilograms in the US (Pelton, Strutton, Barnes, and True 1993), while spare incineration and landfill capacity is severely limited and under increased public scrutiny. The corresponding social marketing task is to reduce the societal problem of processing and storing the waste. Recycling reduces the strain on processing resources, but requires separation of garbage fractions at the source. Social marketers need to convince consumers to do the sorting themselves. Using paid labor would currently render recycling economically unfeasible.

3

Quoting Wiebe (1951), Rotschild (1979) argued that it is 'hard to sell brotherhood like soap'. He observed that behavior in many social dilemma situations is relatively thoughtless, while the dominant response tendency is to maximize one's own gains. In order to produce prosocial behavior the social marketer should try to make the consumer reconsider the social implications of his behavior, and convince him of the attractiveness of the prosocial option. This view permeates the literature on social marketing. For example, Andreasen (1995) wrote that social marketers are in the business of trying to influence high involvement consumer decisions. Prosocial behavior, in his view, requires "active contemplation", which is hard to produce when consumers are not spontaneously inclined to do so.

We want to offer an alternative point of view. The alternative is based on the observation that for individual consumers recycling can be characterized as routine behavior. Recycling decisions occur several times each day, when a consumer throws something in the trash. These molecular choices are not necessarily driven by explicit consideration of goals or values of any kind. But when a consumer wants to reflect about justifications for his decision, several and conflicting values and goals are available for justification. Making people think about their choices, like social marketers propose, is likely to activate several of these value considerations and awaken a decisional conflict that may not be spontaneously experienced. Sometimes, therefore, social marketers may be better off not promoting elaborative thought. We will examine the implications of this alternative perspective, and discuss the research questions it raises. Nothing we have to say is particularly new. In fact, our recommendations and research propositions are rooted in existing insights on the nature of low-involvement decision making and judgment (Alba, Hutchinson and Lynch 1991; Clore 1992).

Characteristics of recycling behavior

Belgium installed mandatory recycling of major waste fractions in the early nineties. Local governments mandate the use of different waste bags or bins for glass, paper, plastics, metal, and organic waste. Control, however, is imperfect and not all garbage is sorted well. A recent field study in Flanders (Bogaert and van Ootegem 1997) found that on average

62% of recyclable waste is appropriately sorted. Below a certain purity threshold, it would cost too much to recycle the contents of a waste bag.

We will start with a brief overview of our own observations of household recycling behavior in the Flemish part of Belgium (Smeesters, Warlop, Vanden Abeele, and Ratneshwar 1999), based on focus-groups and individual depth interviews. The data are qualitative, and relatively 'raw'. As a whole, however, they may suggest why the traditional social marketing paradigms do not necessarily work. We believe that these observations are characteristic of the current recycling environment in many industrialized countries and regions of the world, and can be generalized to a relative large class of "brotherhood" behaviors, including tipping the waitress, courteous driving, taking the bus instead of one's car, or giving a coin to the Kosovar beggar.

Recycling is procedurally simple. People are asked to sort recyclable waste in three or four categories; one additional category is for non-recyclable rest waste. Each fraction has its own plastic bag or container, made available by the local government at a price covering the waste processing cost of its contents. Though a number of garbage items constitute problems for some (e.g. not all plastic materials belong to the 'plastic' category; some belong to the rest waste category), overall it is fairly obvious what goes where.

Recycling is rarely a major consideration in one's life. Sorting different waste categories also means that people have to store a number of collection bins or bags in their house. For most people, this space issue is not a major consideration. Many people have a garden or garage where they would store garbage until it was collected anyway. Our qualitative data collection started in a rural part of the country. To find people who were experiencing real material constraints, we had to gradually move to disadvantaged inner-city neighborhoods. Even there, most people seem to handle the recycling guidelines of the local government pretty well.

The recycling dilemma is not commonly experienced as a conflict. Most of our informants reported on a good organization for storing waste bags and sorting the waste

fractions. We asked participants in a number of focus groups to draw the ground plan of their house to indicate where and how they store waste between curbside collections. We also asked them to describe how they go about collecting, separating and storing the garbage items. It was striking how routinized this behavior was. People seem to have formed a sorting routine at a certain point in time. And once routinized, persistence of sorting and recycling activities does not require much conscious thought. An important consequence of this routinization is that people stop pondering over the costs and benefits of recycling. This also means that people do not face a dilemma every time they throw some waste item in a waste bag.

Reflection easily produces justifications for noncompliance. Spontaneous narratives about household garbage handling activities reveal surprisingly little reference to values or purposes. Respondents concentrate on *how* rather than *why* they recycle. When asked to reflect about reasons, however, justifications are easily produced for both compliance and noncompliance with the recycling guidelines, and related to basic values or motivations. Most informants reported a high degree of compliance, but no one had any difficulties to retrieving episodes of defection, which were justified by referring to situational constraints on the appropriate behavior or on witnessing successful defection by others.

A range of intrinsic motivations. The installation of a mandatory program did not seem to produce "burn-out" as described by economists and psychologists when extrinsic motivation replaces intrinsic motivation (Frey 1993). In fact, our observations indicated that the installation of the mandatory program enriches the set of intrinsic values that are applicable to the behavior. While most of the literature on values and recycling (e.g., Bagozzi and Dabholkar 1994; McCarty and Shrum 1994) emphasizes environmental values, we found that our informants referred to morality, fairness and social duty as more important drivers.

There is an obvious contradiction between the ease and routinization of the reported recycling behavior of our informants and the aggregate observation that so much of the garbage is inappropriately sorted. Government studies of recycling (e.g., Bogaert and van

Ootegem 1997) suggest that the problem is not associated with specific groups of individuals. While there are individual differences, inappropriate sorting occurs in virtually every household. Can existing consumer theories provide an explanation for this phenomenon?

Recycling as intentional and volitional behavior

The dominant theoretical frameworks in the research on recycling behavior have been Fishbein and Ajzen's (1975) Theory of Reasoned Action (TRA) and its successors. These theories model the cognitive structure of beliefs about behavioral consequences and their importance weights, which jointly determine the attitude towards a particular behavior. Consequences are incorporated at the level of abstraction most salient to the individual. Typically, they are conceptualized as fairly proximal to the behavior. The intention to perform this behavior is a function of the attitude and the social norms surrounding the behavior. The values underlying the behavior are incorporated as determinants of importance weights. A behavioral consequence that appeals to a higher value in one's life will receive a higher weight and have more impact on the attitude towards the act. The potential conflict between goals is left out of the discussion.

Counter to what many recycling researchers have assumed (e.g., Bagozzi and Dabholkar 1994), TRA does not assume that every single decision is necessarily based on thoughtful consideration of the consequences of the behavioral alternatives. Actual behavior may be based on retrieved attitudes that are stored in memory. It does assume, however, that the attitude has formed through thoughtful reasoning at some point prior to the act. Choices are made by comparing retrieved attitudes about the competing behavioral alternatives (see Eagly and Chaiken 1993, for an extensive discussion). These theories adhere to what Wilson, Lisle and Kraft (1990) have called the 'file drawer analogy' of behavior. Like in a file drawer, a person's values, attitudes, beliefs, and relevant knowledge about a target object or act are stored in a systematic fashion. The 'file' with all these potential decision inputs is opened when it is called for by a pending decision involving the target object or behavior. Its entire content is then available for use in the decision, and will be used in the decision. The contents of the file drawer may change over time, through learning and

experience, but this learning process is slow and gradual. Stored beliefs, attitudes, and values are accessed and combined on the basis of some implicit calculation about their weighted relevance to the target object or behavior; this calculation rule itself is assumed to be stable. Therefore, in the short term the consumer's recycling behavior is highly predictable from the contents of his 'file' only.

The only source of variability in behavior, according to these models, is when a consumer changes intentions: a nonrecycler decides to become a recycler, or vice versa. Intentions can only change if the consumers' beliefs are changed. These beliefs can be about the costs and benefits of behavior, about the norms of the social environments, or about one's own ability to perform the behavior. The model assumes that changing these beliefs is an all-or-nothing process. It is a volitional and voluntary act on the part of the consumer, who has to be convinced that his previous conviction was wrong. Once a consumer has adapted a belief, the changed belief will always be active and influence each subsequent recycling act, unless it is changed again by a new, successful, marketing effort.

Recycling research (see Pieters 1989; Hornik, Cherian, Madanksy, and Narayana 1995 for reviews) has adapted to the constraints imposed by this model. All hitherto published studies have investigated recycling at a fairly high level of abstraction. Criterion variables in most of the studies have been measures of intention, or self-reports of past behavior. Self-reported recycling behavior is a summary measure of a series of consecutive discarding decisions over a specified or unspecified stretch of time. Even the few studies that used observational measures (e.g., Pieters' (1989) garbology studies) could only observe the aggregate result of consumers' recycling decisions over the previous week or weeks, as reflected in the contents of garbage containers they put out for curbside collection.

Not surprisingly, the bulk of the research is about individual differences in motivation and knowledge, or about situational factors which can be assumed to remain constant over the period implied by the level of aggregation of the dependent measures, such as the nature of the garbage collection policies (Folz 1991). More generally, Pieters (1989), Thøgersen (1994), and Hornik et al. (1995) have called attention to the role of ability-related and

opportunity-related determinants of recycling behavior. Intentions to recycle may or may not translate into behavior, depending on the consumer's recycling knowledge and stable constraints imposed by the environment. TRA-based models have been fairly successful in predicting whether an individual, based on his beliefs, will report to be a recycler or not (e.g., Allen, Davis, and Soskin 1993; Goldenhar and O'Connell 1992-1993; Grunert 1996). The theory can not account well for intra-individual variation in behavior. Recyclers are assumed to be always recyclers; non-recyclers never have a reason to recycle. This view is consistent with the individual difference perspective in social marketing; interventions are geared towards changing cognitive structure, and have to take into account stable environmental constraints. The application of the Theory of Reasoned Action to the recycling problem illustrates how difficult the social marketing task can be. One is asking the social marketer to make 'recyclers' out of 'nonrecyclers', or to convert 'sinners' to 'the good faith'. This difficulty has inspired the statement that "brotherhood can not be sold like soap".

Recycling as a social dilemma

Most prosocial behaviors, including recycling, are not all-or-nothing phenomena. The prosocial option competes at all times with other concerns, or may not even be salient in the mind of the consumer. From this perspective, the goal is to minimize the number of selfish choices, while realizing that most individuals will defect some of the time, due to situational factors, that may vary over time. The decisional conflict can also be characterized as a social dilemma or commons dilemma, because the needs and desires of the individual (self-interest) conflict with the needs and desires of human beings in general (collective interest). The essential property of a social 'commons' dilemma is that every individual continues to do something which yields an individual advantage, but is damaging the collective (Hardin 1968; Komorita and Parks 1994). Recycling is a good example of such a dilemma. By participating in a recycling program, members of a community are making a contribution to the public good. If every individual contributes by sorting his domestic garbage in an accurate way, the whole community will benefit. However, in the short run 'not sorting' is the most profitable behavior for most people. It saves them discomfort, costs and time. Social dilemma research introduces a dilemma as a molecular choice, which only after

accumulation may result in negative consequences for the group. It also allows for situational determinants of these molecular decisions, which can vary within individuals over time. Most social dilemma research uses experimental games, such as the Prisoner's Dilemma game or one of several resource dilemma games, in which subjects take resources from a common pool and try to maintain it over a series of trials. Each player's task is to use the pool efficiently while trying to do well individually. In experimental games, the pay-off matrix of alternative courses of action is usually very salient. Participants are uncertain about the outcome, but they know all possible consequences of their cooperative and noncooperative choices. The major situational influences on behavior are due to the interdependent relationship of each participant with the other players in the game. Behavior in such games has been shown to depend on the anticipation and perception of the strategies of other players (see Komorita and Parks 1994 for an extensive recent review of this whole literature).

These findings are easily applicable to behavior in small group dilemmas (e.g., negotiation behavior, DeDreu and Boles 1998). Only a few studies (e.g. Cialdini, Kallgren and Reno 1990; Van Vugt, Meertens and Van Lange 1995) have focused on large scale social dilemmas. These are more problematic because they imply a large number of social actors, and a much longer time perspective, making it very unclear what the social consequences of one's personal decisions may be (Kelley and Thibaut 1978; Pruitt and Kimmel 1977). For example, in a metropolitan area several millions of actors make daily discarding decisions, affecting the lives of many more millions belonging to current and future generations. Each individual decision has a minimal impact on the collective outcome. Individual consumers can not know whether sufficient others would be willing to participate, and they are uncertain about whether the collective outcome will ever materialize (Wiener and Doescher 1994). As a result, they feel less personally responsible. They easily attribute the responsibility for a clean environment to other 'players' like 'industry' or the government (Pieters et al. 1998), or assume that future generations will find the technology to solve the problems (Stern 1992).

Wiener and Doescher (1991) proposed several social marketing strategies to overcome these barriers. Social marketers should convince consumers that the collective goal is worth

pursuing, and will be achieved with high probability. They should also try to enhance individual consumers' identification with the collective and emphasize the importance of the individual's contribution. These are all changes in beliefs or cognitive structure, which are hard to obtain.

It should therefore not be surprising that, just like in TRA-based recycling research, research efforts have been concentrated on individual differences that help to explain differences in cooperation. While the social marketing research is looking to identify segments which will respond positively to social marketing action, the emphasis in social dilemma research was initially more theoretical. Messick and McClintock (1968) identified three social value orientations, namely cooperation, individualism, and competition. Cooperators prefer to maximize own and others' outcomes, individualists tend to maximize own outcomes without reference to other's gain, and competitors prefer to maximize the relative advantage of self over others. Cooperators are typically the largest group, and the two others are often collapsed in one, contrasting, 'pro-self' group. Social value orientation is a relatively stable individual difference variable, rooted in socialization processes starting in early childhood (Van Lange, Otten, De Bruin, and Joireman 1997). Previous research has shown that people with cooperative social value orientations (pro-socials) cooperate more frequently in experimental game situations than individuals with individualistic or competitive social value orientations (pro-selves) (e.g., Allison and Messick 1990). Prosocials are also more likely to help people in need (McClintock and Allison 1989), strive to maximize joint outcomes in negotiations (De Dreu and Boles, 1998), and are more willing to sacrifice in close relationships (Van Lange, Agnew, Harinck, and Steemers 1997). They would also prefer to commute by public transportation if other commuters do the same, while proselves prefer public transport only if other people travel by car (Van Vugt et al. 1995). Another important observation in these studies is that prosocials are very sensitive to the perceived behavior of others. Prosocials are willing to cooperate only when the other players are also willing to cooperate. Otherwise, even prosocials might turn to a more defective kind of behavior or tit-for-tat strategies (McClintock and Liebrand 1988).

Summary of current approaches

We have identified two psychological accounts for recycling (and other prosocial) behavior.

The Theory of Reasoned Action and (large scale) social dilemma theory can both be used as a basis for designing social marketing interventions. In both cases the proposed interventions need thoughtful consideration and changes in beliefs or attitudes. Because these are so difficult to achieve, both look primarily for individual difference variables as explanations for behavior. Their 'all-or-nothing' position is hard to square with the high levels of participation but low intra-personal consistency we have observed in our own qualitative work.

Just like many other prosocial behaviors, recycling consists of a series of molecular recycling acts, embedded in an ongoing stream of household behaviors. Our observations suggest that the molecular acts are rarely very thoughtful. They are the result of a very simple decision by an individual at a particular time to throw the empty bottle or the read newspaper in the appropriate recyclable waste bin or not. On the other hand, prosocial behavior, such as recycling, assumes and requires that the consumer perceives the behavior (decision situation) as consistent with prosocial goals. How then can these simple and non-involving behaviors be linked with the "appropriate" social goals?

Linking means and ends

It is generally accepted that consumer behavior is goal-directed, and that goals at different levels of abstraction are hierarchically related. In consumer research, means-end chain models have proposed a structural link between values and higher order goals, immediate concerns, and actual behaviors or preferences (Gutman 1982; Huffman, Ratneshwar and Mick this volume). Means-end chains can be considered as schemata or knowledge structures that may or may not be used to interpret a current situation (Walker and Olson 1991). Throwing the empty bottle in the glass recyclables bin may be construed as socially responsible or environmentally friendly, through the perceived social consequences of choosing for recycling or non recycling. The alternative, throwing the bottle with the nonrecyclable waste, may be construed as smart and time-efficient, because "nobody would find out anyway, and it saves me a trip to the neighborhood glass collector". When both types of values are active, the decision maker experiences the social dilemma as a personal conflict. This does not have to happen. In some cases, only one value or corresponding means-end chain might be salient to the decision maker, or none at all. In those cases, there

is no conflict, but there may also be no prosocial action.

Huffman et al. (this volume) have proposed two different, but not necessarily mutually exclusive processes by which molecular behaviors are linked with higher order values. One process, they have labeled "goal alignment". Here it is assumed that consumers are motivated to achieve consistency among the different goal concepts they carry at different levels, and their actual behaviors. Goal alignment is achieved by extensive problem solving based on top-down processes (finding behavioral options consistent with one's goals) and bottom-up processes (finding goal constructs that are consistent with behavioral alternatives that one is considering). The other process is one of adaptation. The consumer constructs a motivation or purpose for his behavior by considering the constraints imposed by the environment. Goal alignment is a thoughtful and resource consuming process. For some brotherly behaviors a lot of thought may be necessary, such as when a potential choice for prosocial behavior carries a lot of personal risk. Huffman et al. (this volume) suggest that goal alignment processes will occur for high involvement decisions, such as when a consumer believes he will be held accountable for his choices. In other circumstances, goals are constructed by adaptation to the environment (Bettman, Luce, and Payne 1998; Huffman et al. this volume). The optimal course of behavior and the motivation to justify it are jointly constructed on the basis of the choice set, or salient constraints (e.g., time pressure) on the decision. The proposed constructive heuristics are still resource-consuming and require considerable issue relevant thought.

The drawbacks of issue-relevant thought.

For social marketers, forcing the problem solving processes that are assumed in the goal determination framework upon consumers is not likely to be effective for the recycling behavior that we consider in this paper. Recycling is one activity in a continuous stream of household tasks, many of which require considerable planning, problem solving and social interaction. The individual mental capacity for such mental control tasks is limited. For example, Baumeister, Bratslavsky, Muraven and Tice (1998) recently demonstrated that performance in mental control tasks seriously deteriorates when the mental load imposed by a preceding self-control task (e.g., not eating from a plate of cookies) is high. In other

words, consumers may have limited mental capacity for virtue. We argue that promoting consideration of prosocial values may even be counterproductive. Making consumers think about why they should recycle, will also make more salient why they should not. When consumers think about courses of action in a commons dilemma, private costs of the prosocial choice option and private benefits of the more selfish alternative are more a priori salient than the public costs and benefits of each behavior (Antonides and Van Raaij 1998). Concrete public benefits of recycling or the public costs of not recycling are fairly abstract, and further removed from one's daily considerations. In a heuristic decision process, based on the available problem representation, they may not even come to mind at all, or will be out-weighted by more proximal and salient personal consequences.

If social marketers would succeed in starting a more involving goal determination process, one should take into account that there is no reason why constructive thought should be selective. An individual, who is trying to construct or retrieve reasons to recycle or act brotherly, will also retrieve or be able to construct reasons why he should not. Consideration may make the prosocial consequences of one option more salient, but it will also make the costs of the prosocial behavior for the self more salient. Similarly, it will make more salient that one's own contribution to the public good is extremely limited, and would not make much of a difference. Consideration may also promote speculation about what others will do or should do (Pieters et al. 1998), or render observed defective behaviors of others more salient (Smeesters et al. 1999).

Some writers have suggested an additional way in which purposive consumer behavior may be influenced, especially when the behavior is relatively thoughtless, as in the case we are examining. Huffman et al. (this volume; see also Walker and Olson 1991) have suggested that goals may influence behavior by merely making these goals more accessible in the mind of the decision maker. This idea (not further elaborated in their work) is consistent with a body of research in social cognition and low-involvement consumer decision making. We will examine the implications of this possibility in the remainder of this paper.

Extremely simple prosocial decisions

Alba, Hutchinson, and Lynch (1991) characterized many consumer choices as extremely simple, incorporating only minimal informational inputs, and only those that tend to be salient and are perceived to be relevant at the time of the decision. Their "accessibility-diagnosticity" framework suggests that consumer choices are often based on minimal inputs as long as these inputs are more accessible and more diagnostic (relevant for the decision and discriminating among alternatives) than their alternatives (Alba et al. 1991). Social dilemmas of the less involving kind, we argue, are not different. The decision to throw an item of garbage in the "prosocial garbage bin" or in the "selfish garbage bin" may be based on the first discriminating thought that comes to mind. If this reasoning applies to social dilemmas as well as to consumer decision making, the best option for social marketers may be to make prosocial values accessible in the mind of the consumer at the moment of discarding, while avoiding further thought and consideration (which would make alternative and more selfish considerations more salient).

 Some writers in social cognition go one step further, by suggesting that mere accessibility of decisional inputs may be interpreted as relevance. In the field of organizational theory, Cohen, March and Olson (1972) had proposed a 'garbage can model' of decision making (pun not intended). They argued that in organizations momentarily available information will be considered important and will drive decisions, resulting in a marked lack of consistency over time. Clore (1992) claimed that this model applies equally well to individual decision making. The model assumes that decision making is like the 'art of found objects' (Clore 1992): the decision maker makes the best possible use of whatever is at hand. People want their judgments and choices to be justifiable, but the acceptable justifications may be heavily dependent on what is cognitively salient at any particular time.

Recycling values, beliefs, attitudes and intentions to recycle not only have to be traded off against competing concerns in housekeeping tasks; they may not even come to mind at all. Whether or not they are used in any discarding/recycling decision will depend to a large extent on whether they are accessible for the behavior at the time of the decision. Communication policies to facilitate recycling behavior should be evaluated on the basis of their ability to bring relevant thought to the consumer's mind, while s/he is engaging in the specific household tasks that involve the discarding of garbage. No empirical research to

date has investigated these issues.

Increasing the activation level of prosocial values for recycling decisions

Social psychologists (e.g., Langer, Blank, and Chanowitz 1978) have long demonstrated that behavior in complex social situations may be mindless and under the control of environmental cues. The mechanism by which the environment may control decisions and behavior is the formation of direct mental links between representations of motives and values in memory and the behaviors associated with them. The motive-goal-plan structure becomes activated whenever the relevant triggering situational features are present in the environment (Barsalou 1991). Similarly, consumer researchers have argued that in familiar decision contexts, the activation of a goal or value may make the products or behaviors directly accessible as solutions to the problem (Walker and Olson 1990; Warlop and Ratneshwar 1993). This formulation supposes that goals and intents are represented in the mind in the same fashion as social constructs, stereotypes and schemas. Higgins (1997) referred to mental representations of goal values as "guides", and to mental representations of the behaviors to reach those goals as "procedures". For both types of representations, the probability of activation is a joint function of their applicability to the situation and their accessibility in memory (Higgins 1997).

The choice between actual prosocial and selfish behaviors is ambiguous. Both choice options have costs and benefits, positive and negative aspects. Behavior may be strongly dependent on how the choice options are interpreted. Several authors have suggested that these interpretations may be 'primed' by the environment (Cialdini et al. 1990; Herr 1986; Hertel and Fiedler 1998; Sattler and Kerr 1991). Priming refers to the incidental activation of knowledge structures, by the current situational context. Many studies have shown that the recent use of a trait construct, a social stereotype, or an action schema, even in an earlier unrelated situation, carries over to exert an unintended passive influence on the interpretation of a social situation (see e.g., Higgins 1997, for a recent review). In ambiguous situations, a priori open to multiple interpretations, Higgins (1997) has suggested that primes serve as disambiguators. Priming will influence which of two applicable alternative knowledge structures will be used to interpret the decision situation, resulting in prime consistent

behavior. Bargh (1990) has argued that a motive or goal consistently activated in a general type of situation may become activated by the general features of that situation. 'Habitual' recyclers' motives may therefore be triggered each time they are confronted with the situational features of a typical discarding decision. They may cease to experience discarding as a decision, because the alternative courses of action would never come to mind. In Bargh's (1990) words, motives start to function as "auto-motives", guiding behavior without requiring intervening conscious deliberation.

When the "choice nature" of a behavioral choice is not salient, several authors have shown that action schema's can be directly activated by contextual 'primes'. Bargh, Burrows, and Chen (1996) primed participants in a study with either an elderly or a youthful stereotype, and observed marked differences in the speed with which the participants crossed a hallway after leaving the experimenter room. 'Primable' action schemata can consist of relatively complex procedural knowledge. Dijksterhuis and Van Knippenberg (1998) found that priming subjects with a "professor" stereotype increased performance in a Trivial Pursuit game, while priming with a "supermodel" stereotype reduced performance.

More common should be the case in which the consumer still faces a decision each time he has to discard an item. By definition, "decisions" require deliberation, although the process might be extremely simple. The decision task is ambiguous in the sense that multiple values or "guides' can be applied in its interpretation. The 'prosocial' option, in fact, has many different possible labels. It can be identified as the environmental choice, the morally just choice, the socially responsible choice, the civic choice, and so on. But it can also be labeled negatively, as the "dumb choice" if somebody uses more individualistic, cost-minimizing, motivations as a frame of reference. The environment may exert a considerable influence on the interpretation of the decision task, which in turn will make some behavioral decisions more likely than others.

Herr (1986) found that altering the accessibility of "hostile" categories influenced people's competitiveness in a Prisoner's Dilemma Game. He argued that influencing the relative accessibility of one's cognitive categories can alter the interpretation of other players'

behavior and, consequently, influence one's own behavior. Sattler and Kerr (1991) have conceptualized social motives (e.g., a cooperative social motive, an individualistic social motive etc.) as a structured set of cognitions (i.e., a schema). They primed social motive schemas by presenting prescriptive messages (messages with either a "moral" theme or with a "power" theme) in a context unrelated to the choice task. They found that a moral message activated the prosocial social motive schema and resulted in more prosocial behavior, but only under some circumstances (see below). Similarly, Cialdini et al. (1990) primed exiting library visitors by handing them a leaflet which featured a pro-environmental or an unrelated message, and found that receivers of environmental messages were much less likely to toss it on the floor of the parking garage.

In social dilemmas, not only the semantic (cooperative vs. individualistic) meaning of a prime is important, but also its valence. Both cooperative and individualistic behavior can be framed positively or negatively. Hertel and Fiedler (1998) suggested that semantic priming activates the representation of a specific type of behavior, whereas affective priming activates an orientation to approach or to avoid that type of behavior. They found, for example, that prosocial behavior in a dilemma game was not only influenced by primes suggesting positive connotations of cooperation but also by primes suggesting negative connotations of competition.

Boundary conditions for the priming effect

Social marketing can be enriched by considering ways in which cooperative behavior in recycling decisions and in other dilemmas can be influenced. Priming effects can be due to simple situational cues that could be put in place by social marketers. In the Cialdini et al. (1990) study, the prime was a message on the leaflet that was at the same time the to be discarded item. Other priming studies have used involuntary overheard conversations by socii, or 'radio messages' as priming stimuli. Laboratory manipulations often use less mundane tasks, but they always are designed to present the priming message in a way that makes the content active without suggesting that its meaning is related to the central task.

A lot of research needs to be done, in order to develop a theory of "low involvement"

behavior and social marketing intervention in social dilemmas, which can complement the well established work on high involvement prosocial behavior. If these ideas survive empirical scrutiny, they should result in guidelines for social marketers which are very similar to those for advertisers of fast moving consumer goods (Rossiter and Percy 1997). We suggest that laboratory consumer research using priming paradigms can be used to develop such theory. Initially, researchers should concentrate on documenting the effectiveness of priming, and its sensitivity to a number of boundary conditions. In the priming literature, boundary conditions are derived from the finding that priming only works when the to-be-primed mental structures are (1) available to the individual, (2) accessible for use, and (3) perceived as applicable to the behavioral context. Below, we discuss a number of such limiting findings as a start for further inquiry.

Construct availability

Providing subtle cues in the environment cannot create motivations that the person does not at all have. An important boundary condition to the priming effects is that the mental structure or script linking the behavior to the value is present in the person. Bargh, Chen and Burrows (1996) suggested that behavior can only be under control of the situation (prime) if the behavioral representation is already associated with the situation by the individual. In their experiments all the primed behaviors were likely part of the behavioral repertoire of the participants. One may affect someone's behavior by making certain existing motivations more readily accessible as a means to interpret the situation, but cannot give them a motivation that they do not already possess. One crucial element of the theory we are looking for should be the required level of specificity of the relationship between value and behavior. Social dilemma research suggests the use of very general social value orientations (Hertel and Fiedler 1998; Sattler and Kerr 1991). Van Lange, Otten et al. (1997) found that prosocial value orientations dominate for the largest group of individuals, and that they are an important aspect of socialization starting in early childhood. However, the more abstract the primed values, the more extensive the chain of associations that needs to be activated in order to affect behavior. It is also possible, but has never been empirically examined, that effective prime stimuli activate more task- and person-specific social values.

Our own qualitative research (Smeesters et al. 1999) suggests that qualitatively different value orientations dominate reflections about the "why of recycling" for different individuals. If primes are only effective if the primed values are task specific, segmented approaches would be called for, which makes the life of the social marketer much more difficult.

Base-line accessibility of primed constructs

Arguably, the most speculative part of our conceptualization is the assumed schematic link between values and value-consistent behaviors. Moreover, these associations should be strong enough to activate situation specific action plans, upon mere triggering by value consistent cues in the environment. The availability of these strong scripts is easily assumed in current work on social cognition. They are also abound in much current means-end chain work in marketing (Grunert and Grunert 1995). Cohen and Warlop (in press) have lamented the absence of good evidence and theory on precisely this aspect of means-end chain conceptualizations of human motivation. Good evidence exists for the effect of prosocial primes in abstract resource or prisoner's dilemma games (Herr 1986; Hertel and Fiedler 1998; Sattler and Kerr 1991). Whether the same results would be obtained in more specific pro-social contexts remains to be demonstrated.

Priming makes available interpretative constructs more accessible for use in an interpretation task. But these constructs or schemata may also be habitually more accessible for one individual versus another. Social cognition research has emphasized the interaction between chronic and situational sources of activation of cognitive schemata on overt responses. Individuals may differ not only in the availability of relevant schemata but also in the extent to which they are "chronically" active in their interpretations of the environment. Prior social cognition research has generally found that chronicity and priming have additive or weak superadditive interaction effects. However, habitual modes of interpreting the environment tend to be favorable to the concept of self. It was found, for example, that chronic 'proselves' tend to interpret social dilemmas in terms of intelligence or good strategy (smart vs. dumb), whereas cooperators tend to interpret the same choice in moral terms (good vs. mean). It is possible therefore that 'proselves' reduce cooperation even more when they are primed with (dumb) cooperation content.

Relevance, applicability, and use of primed constructs

Easily accessible constructs are not always used as a means to interpret ambiguous events. Their use is conditional upon judged applicability to the situation at hand. Earlier, it was often assumed that priming effects are only obtained when subjects are not aware of the priming event. Awareness of the priming even would make salient that the source of accessibility of the prosocial construct is not internal but external. It is an empirical question whether this applies here. In a social marketing context, this would constitute a serious problem. It is possible to bring verbal references to prosocial values in the general environment, but very hard to exclude awareness of the source. However the studies finding such exclusion effects studied more simple and experientially isolated behaviors. Recycling is embedded in a complex sequence of household tasks and events, leaving little mental resources for further consideration. Several studies have shown that the crucial condition for behavioral assimilation to primes, is not the subject's unawareness of the prime, but his inability to allocate mental resources to the elaboration of its contents. For example, Martin, Seta and Crelia (1990) found assimilation to primes, even when subjects were aware of the prime, when they were either not motivated or due to distraction not able to elaborate on its implications.

Conclusion

Social marketing starts from a fairly pessimistic view of human nature. The motivational groundwork of marketing and economics does not include altruistic or cooperative motives. For example, prosocial or ethical objectives are absent from Maslow's hierarchy, from the Rokeach values (Rokeach 1973) or Kahle's (1988) List of Values. The motivated consumer is often assumed to be an egoist. Recent social dilemma research suggests that this is not true: prosocial values are strong and dominant, strongly embedded in human socialization, and able to influence a variety of behaviors in real-life and laboratory social dilemma's (Van Lange, Otten et al. 1997). Then why would it be so hard to 'sell' brotherhood? And why can it not be 'sold like soap'? Our analysis, incomplete as it may be, suggests that there are different kinds of brotherhood, each with their analogies in traditional consumer marketing.

First, some forms of brotherhood are definitely not like soap. Buying an electrical car to help prevent inner-city air pollution (Harms and Truffer 1998), or giving up control over the functioning of the household air-conditioning unit (Osterhuis 1997) are not inconsequential. They carry high personal and economic risk, and consumers are likely to weigh their options carefully before making a choice. Here, the current social marketing paradigm, in which consumers are advised to reconsider the consequences of their choices, is most directly applicable. The social marketing task, however, is formidable, because most attempts to make consumers reconsider their options will strengthen not only the socially desirable beliefs and attitudes, but also the currently dominant attitudes.

Second, in some cases selling brotherhood is like selling a new brand of soap to "other-brand loyals" (Rossiter and Percy 1997). If consumers have developed stable individualistic or egoistic routine behavior, social marketing faces an excessively difficult task as well. Hoch and Deighton (1989) summarized the strategic advice for managing consumer learning in this group as "just struggle". Motivational approaches may not work, because any attempt to make them reconsider their beliefs will activate and strengthen the current beliefs, and their day-to-day routine behavior is driven by chronic, - automatic – own-cost-minimizing goals. Possibly, the behavior of this group can only be changed through structural changes in the dilemma pay-off structure, and prosocial pricing (Stroebe and Frey 1983). Current recycling programs change the pay-off structure by charging much higher prices for rest waste recipients than for recyclable waste recipients. If control and penalization are believable, all consumers should participate regardless of motivation.

For most consumers, recycling behavior is characterized by the absence of goal references of any kind. For this third group recycling is like the purchase of soap by an uncommitted consumer. Different brands of soap can be associated with different consequences and values, like hygiene and health or with bodily scent and social success. A brand may be positioned as a 'means' to reach these values ends, and these means-end chains may be well established in a consumer's mind. Similarly, the different behavioral alternatives involved in discarding waste can be linked with a number of more abstract consequences and values. Recycling may be associated with environmental values but also with values of social duty or morality. Not recycling may be considered smart (beating the system) or frugal. Every individual has experience with both alternatives, and the links of associations

may be as well established as the 'means-ends' positioning of any consumer product.

Thought is only useful if new and relevant information is given. Even then it still has to succeed in changing the experienced pay-off matrix or the attitudinal implications of the current cognitive structure. This insight has never escaped our religious and ethical thinkers either. Violations of ethical rules are rarely premeditated. They are due to inattention, negligence and thoughtlessness. Thinking too much about what one is supposed to do may will only awaken the realization that unethical alternatives are often easier and will go unnoticed. Ethical imperatives are supported by 'ten commandments', by simple stories and parables, or by simplified life histories of remarkable people. All these are easily accessible as guides for brotherhood. Just like religions, social marketers may be better off by just 'priming brotherhood'.

References

Alba, J., J.W. Hutchinson, and J. Lynch (1991), "Memory and decision making," in *Handbook of consumer behavior*, T.S. Robertson and H.H. Kassarjian, eds. Englewood Cliffs, NJ: Prentice-Hall.

Andreasen, A. R. (1995), *Marketing Social Change: Changing behavior to promote health, social development, and the environment*. San Fransisco: Jossey-Bass

Allen, J., D. Davis, and M. Soskin (1993), "Using coupon incentives in recycling aluminum: A market approach to energy conservation policy," *Journal of Consumer Affairs*, 27 (2), 300 - 318.

Allison, S.T. and D.M. Messick (1990), "Social decision heuristics in the use of shared resources," *Journal of Behavioral Decision Making*, 3, 195 - 204.

Antonides, G. and W. F. Van Raaij (1998), *Consumer behavior: a European perspective.* Chichester: Wiley.

Bagozzi, R.P. and P.A. Dabholkar, P.A (1994), "Consumer recycling goals and their effect on decisions to recycle: A means-end chain analysis," *Psychology and Marketing*, 11 (5), 313 - 340.

Bargh, J.A. (1990), "Auto-motives: Preconscious determinants of thought and behavior," in *Handbook of motivation and cognition* (Vol. 2), E.T. Higgins and R.M. Sorrentino, eds. New York: Guilford.

Bargh, J.A., M. Chen, and L. Burrows (1996), "Automaticity of social behavior: Direct effects of trait construct and stereotype action on construct accessibility," *Journal of Personality and Social Psychology*, 50, 869 - 878.

Barsalou, L.W. (1991), "Deriving categories to achieve goals," in *The psychology of learning and motivation* (Vol. 27), G.H. Bower, ed. New York: Academic Press.

Baumeister, R. F., E. Bratslavsky, M. Muraven, and D. M. Tice (1998), "Ego depletion: Is the active self a limited resource?," *Journal of Personality and Social Psychology*, 74, 1252 - 1262.

Bettman, J. R., M. F. Luce, and J. W. Payne (1998), "Constructive consumer choice processes," *Journal of Consumer Research*, 25 (December), 187 – 217.

Bogaert, G. and L. Van Ootegem (1997), *Inzamelmethoden voor papier en karton, glas, plastiek, metaal en drankkartons*. OVAM, Belgium.

Cialdini, R. B., R. R. Reno, and C. A. Kallgren (1990), "A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places," *Journal of Personality and Social Psychology*, 58, 1015 - 1026.

Clore, G.L. (1992) "Cognitive phenomenology: feelings and the construction of judgment," in *The construction of social judgments*, L.L. Martin and A. Tesser, eds. Hillsdale, NJ: Lawrence Erlbaum.

Cohen, D., J.G. March, and J.P. Olsen (1972), "A garbage can model of organizational choice," *Administrative Science Quarterly*, 17, 1 - 25.

Cohen, J. B. and L. Warlop (in press), "A motivational perspective on means-end chains," In *Understanding your customers: Means-end chain theory and practice*, T. J. Reynolds and J. C. Olson, eds. Hillsdale, NJ: Lawrence Erlbaum.

De Dreu, C.K.W. and T.L. Boles (1998), "Share and share alike or winner take all?: The influence of social value orientation upon choice and recall of negotiation heuristics," *Organizational Behavior and Human Decision Processes*, 76, 253 - 276.

Dietz, T. and P.C. Stern (1995), "Toward a theory of choice: Socially embedded preference construction," *Journal of Socio-Economics*, 24, 261 - 279.

Dijksterhuis, A. and A. van Knippenberg (1998), "The relation between perception and behavior or how to win a game of Trivial Pursuit," *Journal of Personality and Social Psychology*, 74 (4), 865 – 877.

Eagly, A.H. and S. Chaiken (1993), *The psychology of attitudes*. Ft Worth, TX: Harcourt Brace Jovanovich.

Fishbein, M. and I. Ajzen (1975), *Belief, attitude, intention and behavior: An introduction to theory and research*. Reading, Mass.: Addison-Wesley.

Folz, D.H. (1991), "Recycling program design, management and participation: A national survey of municipal experience," *Public Administration Review*, 51, 222 - 231.

Frey, B. S. (1993), "Motivation as a limit to pricing," *Journal of Economic Psychology*, 14, 635 - 664.

Goldenhar, L.M. and C.M. Connell (1992 - 1993), "Understanding and predicting recycling behavior: An application of the Theory of Reasoned Action," *Journal of Environmental Systems*, 22 (1), 91 - 103.

Grunert, K.G. and S.C. Grunert (1995), "Measuring subjective meaning structures by the laddering technique method: Theoretical considerations and methodological problems," *International Journal of Research in Marketing*, 3 (October), 209 – 226.

Grunert, S. (1996), "Antecedents of source separation behavior: A comparison of two Danish municipalities," in *Marketing for an expanding Europe. Proceedings of the 25th Annual Conference of the European Marketing Academy* (Vol. 1, pp. 525 - 538), J. Berács, A. Bauer, and J. Simon, eds. Budapest: Budapest University of Economic Sciences.

Gutman, J. (1982), "A means-end chain model based on consumer categorization processes," *Journal of Marketing*, 46 (September), 60 - 72.

Hardin, R.G. (1968), "The tragedy of the commons," *Science*, 162, 1243 - 1248.

Harms, S. and B. Truffer (1998), *Stimulating the market for lightweight electric vehicles: the experience of the Swiss Mendriso Project*.   EAWAG Research Report. Zurich: Technische Hochschule (www.jrc.es/snm)

Herr, P.M. (1986), "Consequences of priming: Judgment and behavior," *Journal of Personality and Social Psychology*, 51, 1106 - 1115.

Hertel, G. and K. Fiedler (1998), "Fair and dependent versus egoistic and free: Effects of semantic and evaluative priming on the 'Ring Measure of Social Values'," *European Journal of Social Psychology*, 28, 49 - 70.

Higgins, E.T. (1997), "Knowledge activation: Accessibility, applicability, and salience," in *Social psychology: Handbook of basic principles*, E.T Higgins and A.W. Kruglanski, eds.

New York: Guilford Press.

Hoch, S.J. and J. Deighton (1989), "Managing what consumers learn from experience," *Journal of Marketing*, 53 (2), 1 – 20.

Hornik, J., J. Cherian, M. Madansky, and C. Narayana (1995), "Determinants of recycling behavior: A synthesis of research results," *Journal of Socio–Economics*, 24 (1), 105 - 127.

Kahle, L., S. Beatty, and P. Homer (1986), "Alternative measurement approaches to consumer values: the List of Values (LOV) and Values and life Styles (VALS)," *Journal of Consumer Research*, 13 (December), 405-409.

Komorita, S.S. and C.D. Parks (1994), *Social dilemmas*. Madison, Wisconsin: Brown and Benchmark Publishers.

Langer, E.J., A. Blank, and B. Chanowitz (1978), "The mindlessness of ostensibly thoughtful action: The role of 'placebic' information in interpersonal interaction," *Journal of Personality and Social Psychology*, 36, 635 - 642.

Martin, L.L., J.J. Seta, and R. Crelia (1990), "Assimilation and contrast as a function of people's willingness and ability to expend effort in forming an impression," *Journal of Personality and Social Psychology*, 59, 27 – 37.

McCarty, J.A. and L.J. Shrum (1994), "The recycling of solid wastes: Personal values, value orientations, and attitudes about recycling as antecedents of recycling behavior," *Journal of Business Research*, 20, 53-62.

McClintock, C.G. and S.T. Allison (1989), " Social value orientation and helping behavior,"

Journal of Applied Social Psychology, 19, 353 - 362.

McClintock, C.G. and W.B.G. Liebrand (1988), " Role of interdependence structure, individual value orientation and another's strategy in social decision making: A transformational analysis," *Journal of Personality and Social Psychology*, 55, 396 - 409.

Messick, D.M. and C.G. McClintock (1968), "Motivational bases of choice in experimental games," *Journal of Experimental Social Psychology*, 4, 1 - 25.

Osterhuis, T. L. (1997), "Prosocial consumer influence strategies: when and how do they work?," *Journal of Marketing*, 61 (October), 16 - 29.

Pelton, L.E., D. Strutton, J. H. Barnes, and S. L. True (1993), "The relationship among referents, opportunity, rewards, and punishments in consumer attitudes towards recycling," *Journal of Macromarketing*, 13 (1), 60 - 74.

Pieters, R.G.M. (1989), *Attitudes and behavior in a source separation program. A garbology approach*. Delft: Euburon.

Pieters, R.G.M., T. Bijmolt, F. van Raaij, and M. de Kruijk (1998), "Consumers' attributions of pro-environmental behavior, motivation, and ability to self and others," *Journal of Public Policy and Marketing*, 17 (Fall), 215 - 225.

Pruitt, D.G. and M.J. Kimmel (1977), "Twenty years of experimental gaming: Critique, synthesis, and suggestions for the future," *Annual Review of Psychology*, 28, 363 - 392.

Rokeach, M. (1973), *The nature of human values*. New York: Free Press.

Rossiter, J. R., and L. Percy (1997), *Advertising, communication, and promotion management*. New York; McGraw-Hill.

Rothschild, M.L. (1979), "Marketing communications in nonbusiness situations or why it's so hard to sell brotherhood like soap," *Journal of Marketing*, 43 (Spring), 11 - 20.

Sattler, D. N. and N. L. Kerr (1991), "Might versus morality explored: motivational and cognitive bases for social motives", *Journal of Personlity and Social Psychology*, 60, 756 - 765.

Smeesters, D., L. Warlop, P. Vanden Abeele, and S. Ratneshwar (1999), *Exploring the recycling dilemma: Consumer motivation and experiences in mandatory garbage recycling programs.* Research Rapport No. 9924, Department of Applied Economics. Belgium, Leuven, Catholic University of Leuven.

Stern, P. C. (1992), "Psychological dimensions of global environmental change," *Annual Review of Psychology*, 43, 251 - 264.

Stroebe, W. and B. S. Frey (1982), "Self-interest and Collective Action : The economics and psychology of public goods," *British Journal of Social Psychology*, 21, 121 - 137

Thøgersen, J. (1994), "A model of recycling behavior, with evidence from Danish source separation programs," *International Journal of Research in Marketing*, 11, 145 - 163.

Van Lange, P.A.M., C.R. Agnew, F. Haricnck, and G.E.M. Steemers (1997), "From game theory to real life: How social value orientation affect willingness to sacrifice in ongoing relationships," *Journal of Personality and Social Psychology*, 73, 1330 - 1344.

Van Lange, P.A.M., W. Otten, E.N.M. De Bruin, and J.A. Joireman (1997), "Development of prosocial, individualistic, and competitive orientations: Theory and preliminary evidence," *Journal of Personality and Social Psychology*, 73, 733 - 746.

Van Vugt M., R. M. Meertens and P.A.M. Van Lange (1995), "Car versus public transportation: the role of social value orientations in a real-life social dilemma," *Journal of*

Applied Social Psychology, 25, 258 - 278.

Walker, B. A and J. C. Olson (1991), "Means-end chains: connecting products with self," *Journal of Business Research*, 22 (March), 111 - 118.

Warlop, L., and S. Ratneshwar. (1993), "The Role of Usage Context in Consumer Choice: A Problem Solving Perspective," in *Advances in Consumer Research* (Vol. 20, pp. 377 - 382), L. McAlister and M. Rothschild, eds. Provo, UT: Association for Consumer Research.

Wiebe, G. D. (1951), "Merchandising commodities and citizenship on television," *Public Opinion Quarterly*, 15 (Winter), 691 - 697.

Wiener, J.L. and T.A. Doescher (1991), "A framework for promoting cooperation," *Journal of Marketing*, 55 (April), 38 - 47.

Wiener, J.L. and T.A. Doescher (1994), "Cooperation and expectations of cooperation," *Journal of Public Policy and Marketing*, 13 (Fall), 259 -270.

Wilson, T.D., Lisle, D.J., and D. Kraft (1990), "Effects of self-reflection on attitudes and consumer decisions," in *Advances in Consumer Research* (Vol. 17, pp. 79 – 85), in M. Goldberg, G. Gorn, and R. Polley, eds. Provo, UT: Association for Consumer Research.

Hefbomen voor een beleid gericht op duurzame ontwikkeling:

Tussen groene woorden en groene daden …: De relatie tussen milieubesef en milieuzorg

bij individuele consumenten (HL/DD/24)

Part 7

Subtle influences on cooperative behavior

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Abstract

This research examines if priming can directly activate interpersonal orientations in settings of mixed-motive interdependence. In four experiments, people were confronted with one of three priming conditions (prosocial, neutral, proself primes) and we measured their degree of cooperation in simultaneous one-trial give-some games. Results revealed that priming did not directly activate interpersonal orientations but instead nonconsciously influenced expectations about partners' cooperation in these dilemma games. People confronted with prosocial primes expected significantly more cooperation from their opponents than people confronted with proself primes. Subsequently, these automatically formed expectations were used to determine own cooperative behavior, which also depended on participants' own interpersonal orientation. All participants displayed the same amount of cooperative behavior when they were confronted with proself primes: they reacted very selfishly towards their opponents of whom a low degree of cooperation was expected. However, when participants expected a high degree of cooperation from their partners (i.e., in the prosocial priming condition), prosocials but also low consistent proselfs played very cooperatively whereas high consistent proselfs took advantage of their partners and defected. Our research suggests that in mixed-motive interdependence situations cooperative behavior is mediated by nonconsciously influenced expectations of partners' cooperation. Implications to both the literature on interpersonal orientations and on automaticity are discussed.

Individuals are often involved in interdependent dilemmas, in which they may experience a conflict of motives. They can either choose to behave in a collective interested manner or in a self-interest manner. Pursuing one's self-interest (called noncooperative behavior) enhances one's own outcomes but hurts other individuals' outcomes. Pursuing the collective interest (called cooperative behavior) diminishes one's own welfare but enhances the outcomes of everybody. An individual is always better off by making a noncooperative choice, because it yields higher outcomes to the individual than a cooperative choice, no matter what others may do. However, if all interested parties chose to follow their self-interest, then they are all worse off than if they had acted in a collective interested manner (Dawes, 1980; Messick & Brewer, 1983). Therefore, mutual cooperative behavior is better for all parties than mutual noncooperative behavior.

It is largely assumed that individuals' cooperative behavior in conflicting social interactions is driven by interpersonal orientations. Individuals may use these orientations to eventually go beyond one's own self-interest and act on the basis of broader considerations. The most commonly used orientations can be categorized into two broad categories of orientations: prosocial orientations (cooperation, equality, altruism) and proself orientations (individualism, competition). Over time, individuals repeatedly encounter several types of interdependence situations. Therefore, it is assumed that individuals may automatically rely on interpersonal orientations to respond to specific dilemmas (cf. Bargh, 1990, 1996; Uleman & Bargh, 1989; see also Van Lange, 2000; Wieselquist, Rusbult, Foster, & Agnew, 1999). In some situations individuals may automatically rely on prosocial orientations, whereas in other situations individuals may automatically rely on proself orientations. Assuming that interpersonal orientations are directly and automatically associated to an interdependent situation, relevant situational features should be capable of triggering them also in a direct and automatic fashion (cf. Bargh, 1990). Subsequently, automatically activated interpersonal orientations may determine cooperative behavior in that interdependent situation. The question is, however, whether both prosocial and proself orientations can be automatically activated in each individual. In the literature, there is some debate on the possible sources of activation of interpersonal orientations. The disposition-based view states that there exist individual differences in interpersonal orientations (embodied in interpersonal dispositions). It is further assumed that there exists a strong consistency in individuals' interpersonal orientations. Some individuals tend to rely consistently on prosocial orientations, whereas others tend to rely consistently on proself orientations. The situation-based view assumes that there exists no strong consistency in individuals' interpersonal orientations and that they are primarily activated through situational features. Van Lange (2000) integrated both views and assumed that interpersonal orientations embodied in interpersonal dispositions have only influences in situations without any relevant features. However, in situations with relevant features, dispositional influences should disappear and

various interpersonal orientations should be capable of becoming automatically activated depending on which relevant features are present.

In our paper, we made a refinement of Van Lange's (2000) view. We expanded his view by arguing that individuals may differ with regard to the consistency of their interpersonal orientations. Some individuals may rely more consistently on the same interpersonal orientation than other individuals. We further argued that the ease with which some interpersonal orientations can become automatically activated may differ between individuals with low consistent interpersonal orientations and individuals with high consistent interpersonal orientations. We tested our view by confronting our participants with a priming procedure that tried to directly activate a prosocial orientation, a proself orientation or no specific orientation at all.

Interpersonal orientations

Research on interpersonal orientations started from the assumption that cooperative behavior in social interaction is not always determined by a pursuit of good outcomes for the self. Behavioral choices and preferences may also be determined by broader considerations in which outcomes for other individuals are also considered. Preferences may differ in the way in which own outcomes are related to the outcomes for others. These different broader preferences are labeled as <u>outcome transformations</u> in the <u>interdependence theory</u> (Kelley & Thibaut, 1978). This theory assumes that individuals' behavior in social interaction starts from a <u>given outcome matrix</u>, describing individuals' self-interested preferences. If individuals follow this given matrix, their behavior is determined by a nonsocial, self-interested preference. However, individuals may move away from this given matrix by transforming it into an <u>effective outcome matrix</u>, according to broader considerations, from which they make their choices. That is, individuals may re-evaluate outcomes in a given matrix according to the value they place on alternative self/other outcome distributions.

A considerable amount of research has identified a variety of interpersonal orientations that may shape the outcome transformation process. In general, five common orientations have been identified (derived from Allison & Messick, 1990; Griesinger & Livingston, 1975; Kuhlman & Marshello, 1975; McClintock, 1972, 1978; Messick & McClintock, 1968): three prosocial orientations, including <u>cooperation</u> (MaxJoint, i.e., maximizing joint outcomes), <u>equality</u> (MinDiff, i.e., minimizing absolute differences between one's own and others' outcomes) and <u>altruism</u> (MaxOther, i.e., maximizing the others' outcomes with little or no consideration about one's own outcomes), and two proself orientations, including <u>individualism</u>[1] (MaxOwn, i.e., maximizing one's own outcomes with little or no consideration about others' outcomes) and <u>competition</u> (MaxRel, i.e.,

maximizing the difference between one's own and others' outcomes). Recently, Van Lange (1999) has found evidence for an integrative model of prosocial orientations. He found that cooperation (which is a combination of MaxOwn + MaxOther) and equality (MinDiff) were positively associated to each other and tend to go together, i.e. individuals with prosocial orientations assigned greater weight to both outcomes for own and others and equality in outcomes. This means that if individuals want to enhance joint outcomes, they also want to enhance equality in outcomes. Van Lange & Liebrand (1989, 1991a, 1991b) also argued that individualism (MaxOwn) and competition (MaxRel) can be both conceptualized as proself orientations, because these orientations both focus on enhancing outcomes for the self. Therefore, it is not unusual to categorize orientations into two broad categories: prosocial and proself orientations (e.g., Kramer, McClintock, & Messick, 1986; Van Lange & Liebrand, 1989, 1991a, 1991b; Van Vugt, Meertens, & Van Lange, 1995).

Conceptualizations of Interpersonal Orientations

In the literature, two general views on interpersonal orientations are advanced: a disposition-based view and a situation-based view (Rusbult & Van Lange, 1996; Van Lange, 2000). Both views differ from each other with regard to the source of activation of interpersonal orientations. Until now, very few attempts have been made to integrate both views (accept Van Lange, 2000).

Research on <u>interpersonal dispositions</u> (oftentimes called social value orientations) focused on individual differences in the way of relying on specific interpersonal orientations to respond to interdependent situations (i.e., the <u>disposition-based view on interpersonal orientations</u>). Some decomposed game techniques have been developed to measure these disposition-based differences (the Triple-Dominance Technique of Social Values, e.g., Kuhlman & Marshello, 1975; Van Lange, Otten, De Bruin, & Joireman, 1997a; or the Ring Measure of Social Values, e.g., Liebrand, 1984; Liebrand & McClintock, 1988). In both techniques, participants have to make choices among various combinations of outcomes for the self versus outcomes for an imaginary other person. These techniques can indicate whether participants relied on prosocial or proself outcome transformations in their decisions across trials (i.e., according to the disposition-based view, whether individuals <u>have</u> prosocial or proself interpersonal dispositions). Interpersonal dispositions have been found to predict fairly accurate cooperative behavior in all kinds of mixed-motive situations (e.g., Allison & Messick, 1990; De Dreu & Van Lange, 1995; Kramer et al., 1986; Kuhlman & Marshello, 1975; Liebrand, Jansen, Rijken, & Suhre, 1986a; McClintock & Allison, 1989; Parks, 1994; Van Lange & Liebrand, 1989; Van Vugt et al., 1995). Individuals relying on prosocial orientations (called <u>prosocials</u>) always behaved more cooperatively than individuals relying on proself orientations (called <u>proselfs</u>). The disposition-based view further assumes that individuals' interpersonal dispositions

reflect orientations that are consistent over substantial periods of time and across situational manipulations (Kuhlman, Camac, & Messick, 1986). However, the disposition-based view does not expect that individuals always rely on the same interpersonal orientation (the 'base rate' view on interpersonal dispositions, see Van Lange, 2000). For instance, it would be very inadequate for prosocials to always rely on prosocial orientations because that would make them very exploitable. Proselfs may also sometimes rely on another orientation: they may rely on a prosocial orientation if they have long-term self-oriented reasons for doing so. Although individuals may at times rely on various interpersonal orientations, the core assumption of the disposition-based view holds that there is a reasonable consistency in individuals' orientations, with some individuals consistently relying on prosocial orientations and others consistently relying on proself orientations. These consistent orientations embodied in dispositions also have been found to influence perceptual and cognitive processes. Prosocials tend to have a more heterogeneous 'world view' than proselfs. Whereas proselfs believe that most others will also rely on proself orientations, prosocials believe that other individuals are more heterogeneous in this respect, some relying on prosocial orientations and others on proself orientations. Dispositional differences in interpersonal orientations are also linked to differences in the way other individuals' behavior is perceived. It has been found that prosocials tend to judge another person's behavior in terms of morality: someone who behaves in a cooperative manner will be judged as a moral, honest person whereas someone who behaves in an noncooperative manner will be judged as an immoral, dishonest person. Proselfs have been found to judge another individual's behavior more in terms of might/competence: someone who acts cooperatively will be judged as a mighty, competent person whereas someone who acts noncooperatively will be judged as a weak, stupid person. This difference in the way prosocials versus proselfs judge other individuals' behavior is called the <u>might-versus-morality</u> phenomenon (e.g., Liebrand et al., 1986a; McClintock & Liebrand, 1988; Sattler & Kerr, 1991; Van Lange & Kuhlman, 1994). De Bruin & Van Lange (2000) also argued that morality may be a chronically accessible construct for prosocials and that competence may be a chronically accessible construct for proselfs. All things considered, there is clear evidence of the dispositional influence of interpersonal orientations in mixed-motive situations.

Van Lange (2000; see also Rusbult & Van Lange, 1996) indicated that there is also a <u>situation-based view on interpersonal orientations</u> (e.g., in the form of relation-specific motives and social norms). Relation-specific motives are partner-specific orientations that drive behavior in dyadic interdependence situations. Several studies (Agnew, Van Lange, Rusbult, & Langston, 1998; Rusbult, Verette, Whitney, Slovik, & Lipkus, 1991; Van Lange, Rusbult, Drigotas, Arriaga, Witcher, & Cox, 1997b; Wieselquist et al., 1999) demonstrated that partners to whom we feel strongly committed are more likely to activate prosocial orientations. In general, prosocial orientations have

been found to be associated with specific features of a strong relationship like strong commitment, high satisfaction, poor alternatives and high investments (Van Lange et al., 1997b). Thus, features of a relationship may activate specific orientations. For instance, perceiving another player in a dilemma game as a moral person may activate prosocial orientations, and perceiving another player as a mighty person may activate proself orientations. Another situational basis of interpersonal orientations are social norms, these are broad rules that activate specific orientations to respond in a specific manner to interdependence situations. Activation of social norms can have strong effects on the activation of prosocial versus proself orientations. Hertel & Fiedler (1994) argued that that priming 'moral norms' may increase cooperative behavior and that priming 'power norms' may decrease cooperative behavior in interdependent situations. This means that even subtle situational features may activate prosocial versus proself orientations in a dilemma game.

Consistency of Interpersonal Orientations

An important issue in the discussion of which source (dispositional versus situational) activates interpersonal orientations is the consistency of interpersonal orientations. The disposition-based view assumes that there exists a reasonably strong consistency in individuals' interpersonal orientations over time and across situational manipulations (Kuhlman et al., 1986). Thus, behavior in social interaction is a function of consistent interpersonal orientations embodied in dispositions. The situation-based view, on the other hand, assumes that the consistency of interpersonal orientations is rather weak and that activation of interpersonal orientations is a matter of situational features. Thus, behavior in social interaction is a function of situational features. Van Lange (1999, Study 1) has performed a study on the temporal consistency of interpersonal orientations. He measured interpersonal orientations at two points in time with a lag of nineteen months. It appeared that 58.8% of the participants expressed the same orientation at time 1 and at time 2. As a result, a large group of participants (41.1%) changed their orientation over time. This indicated that the consistency of interpersonal orientations is much lower than one would expect from a stable and consistent dispositional point of view. According to Van Lange (2000) interpersonal orientations are a function of situational features and interpersonal orientations embodied in dispositions. The influence of situational features versus the influence of dispositional differences in orientations will depend on the context of the mixed-motive situations. Van Lange (2000) made a distinction between weak and strong situations (in analogy with Snyder & Ickes, 1985). Weak situations are very ambiguous situations in which there are no relevant features that can guide individuals' behavior. One would expect dispositional influences to be large in weak situations. Strong situations are less ambiguous situations that afford relevant features to guide behavior. One would expect situational influences to be large in strong situations. Most of the earlier studies investigating cooperative behavior used

dilemma games that were very ambiguous and therefore it is not surprising that they found mainly effects of interpersonal dispositions, with prosocials always being more cooperative than proselfs. However, mixed-motive situations may become strong because of relation-specific motives or because of social norms. In such circumstances, dispositional influences should become substantially weaker and situational influences should become stronger.

Although the consistency of individuals' orientations over time may be somewhat lower than the disposition-based view would assume, there may exist differences among individuals concerning the consistency of their interpersonal orientations. Some may show a stronger consistency of interpersonal orientations over time than others. This is supported by several findings. A study of Van Lange (1999; Study 1), in which he investigated the relation between interpersonal orientations (measured at time 1) and the weights assigned to outcomes for self, outcomes for another person and equality in outcomes (measured at time 2), demonstrated that the weight assigned to outcomes for other as well as the weight assigned to equality in outcomes was greater for prosocials than for proselfs. This finding indicated that for some individuals, interpersonal orientations have a reasonable consistency over time. This led him the following to conclude: "Indeed, I suggest that each of these interpersonal orientations can be activated in people. But importantly, I suggest at the same time that some orientations are activated more easily in some people than in others" (Van Lange, 2000, pp. 322).

Hertel & Fiedler (1998) also addressed this issue; they also suggested that there may exist individual differences concerning the consistency of interpersonal orientations. They used the Ring Measure of Social Values (Liebrand, 1984) to measure a consistency score. This score is measured over 24 decision trials, with each trial consisting of a pair of options describing different allocations of gains or losses to the self and to another person. They interpreted consistency in terms of a clear-cut decision routine or interpersonal orientation. Their interpretation is in line with Liebrand's (1984; see also Dehue; McClintock, & Liebrand, 1993) original conceptualization of the Ring Measure, according to which a maximal consistency score implies that the participant's preferred orientation on the Ring Measure remains consistent across all trials. The consistency score will decrease to the extent that a person changes his or her preferred orientation from trial to trial. Hertel & Fiedler (1998) further advanced that the more individuals display a low consistency in their orientations the more they should be influenced by various situational features (i.e., susceptible to various priming effects).

It is clear from the studies of Van Lange (1999, Study 1) and of Hertel & Fiedler (1998) that there may exist individual differences in the consistency of individuals' interpersonal orientations over time and in the ease with which some orientations may be activated in some individuals. Some may show a high consistency of interpersonal orientations over time, whereas others may show a

low consistency of interpersonal orientations over time. However, Hertel & Fiedler (1998) did not prove that the consistency of an interpersonal orientation measured with the Ring Measure, and which is a measure at a short period of time, can be generalized to the consistency of interpersonal orientations over a larger period of time. Smeesters, Warlop, & Van Avermaet (2001) conducted a study in which they measured interpersonal orientations at two points in time (cf. Van Lange, 1999, Study 1). The data of 156 participants were analyzed in this study. At time 1 they used the Ring Measure to determine each participant's interpersonal orientation and the consistency of that orientation. At time 2 they used the Triple-Dominance Measure to determine each participant's interpersonal orientation. It has been proven that there is a high correspondence between the two tests in measuring interpersonal orientations (Liebrand & Van Run, 1985; Van Lange & Liebrand, 1991a, 199b). There was a time lag of 6 months between the two measures. These results indicated that 75 out of 81 participants (92.6%) with a high consistent interpersonal orientation (measured at time 1) expressed the same interpersonal orientation at time 2. Of the participants with a low consistent interpersonal orientation (measured at time 1) 46 out of 75 (61.3%) expressed the same interpersonal orientation at time 2. This finding demonstrated that the temporal consistency of interpersonal orientations was significantly much lower for individuals with a low consistency score on the Ring Measure than for individuals with a high consistency score on the Ring Measure. Thus, the results of this study indicated that the consistency score obtained with the Ring Measure, was a good measure of the consistency of interpersonal orientations over time.

Taken together, there are strong arguments to allege that individuals may differ with regard to the consistency of their interpersonal orientations and the ease with which some orientations may become activated in some individuals. For individuals with low consistent interpersonal orientations, some interpersonal orientations may be easier to activate than for individuals with high consistent interpersonal orientations (cf. Van Lange, 2000). For instance, a prosocial orientation may be more difficult to activate in high consistent proselfs than in low consistent proselfs.

According to Van Lange (2000), automatic activation of interpersonal orientations should be a function of dispositional influences in ambiguous situations and of situational influences in a less ambiguous context. We do not disregard the dispositional influence of interpersonal orientations in situations with no relevant features but we argue that the automatic activation of interpersonal orientations in situations with relevant features depends on individuals' consistency of interpersonal orientations.

Automatic Activation of Interpersonal Orientations

Several authors (Van Lange, 2000; Wieselquist et al., 1999) argued that interpersonal orientations are capable of becoming automatically activated. Activation of interpersonal orientations may be the product of little or no conscious thought. Individuals are oftentimes confronted with mixed-motive interaction situations and therefore it is plausible that the activation of interpersonal orientations takes place in a fairly habituated, automatic manner. In interdependent terms, individuals may automatically rely on transformation motives to translate a given situation into an effective situation. Which interpersonal orientations are capable of becoming automatically activated may depend on individuals' consistency of interpersonal orientations.

Trying to activate automatically specific interpersonal orientations via priming techniques assumes that interpersonal orientations are mentally represented, just like goals, intentions, attitudes, stereotype, and trait constructs are (Bargh, 1990; Bargh, 1994; Kruglanski, 1996). Because it has been proven that these other mental representations are capable of becoming automatically activated by relevant situational stimuli, interpersonal orientations should also be capable of becoming automatically activated if they followed the same principles that led to the development of automaticity of other mental representations. The auto-motive model (Bargh, 1990), for instance, assumes that consistently pursuing a specific goal in a certain situation leads to a mental representation of that goal that may become automatically associated with the representation of that situation. Thus, situational features may directly activate interpersonal orientations that are chronically activated with those features. Subsequently, these activated interpersonal orientations may guide individuals' cooperative behavior in an interdependent situation without any conscious awareness or guidance.

Increases in accessibility of interpersonal orientations may result from momentary increases in accessibility (through priming) as well as from chronic accessibility (Higgins, 1989). The combination of these two sources of activation (priming and chronicity) can lead to stronger responses than each of these sources separately (Bargh, Bond, Lombardi, & Tota, 1986; Chaiken, Giner-Sorolla, & Chen, 1996; Higgins, Bargh, & Lombardi, 1985). Therefore, we assume that activation of prosocial versus proself interpersonal orientations will be interplay of relevant situational features and chronic accessibility of individuals' mentally represented interpersonal orientations.

Highly consistent reliance on a particular interpersonal orientation over time in an interdependent situation may lead to a mental representation of that orientation automatically and chronically associated with that situation. In that case, interpersonal orientations that are almost never relied on may not become mentally represented. Therefore, we assume that individuals with high consistent interpersonal orientations have only a mental representation for their consistently pursued interpersonal orientation but no mental representation for other interpersonal orientations.

On the other hand, individuals with low consistent interpersonal orientations do not consistently rely on one interpersonal orientation and, therefore, they may have mental representations for various interpersonal orientations. For these individuals, the mental representation with the highest chronic accessibility will probably predominate the others in ambiguous situations and in situations in which its accessibility is increased through priming but may be overruled by an increase in accessibility of another mental representation in other situations.

Taken together, in situations with no relevant features, we expect that individuals' most chronically accessible orientations will be automatically activated. In situations of relevant prosocial versus proself features, the automatic activation of a particular interpersonal orientation will depend on the consistency of individuals' interpersonal orientations. For low consistent individuals we expect that both prosocial and proself interpersonal orientations are capable of becoming automatically activated. For high consistent individuals, we expect that only their consistently pursued interpersonal orientations will be capable of becoming automatically activated and that other interpersonal orientations will fail to become automatically activated. Increased accessibility of an interpersonal orientation may result from chronic accessibility and momentary accessibility caused by relevant situational features (i.e., priming).

Besides a contribution to a new conceptualization of interpersonal orientations, we also like to contribute to the contemporary automaticity literature by testing whether the activation of interpersonal orientations follows automaticity principles, namely that cooperative behavior can be automatically triggered in an unmediated fashion by subtle situational features.

Priming Social Behavior

In contemporary social psychology, there is a great appeal to the idea that the social environment can automatically trigger specific behavioral sequences. The way one behaves in a crowd, for instance, might be influenced by what one fleetingly perceives. The unobtrusive proximity of an elderly couple might cause you to walk suddenly more slowly. Many studies have shown that a recent unobtrusive activation of trait concepts, stereotypes or goals can have strong effects on subsequent behavior (for reviews see Bargh & Chartrand, 1999; Bargh & Ferguson, 2000). It has been shown that both simple behaviors (e.g., walking) and more complex behaviors (e.g., answering quiz questions) can be unobtrusively influenced by subtle situational features. Oftentimes one is not conscious of the impact that these features can have on one's own social behavior, i.e. the mental processes accompanying these effects have been found to operate outside of conscious awareness and guidance. Furthermore, it is generally assumed that automatic behavior emerges from a direct, unmediated psychological effect of the social environment (Bargh, 1997;

Bargh, Chen, & Burrows, 1996).

This unmediated assumption has gained strong support in the automatic behavior literature. A lot of studies have demonstrated the direct effect of the automatic activation of trait concepts and stereotypes on one's own social behavior (e.g., Bargh et al., 1996; Chen & Bargh, 1997; Dijksterhuis, Aarts, Bargh, & Van Knippenberg, 2000; Dijksterhuis & Van Knippenberg, 1998; Pendry & Carrick, 2001). For example, Bargh et al. (1996, Experiment 1) demonstrated that priming participants with trait concepts related to rudeness or politeness influenced the time participants waited to interrupt a conversation between the experimenter and a confederate. The results showed a clear effect of priming trait concepts on the participant's behavior. Participants primed with rudeness concepts interrupted this conversation significantly faster than did participants in the neutral or polite priming conditions. Bargh et al. (1996, Experiment 2) demonstrated that participants primed with an elderly stereotype walked more slowly through a corridor than neutrally primed participants.

The direct effects of priming on behavior have not only been demonstrated in case of trait concept and stereotypes. In his famous 'auto-motive' chapter, Bargh (1990) argued that also 'motives' may become automatically activated on mere confrontation with situational features that are associated with these motives. Research (e.g., Chartrand & Bargh, 1996; Gollwitzer, Heckhausen, & Steller, 1990) has shown that goals can be activated by relevant situational stimuli and proceed to influence subsequent cognition. Bargh & Barndollar (1996) extended this research by showing that also behavioral goals can become unobtrusively activated. In their experiment, participants were either primed with words related to an achievement goal (e.g., success) or with words related to an affiliation goal (e.g., sociable). In a second phase of the experiment, participants were placed in a goal conflict situation, in which either the achievement goal or the affiliation goal could be fulfilled. Each participant had to cooperate with a confederate to find as many words as possible in a series of word search puzzles. However, the confederate feigned to be very bad at this task and started to become humiliated for not performing well. What would the participants do in this goal conflict situation? Would they hurt the confederate's feeling by trying to achieve a high score or would they take the feelings of the confederate into consideration by finding not too many words in the puzzles? It turned out that participants in the achievement goal priming condition outperformed the participants in the affiliation goal priming condition. In a second experiment, the same priming conditions were used but also each participant's chronic achievement and affiliation motivations were assessed. The results replicated the findings of the first experiment; participant's whose achievement motivation was primed outperformed the participants whose affiliation motivation was primed, but only on the first trials of the task. On the later trials, when the temporary activation caused by the priming method declined, participant's chronic motivation took over and it turned out that participants with a chronic achievement motivation outperformed

participants with a chronic affiliation motivation. Bargh & Barndollar (1994) argued that the results of the second experiment are very important because they showed that priming of achievement and affiliation goals simulates in the short term the same effects that chronic achievement and affiliation goals have over time. This confirmed the possibility that behavioral goals can become automatically activated by the mere presence of relevant situational stimuli and guide social behavior in an unobtrusive way.

In general, there is ample evidence that unconscious mental processes that are activated directly by situational features can drive social behavior. There is almost no evidence that suggests that the effects of priming on social behavior are mediated by something else (like social perceptions or judgments). One can image that impressions of other persons influence the way you behave in social interactions. However, research (e.g., Bargh et al., 1996; Chen & Bargh, 1997) indicated that social behavior can be triggered directly without being mediated by impressions or judgments of the person with whom one is interacting. In this research, impressions were clearly not affected by the priming manipulation, whereas behavior strongly was. Also other reviews of possible evidence of mediating factors that might influence social behavior showed only weak or nonexisting evidence (Bargh, 1997).

The only reported studies in which it is argued that participants' own social behavior (in prisoner's dilemma games) might have been based on perceptions, which were influenced by the priming procedure, instead of as a direct effect of the priming manipulation, are the studies of Herr (1986) and of Neuberg (1988). However, evidence for mediated effects was rather weak. In the study of Herr (1986, Experiment 2), participants were primed with extreme or moderate exemplars of hostility of nonhostility (e.g., Hitler, Alice Cooper, Kissinger, Santa Claus). In a second phase of the experiment, participants received a Donald-like description (see Higgins, Rholes, & Jones, 1977) of their opponent in a prisoner's dilemma game and were asked to overtly assess this person's hostility after reading the description. Following completion of the hostility measure, participants played a prisoner's dilemma game. The results showed assimilation and contrast effects of the judgment of the other person's hostility following priming with exemplars of, respectively, moderate and extreme levels of the category hostility. In addition, when participants interacted with this other person in a prisoner's dilemma games, they behaved in line with the judgment they made. This experiment showed that the unobtrusive and recent activation of a social category not only can have effects on the judgment of an ambiguously described person, but it can also affect behavior directed toward that person as based on the overtly made judgment. However, Herr (1986) never proved statistically (e.g., through a mediation analysis, see Baron & Kenny, 1986) that participants really used these overtly assessed judgments to determine their behavior in a social interaction. Nevertheless, in case that the influence of the priming procedure on the social behavior was mediated

by judgments of the other person's hostility, it was not surprising that the participants in this study used these judgments to determine their behavior. After all, participants were asked to <u>overtly</u> judge the other person's hostility. This is typically a social perceptual process like in the Donald-study of Higgins et al. (1977), where participants were also asked to judge someone's behavior, after a recent activation of a specific social category (e.g., adventurousness, recklessness). The question is whether the same behavioral effects would have been obtained if an overt judgment of the other person's hostility had not been made or whether participants in fact made spontaneous evaluations following priming. Herr (1986) suggested that it may be possible that social judgments are in fact made automatically (see also Winter & Uleman, 1984; Winter, Uleman & Cunniff, 1985). However, his experiment could not demystify whether there might have been direct priming effects on social behavior or whether individuals used judgments to determine their behavior even without making an overt judgment.

Neuberg (1988) also suggested that a social perceptual mechanism might have mediated the effect of his priming procedure on social behavior. In his study, participants were subliminally primed with either competitive words (e.g., hostile, unfriendly) or neutral words, and then played a multi-trial prisoner's dilemma game. The results indicated that the subliminal primes, in interaction with the participants' behavioral predispositions toward competitiveness or cooperation in the game situation, had a significant influence on the competitiveness of the participant's behavior. Competitive participants played more competitively when exposed to the competitive primes (e.g., hostile and hate) than when exposed to the neutral primes (e.g., place and water). In addition, competitive participants exposed to the competitive primes played much more competitively than did cooperative participants exposed to the same competitive primes. Neuberg (1988) advanced several possible mechanisms that might explain his data, of which a social perception mechanism might account well for the observed data. Competitive primes might cause one to subsequently interpret the behavior of other individuals as being more competitive than one might otherwise. Perceiving a situation as being competitive might lead one to behave in an appropriate manner. In the case of the prisoner's dilemma game, the generally appropriate response, if one is basically competitive, to perceiving a partner as being competitive might be to behave competitively oneself, and, if one is basically cooperative, to cooperate in order to change the other's behavior. However, Neuberg (1988) could not confirm the adequacy of his proposed mechanism and he notified that one should treat these mechanisms very tentatively, as he did not perform an experimental test of potential mediators. Moreover, one could also object that he did not use an adequate test of his participants' interpersonal orientations. Instead, he used the first trial (participants could either make a prosocial or a proself decision) of the prisoner's dilemma game to assess each participant's prosocial versus proself orientation. Behavior on the first trial might be a result of a strategic consideration and may

not reflect the participant's truly interpersonal orientation. This inadequate assessment of individuals' orientations might explain why he did not obtain any effects of individuals' orientations in the neutral priming condition. Normally, one should find significant differences between prosocials and proselfs in very ambiguous circumstances (like the neutral priming condition).

In sum, the studies of Herr (1986) and Neuberg (1988) cannot provide indisputable evidence that social perceptions might mediate social behavior. Bargh et al. (1996) also indicated to those who like to support a mediational model that the evidence for a mediation of behavior by social perception is historically weak and that when mediators and behaviors are measured in the same study, it is the behavioral measure that shows the predicted effects and the mediator that shows weak or nonexistent differences (see for example Bargh et al., 1996, Experiment 1).

The Purpose of the Present Experiments

We like to contribute to two domains of research. First of all, we like to make a contribution to the literature on interpersonal orientations. There has been a lot of discussion on the possible sources of activation of orientations (see Van Lange, 2000). We adapted Van Lange's (2000) view by arguing that the consistency of individuals' interpersonal orientations may exert an important impact on the way one behaves in social interactions. We like to test whether various interpersonal orientations are easier to activate in low consistent individuals than in high consistent individuals. Secondly, we like to contribute to the automaticity literature by examining whether behavior in conflicting social interactions emerges from an unmediated and unconscious activation of interpersonal orientations. Until now, evidence of direct priming effects on behavior has been very strong (e.g., Bargh et al., 1996; Chartrand & Bargh, 1996; Chen & Bargh, 1997; Dijksterhuis et al., 2000; Dijksterhuis, Spears, Postmes, Stapel, Koomen, Van Knippenberg, & Scheepers, 1998; Dijksterhuis & Van Knippenberg, 1998) and clear evidence for a mediational model of priming effects has never been found.

In the present experiments, we like to test our main hypothesis that interpersonal orientations can be directly and automatically activated by the mere presence of situational features. The activation of a particular orientation will depend upon the combination of its chronic and momentary accessibility. We conducted a first experiment of four in which we tried to gain evidence for our hypothesis. Our four experiments have all the same structure. In a first phase, we measured each participant's interpersonal orientation and the consistency of that orientation by using a version of the Ring Measure of Social Values (Liebrand, 1984). In a second phase, participants were primed either with prosocial primes, neutral primes or proself primes using supraliminal and subliminal techniques. In a third phase, we observed the priming effects on cooperative behavior in

one-trial mixed-motive games.

Experiment 1

Some features of this study deserve attention. First of all, following the might-versus-morality effects (see Liebrand et al., 1986a) we used prosocial primes, which were linked to 'morality' concepts, to activate prosocial orientations and proself primes, which were linked to 'might' concepts, to activate proself orientations. Second, we used a one-trial simultaneous 2-person give-some game (e.g., Van Lange, 1999, Study 3; Van Lange & Kuhlman, 1994). Participants had to make one choice without having any information about their partner's choice. We wanted to observe the priming effects as purely as possible, and therefore we wanted to rule out that our participants used their partner's choice as a basis for making their own choice.

We predicted that in ambiguous situations (i.e., the neutral priming condition), one's most chronically accessible interpersonal orientation would influence one's own cooperative behavior. One's most chronically accessible orientation will be the orientation that will be measured with the Ring Measure of Social Values. Individuals with (high or low consistent) prosocial orientations will cooperate more than individuals with (high or low consistent) proself orientations (Hypothesis 1). In less ambiguous situations (i.e., situations with relevant features) only orientations will be activated that are mentally represented in individuals. Furthermore, the activation of these orientations will be a combination of chronic and momentary accessibility. High consistent prosocials will act more cooperatively when they are confronted with prosocial primes compared to neutral primes; for these participants, we expect no differences between the neutral and proself priming condition (Hypothesis 2). High consistent proselfs will act less cooperatively when they are confronted with proself primes compared to neutral primes; for these participants, we expect no differences between the neutral and prosocial priming condition (Hypothesis 3). Furthermore, we predicted that, compared to the neutral priming condition, participants with low consistent interpersonal orientations will behave more cooperatively when they are confronted with prosocial primes and that they will behave less cooperatively when they are confronted with proself primes (Hypothesis 4).

Method

<u>Participants and design</u>

The participants were 203 undergraduates (XX women, XX men) at the Catholic University of Leuven. They participated in the experiment as partial fulfillment of course requirements. All were native Dutch speakers.

The experimental design included three between-subjects factors. These three factors were Interpersonal Orientation (pro-social versus pro-self), Consistency (high versus low), and Primes (pro-social versus neutral versus pro-self). One dependent variable was measured: the participant's actual cooperative behavior in a prisoner's dilemma game.

<u>Procedure and materials</u>

Upon entering the laboratory, participants were welcomed by a male experimenter. They were told that they would participate in a number of unrelated experiments. Participants were then brought to individual soundproof cubicles. Participants were requested to perform a sequence of four tasks: (a) the Ring Measure of Social Values; (b) a filler task; (c) the priming procedure and (d) a simultaneous, single-trail prisoner's dilemma task. After participant fulfilled all these tasks, they were requested to fill in a couple of post-experimental questions. Finally, participants were thanked for their participation and debriefed.

<u>Measuring Interpersonal Orientations and Consistency</u>

The experiment started by assessing each participant's interpersonal orientation and consistency, using the Ring Measure of Social Values (Liebrand, 1984, see also Liebrand et al. 1986a; McClintock & Liebrand, 1988). The Ring Measure is a computerized task that confronted participants with 24 choice trials. Each trial existed of two different distributions of imaginary amounts of money for the self and for another person. These different combinations of amounts of money for the self and for the other person could be either positive or negative.

The 24 pairs of outcomes are laid on a circle in the own/other outcome plane defined by two orthogonal dimensions: a horizontal dimension representing the outcomes for the self and a vertical dimension representing the outcomes for the other person. Specific own/other outcomes are defined as points in the plane. The center of the circle coincides with the origin of the outcome plane, i.e., the origin denotes 0 BEF. for the self and 0 BEF. for the other person. The radius of the circle is 1500 BEF. (1 U.S. dollar is about 45 BEF.). Each pair consists of two equidistant own/other outcome distributions that were located next to each other on the circle. An example of

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such a pair is the choice between Alternative A: 1450 BEF. for the self and 300 BEF. for the other and Alternative B: 1500 BEF. for the self and 0 BEF. for the other. In each of the 24 pairs, participants were instructed to choose that alternative of the pair they most preferred.

After the participants made all their 24 choices, we calculated the total amount of money allocated to the self and the total amount of money allocated to the other person. These two totals can be represented as a single point on the horizontal (own outcomes) and vertical (other's outcomes) axis, and provide an estimate of the direction of the person's orientation vector in the outcome plane. This vector defines each participant's interpersonal orientation. Each orientation reflects a unique pattern of choices. Participants are classified on the Ring Measure as making choices consistent with one of the orientations. Participants with orientation vectors falling between 22.5° and 112.5° were classified as individuals with prosocial orientations (i.e., prosocials) and participants with orientation vectors falling between 292.5° (or –67.5°) and 22.5° were classified as individuals with proself orientations (i.e., proselfs). Of the 203 participants, 101 could be identified as prosocials and 98 could be identified as proselfs. Four participants could not be identified because they had an orientation vector of exactly 22.5°.

We used the Ring Measure not only to determine each participant's interpersonal orientation but also to determine the consistency of each orientation. A maximal consistency score implies that the participant's preferred orientation on the Ring Measure remains consistent across all trials (Liebrand, 1984). This consistency score will decrease when participants follows another orientation on some trials. We decided to label participants who obtained a consistency score of more than 90% as individuals with a high consistent interpersonal orientation and participants who obtained a consistency score of less than 85 % as individuals with a low consistent interpersonal orientation (cf. Smeesters et al., 2001). Participants who scored between 84% and 91% were discarded from the analysis. We did not perform a common median split on the consistency scores because we really wanted to create a clear distinction between participants who displayed a very high consistency score and participants who scored a lower consistency score. We wanted to make this distinction even more clearly by omitting participants who felt in between our two criteria (i.e., between 84% and 91%).

The average level of consistency was 88.3%. Of the remaining 199 participants, 110 could be labeled as individuals with a high consistent interpersonal orientation and 86 could be labeled as individuals with a low consistent interpersonal orientation. Three additional participants were discarded from the analysis because they exhibited a consistency score between 84% and 91% or because they had a consistency score that was less than 60%. This means that a total of 196 participants remained for the analysis. Fifty-three participants were classified as individuals with a high consistent prosocial orientation (called high consistent prosocials), 45 participants were

classified as individuals with a low consistent prosocial orientation (called <u>low consistent prosocials</u>), 57 participants were classified as individuals with a high consistent proself orientation (called <u>high consistent proselfs</u>), and 41 participants were classified as individuals with a low consistent proself orientation (called <u>low consistent proselfs</u>).

After the Ring Measure, all participants took part in a filler-experiment that lasted for 15 minutes. Participants were requested to categorize several objects into different color categories (e.g., a banana into the yellow category), and were later asked how many objects they could remember.

<u>Priming manipulation</u>

We used the Scrambled Sentence Test (Srull & Wyer, 1979) as a supraliminal priming technique to prime either prosocial, proself or no relevant (i.e., the neutral priming condition) interpersonal orientations. This test was introduced to the participants as a "language skill" test. We used the Scrambled Sentence Test The Scrambled Sentence Test existed of 30 items, each requiring the participant to form a grammatically correct sentence of four words from five words presented in a scrambled sentence. Word primes were embedded in 15 of the 30 items. We created three versions of the Scrambled Sentence Test. A first version was created to prime a prosocial orientation and used words related to morality (e.g., honest, trustworthy, helpful, fair). A second version was created to prime a proself orientation as used words related to might/competence (e.g., determined, smart, autonomous, independent). A third version existed of words that were neutral and unrelated to a specific orientation (e.g., old, curved, silent, timid).

<u>Measuring cooperation in a one-trial simultaneous 2-person give-some game</u>

We introduced the mixed-motive game in the form of a decision making task. Each participant was told that s/he was paired with another participant in the laboratory. The game we used was adopted from prior research (see De Bruin & Van Lange, 2000; Van Lange, 1999, Study 3; Van Lange & Kuhlman, 1994; Van Lange & Liebrand, 1989, 1991a, 1991b). Each participant was given four chips and it was told that the partner also received four chips. Each own chip had a value of 10 BEF. to the person himself or herself and a value of 20 BEF. to the partner. The same holds for the partner, each chip held by the other had a value of 10 BEF. to himself or herself and a value of 20 BEF. to the participant himself or herself. Participants were told that their task was to decide how many chips (none, one, two, three, or four) they would give to the partner. They were also told that the partner also had to decide how many chips s/he would give to the participant. Participants did not receive any information about the partner. In reality, this 2-person give-some

game was a fictitious game. Every transferred chip resulted in an own loss of 10 BEF. but resulted in a gain of 20 BEF. to the partner. Maximal cooperation was to give four chips and maximal noncooperation was to give zero chips[2]. Participants could end up between 0 BEF. (if they gave four chips to the other and received none) and 120 BEF. (if they gave zero chips to the other and received four). All participants comprehended the task structure and, therefore, no additional data were excluded. After participants made their decision, they were thanked for their participation and debriefed.

Results

A 2 (Interpersonal Orientation: prosocial vs. proself) x 2 (Consistency: high vs. low) x 3 (Primes: prosocial vs. neutral. vs. proself) between-subjects ANOVA was conducted on the measured cooperation in the give-some game. This analysis revealed two significant main effects. First, we obtained a main effect of Interpersonal Orientation, $F(1,184) = 23.10$, $p < .0001$. Prosocials ($M = 2.16$) showed more cooperation than proselfs ($M = 1.48$). Second, a main effect of Primes, $F(2,184) = 36.50$, $p < .0001$ revealed that prosocial primes ($M = 2.48$) produced greater cooperation than neutral primes ($M = 1.95$), which in turn produced greater cooperation than proself primes ($M = 1.04$). Planned comparisons revealed a significant contrast of prosocial primes vs. neutral primes, $F(1,184) = 9.25$, $p < .01$, of neutral primes vs. proself primes, $F(1,184) = 27.89$, $p < .0001$, and consequently of prosocial primes vs. proself primes, $F(1,184) = 71.49$, $p < .0001$.

We also obtained three significant two-way interactions: between Interpersonal Orientation and Consistency, $F(1,184) = 8.07$, $p < .01$, between Interpersonal Orientation and Primes, $F(2,184) = 3.36$, $p < .01$, and between Consistency and Primes, $F(2,184) = 5.61$, $p < .05$. However, these interactions were qualified by a significant three-way interaction between Interpersonal Orientation, Consistency, and Primes, $F(2, 184) = 6.99$, $p < .01$. The means for this three-way interaction are shown in Table 1. To further analyze this interaction, we conducted separated 2 (Interpersonal Orientation: prosocial vs. proself) x 3 (Primes: prosocial vs. neutral vs. proself) between-subjects ANOVAs for participants with a high consistent interpersonal orientation and for participants with a low consistent interpersonal orientation.

The 2 x 3 (Interpersonal Orientation x Primes) between-subjects ANOVA for participants with a high consistent interpersonal orientation revealed two significant main effects. First, we obtained a main effect for Interpersonal Orientation, $F(1,104) = 32.99$, $p < .0001$. High consistent prosocials ($M = 2.26$) showed greater cooperation than high consistent proselfs ($M = 1.19$).

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Second, the analysis showed also a main effect for Primes, $F(2, 104) = 12.07$, $p < .0001$. Planned comparisons showed no significant contrast of prosocial primes vs. neutral primes, $F(1,104) < 1$, ns, but showed a significant contrast of neutral primes vs. proself primes ($M = 2.04$ vs. $M = 1.08$), $F(1,104) = 17.78$, $p < .0001$, and of prosocial primes vs. proself primes ($M = 2.05$ vs. $M = 1.08$), $F(1,104) = 18.09$, $p < .0001$. However, these main effects were qualified by a significant two-way interaction between Interpersonal Orientation and Primes, $F(2,104) = 9.92$, $p < .0001$. This interaction is depicted in Figure 1. In line with Hypothesis 1, a planned comparison showed that high consistent prosocials cooperated more than high consistent proselfs in the neutral priming condition ($M = 2.41$ vs. $M = 1.68$), $F(1,104) = 4.95$, $p < .05$, in the prosocial priming condition ($M = 3.16$ vs. $M = 0.94$), $F(1,104) = 46.34$, $p < .0001$, but not in the proself priming condition ($M = 1.22$ and $M = 0.95$), $F(1,104) < 1$, ns. Planned comparisons also revealed that high consistent prosocials showed greater cooperation after being primed with prosocial words ($M = 3.16$) than after being primed with neutral words ($M = 2.41$), $F(1,104) = 5.19$, $p < .05$. However, a planned comparison also revealed that high consistent prosocials showed less cooperation after confrontation with proself primes ($M = 1.22$) than after confrontation with neutral primes ($M = 2.41$), $F(1,104) = 12.90$, $p < .001$. Thus, Hypothesis 2 is only partially supported.

Planned comparisons indicated that high consistent proselfs showed less cooperation after being primed with proself words ($M = 0.95$) than after being primed with neutral words ($M = 1.68$), $F(1,104) = 5.47$, $p < .05$. However, these participants also showed less cooperation after confrontation with prosocial primes ($M = 0.94$) than after confrontation with neutral primes ($M = 1.68$), $F(1,104) = 5.27$, $p < .05$. There was no significant contrast for high consistent proselfs confronted with prosocial primes vs. proself primes ($M = 0.94$ and $M = 0.95$), $F(1,104) < 1$, ns. These results only partially supported Hypothesis 3.

To test Hypothesis 1 and 4, we conducted a 2 (Interpersonal Orientation: prosocial vs. proself) x 3 (Primes: prosocial vs. neutral vs. proself) between-subjects ANOVA for participants with a low consistent interpersonal orientation. This analysis only revealed a significant main effect of Primes, $F(2,80) = 28.85$, $p < .0001$. As predicted by Hypothesis 4, prosocial primes ($M = 2.90$) elicited greater cooperation than neutral primes ($M = 1.86$), $F(2,80) = 16.71$, $p < .0001$, whereas proself primes ($M = 0.99$) elicited less cooperation than neutral primes ($M = 1.86$), $F(1,80) = 11.17$, $p < .01$. Although there was no significant main effect of Interpersonal Orientation and no significant interaction between Interpersonal Orientation and Primes, we calculated a planned comparison between low consistent prosocials and low consistent proselfs in the neutral priming condition (as postulated in Hypothesis 1). This marginally significant contrast revealed that low consistent prosocials exhibited more cooperative behavior than low consistent proselfs in the neutral priming condition ($M = 2.23$ vs. $M = 1.50$), $F(1,80) = 3.87$, $p < .06$, but not in the prosocial priming

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condition ($\underline{M}$ = 2.88 and $\underline{M}$ = 2.92), $\underline{F}$(1,80) < 1, $\underline{ns}$, and in the proself priming condition ($\underline{M}$ = 1.06 vs. $\underline{M}$ = 0.92), $\underline{F}$(1,80) < 1, $\underline{ns}$.

Discussion

These results only partially supported our predictions. First, our hypothesis that (high or low consistent) prosocials would show greater cooperation than (high or low consistent) proselfs in ambiguous conditions (i.e., the neutral priming condition) was supported. Second, our prediction that prosocial primes and proself primes would elicit, respectively, more and less cooperation than neutral primes for participants with low consistent interpersonal orientations was also supported. Third, Hypotheses 3 and 4 were not fully supported. Our results showed that high consistent prosocials exhibited greater cooperation in the prosocial priming condition than in the neutral priming condition. However, we also obtained an unpredicted finding, namely that high consistent prosocials exhibited less cooperation in the proself priming condition than in the neutral priming condition. In addition, high consistent proselfs showed less cooperation after being primed with proself primes $\underline{and}$ prosocial primes than after being primed with neutral primes.

The finding that high consistent prosocials were sensitive to proself primes and that high consistent proselfs were sensitive to prosocial primes jeopardizes our postulated conceptualization of interpersonal orientations. We stated that high consistent prosocials would have no mental representation for a proself orientation and that high consistent proselfs would have no mental representation for a prosocial orientation. The finding that high consistent prosocials exhibited more noncooperative behavior after being primed with proself primes than after being primed with neutral primes maybe suggests that a proself orientation might have been directly activated by the primes. On the other hand, how can we explain why high consistent proselfs exhibited the same degree of (non)cooperative behavior in proself and prosocial priming conditions? It seems irrational to argue that prosocial primes are capable of directly activating a proself orientation. The finding that high consistent proselfs exhibited a high degree of noncooperative behavior after being primed with prosocial primes might even suggest that orientations are not primed at all. If we cannot explain this result via an 'auto-motive' principle, than this would suggest that something else must have been primed. This brings us back to Herr's (1986) suggestion that individuals might spontaneously judge other persons following primes. In his study, he found that priming influenced an overtly made judgment of the partner in a prisoner's dilemma, which might have guided expectations of partner's cooperation. Subsequently, these automatically formed judgments and expectancies might have mediated behavior. Herr (1986) raised the possibility that social judgments might be even made without an overt assessment.

The question is now whether the effect of the primes on cooperation in the give-some game has been mediated by social perceptions. For instance, <u>expectations of the other person's cooperation</u> might have functioned as a mediator. Social dilemma research has demonstrated that expectations of a partner's cooperation and a participant's own cooperative choice are strongly related to each other. There has been a lot of discussion of the direction of this relationship. There is some evidence that the own choice influenced expectations through processes like self-justification or false consensus (Messé & Sivacek, 1979; Ross, Green, & House, 1977). However, there is also strong evidence that expectations determine own cooperative choice (Kelley & Stahelski, 1970; Pruitt & Kimmel, 1977). Liebrand, Wilke, Vogel, & Wolters (1986b) found that participants were more inclined to cooperate when they believed that their partners were willing to cooperate than when they believed that their partners were willing to behave in a noncooperative manner. If expectations mediated the effect of primes on own cooperative behavior, than we have to assume that expectations influenced choice behavior in our research and not vice versa.

Other research indicated that the extent to which expectations influence own cooperative behavior may depend on individuals' orientations. Prosocials are found to follow a 'behavioral assimilation' principle (Kelley & Stahelski, 1970). If they expect their partner to be cooperative, they will also cooperate; if they expect their partner to be noncooperative, they will also choose to act noncooperatively in order to protect themselves from exploitation. Proselfs are less inclined to assimilate because they basically act in a noncooperative manner.

It might be very likely that participants in Experiment 1 used expectations to determine their own cooperative behavior. These expectations might have been automatically created in the presence of the primes[3]. However, in the neutral priming condition expectations might have been influenced by the participants' own interpersonal orientation. Kuhlman & Kimberley (1976) found that prosocials expected more cooperation from other individuals than proselfs in an ambiguous mixed-motive setting. Thus, in ambiguous situations individuals' most chronically accessible orientation will influence expectations. In situations with relevant features (e.g., the prosocial and the proself priming conditions), individuals might rely on the primes to create expectations. Prosocial features might influence one to expect the partner to be a moral person and morality is linked to cooperative persons (Deutsch, 1982; Liebrand et al., 1986a; Van Lange & Kuhlman, 1994). Proself features might influence one to expect the partner to be a mighty person and might is often linked to noncooperative persons (Liebrand et al., 1986a; Sattler & Kerr, 1991; Van Lange & Liebrand, 1989). As a consequence, prosocial primes might influence one to expect a high degree of cooperation from the partner and proself primes might influence one to expect a high degree of noncooperation from the partner. Subsequently, these automatically created expectations might be used to determine own cooperative behavior.

If we assume that our participants in Experiment 1 based their own cooperative behavior on automatically created expectations, this could explain our results. What we then observed is that high consistent prosocials and participants with a low consistent interpersonal orientation tend to show behavioral assimilation to the primes. This behavioral assimilation can be interpreted as a temporary behavioral change in reaction to the partner's strategy. The fact that high consistent prosocials, but also low consistent prosocials behaved very cooperatively in case of prosocial primes (i.e., expectation of a cooperative partner) and very noncooperatively in case of proself primes (i.e., expectation of a noncooperative partner) is not so strange (see Kelley & Stahelski, 1970). The finding that low consistent proselfs also showed behavioral assimilation is somewhat more surprising, and more specific the fact that they showed cooperative behavior after being primed with prosocial words. Nevertheless, the results of Smeesters et al. (2001) showed that these individuals may easily adopt prosocial orientations and therefore it is not surprising after all that these individuals are capable of behaving in a cooperative manner. Just like prosocials, expectations might be an important ingredient in the decisions of low consistent proselfs. Moreover, Liebrand et al. (1986a) suggested that there may exist 'border liners'. Border liners are individuals that have no uniquely defined interpersonal orientation. Because of their borderline orientation, these individuals are also more inclined to assimilate to the behavior of others (Liebrand et al., 1986a). Individuals with a low consistent interpersonal orientation might qualify for a borderline categorization because they may more easily adopt several orientations than individuals with high consistent orientations. In our study, high consistent proselfs did not really show behavioral assimilation. They already acted very noncooperatively in the neutral priming condition. They even played more noncooperatively in case of proself primes (i.e., a 'competitive' reaction). This might be caused by an even more noncooperative perception of the partner than in the neutral priming condition. However, they also played more noncooperatively in case of prosocial primes (i.e., a 'competitive' reaction). If prosocial primes caused these individuals to perceive their partner as a moral/cooperative person, than it is not strange that they exploit their partner (a 'exploitation' reaction)[4].

In the next experiments, we like to test our new hypotheses. If we find support for our new assumptions, then we have to build on a new conceptualization of interpersonal orientations. If expectations of the partner's cooperative behavior mediate the effect of situational features on own cooperative behavior, than this means that one's cooperative behavior is not influenced by a direct activation of interpersonal orientation but instead by a decision that is based on automatically created expectations. The decision that then will be made may depend on the most accessible orientation at that time.

Experiment 2

The purpose of this experiment was to replicate the surprising findings of Experiment 1 and to investigate some new hypotheses. For Experiment 2, we hypothesized that (high and low consistent) prosocials would behave more cooperatively than (high and low consistent) proselfs in the neutral priming condition. We further hypothesized that high consistent prosocials and participants with low consistent interpersonal orientations would act more cooperatively after being primed with prosocial words compared to neutral words and less cooperatively after being primed with proself primes compared to neutral words. High consistent proselfs will basically behave in a noncooperative manner but may show less cooperation after being primed with prosocial or proself words than after being primed with neutral words.

We also hypothesized that prosocials expect in general more cooperation from their partners than proselfs, but we expect the difference to be larger in the neutral priming condition than in the prosocial or proself priming conditions. Further, prosocial primes might generally elicit more expected cooperation from the partner than neutral primes; proself primes might generally elicit less expected cooperation from the partner than neutral primes. We tested statistically whether expectations of the partner's cooperation mediated the effect of primes on own cooperative behavior.

Method

Participants and design

One hundred ninety-three students (XX women, XX men) at the Catholic University of Leuven participated in the experiment as partial fulfillment of course requirements. All were native Dutch speakers.

The experimental design included three between-subjects factors. These three factors were Interpersonal Orientation (pro-social vs. pro-self), Consistency (strong vs. weak), and Primes (pro-social vs. neutral vs. pro-self). We assessed expectations of partner's cooperation and the participant's actual cooperative behavior in a prisoner's dilemma game.

Procedure and materials

The same procedure as in Experiment 1 was followed. Participants were requested to perform a sequence of four tasks: (a) the Ring Measure of Social Values; (b) a filler task; (c) the priming procedure and (d) a simultaneous, single-trail prisoner's dilemma task. However, we added an additional question about the expected cooperation of the partner.

Like in Experiment 1, the experiment started by assessing each participant's interpersonal orientation and consistency, using the Ring Measure of Social Values (Liebrand, 1984). Of the 193 participants, 98 could be identified as prosocials and 94 could be identified as proselfs. One participant could not be identified because of an orientation vector of exactly 22.5°.

The average level of consistency was 85.6%. Of the remaining 192 participants, 98 could be labeled as individuals with a high consistent interpersonal orientation and 88 could be labeled as individuals with a low consistent interpersonal orientation. Six additional participants were discarded from the analysis because they exhibited a consistency score between 84% and 91% or because they had a consistency score that was less than 60%. This means that a total of 186 participants remained for the analyses. Fifty participants were classified as high consistent prosocials, 45 participants were classified as low consistent prosocials, 48 participants were classified as high consistent proselfs, and 43 participants were classified as low consistent proselfs.

After finishing the filler-experiment, participants were subjected to the same priming procedure as in Experiment 1. They were randomly assigned to one of three priming conditions (prosocial vs. neutral vs. proself primes). Immediately after resolving the thirty sentences of the Scrambled Sentence Test, participants took part in the same fictitious 2-person give-some game as in Experiment 1. Here we added an additional question compared to Experiment 1. We asked each participant the following question: "How many chips do you expect the other will give to you?" We counterbalanced this question with the own choice: one half of the participants received this question before making their own decision; the other half received this question after making their own decision[5]. All participants comprehended the task structure and, therefore, no additional data were excluded.

Finally, after making their decisions, participants were thanked for their participation and debriefed.

<div align="center">

Results

</div>

Expectations of partner's cooperation

We conducted a 2 (Interpersonal Orientation: prosocial vs. proself) x 2 (Consistency: strong vs. weak) x 3 (Primes: prosocial vs. neutral vs. proself) between-subjects ANOVA on the expectations of partner's cooperation. This analysis revealed two significant main effects. A main effect of Interpersonal Orientation, $F(1,174) = 7.74$, $p < .01$, revealed that prosocials ($M = 2.33$) expected significantly more cooperation from their partners than proselfs ($M = 1.99$). A planned comparison revealed that there was a significant contrast of prosocials vs. proselfs at the neutral priming level ($M = 2.56$ vs. $M = 1.96$), $F(1,174) = 8.08$, $p < .01$, while this contrast was not

significant at the prosocial priming level ($\underline{M}$ = 2.96 and $\underline{M}$ = 2.90), $\underline{F}$(1,174) < 1, $\underline{ns}$, and only marginally significant at the proself priming level ($\underline{M}$ = 1.48 and. $\underline{M}$ = 1.13), $\underline{F}$(1,174) = 2.84, $\underline{p}$ < .10. There was also a significant main effect of Primes, $\underline{F}$(2,174) = 61.39, $\underline{p}$ < .0001. Planned comparisons revealed that prosocial primes elicited higher expectations of partner's cooperation than neutral primes ($\underline{M}$ = 2.93 vs. $\underline{M}$ = 2.26), $\underline{F}$(1,174) = 20.86, $\underline{p}$ < .0001, and that proself primes elicited lower expectations of partner's cooperation than neutral primes ($\underline{M}$ = 1.30 vs. $\underline{M}$ = 2.26), $\underline{F}$(1,174) = 41.64, $\underline{p}$ < .0001.

Own cooperative behavior

We conducted a 2 (Interpersonal Orientation: prosocial vs. proself) x 2 (Consistency: strong vs. weak) x 3 (Primes: prosocial vs. neutral vs. proself) between-subjects ANOVA on the displayed cooperation in the give-some task. This analysis revealed two significant main effects. First, a main effect of Interpersonal Orientation, $\underline{F}$(1,174) = 35.59, $\underline{p}$ < .0001, revealed that prosocials (M = 2.22) showed greater cooperation than proselfs (M = 1.38). Second, a main effect of Primes, $\underline{F}$(2,174) = 30.99, $\underline{p}$ < .0001, revealed that prosocial primes ($\underline{M}$ = 2.37) elicited more cooperative behavior than neutral primes ($\underline{M}$ = 1.98), which in turn elicited more cooperative behavior than proself primes ($\underline{M}$ = 1.06). Planned comparisons demonstrated a significant contrast of prosocial primes vs. neutral primes, $\underline{F}$(1,174) = 5.46, $\underline{p}$ < .05, a significant contrast of neutral primes vs. proself primes, $\underline{F}$(1,174) = 28.49, $\underline{p}$ < .0001, and a significant contrast of prosocial primes vs. proself primes, $\underline{F}$(1,174) = 59.16, $\underline{p}$ < .0001.

Furthermore, we obtained three significant two-way interactions: between Interpersonal Orientation and Consistency, $\underline{F}$(1,174) = 8.06, $\underline{p}$ < .01, between Interpersonal Orientation and Primes, $\underline{F}$(2,174) = 4.50, $\underline{p}$ < .05, and between Consistency and Primes, $\underline{F}$(2,174) = 5.92, $\underline{p}$ < .01. However, all these interactions were qualified by a significant three-way interaction between Interpersonal Orientation, Consistency and Primes, $\underline{F}$(2,174) = 9.72, $\underline{p}$ < .0001. The means of this interaction are represented in Table 2. To further analyze the effects of our independent variables on own cooperative behavior, we conducted, like in Experiment 1, two separate 2 (Interpersonal Orientation: prosocial vs. proself) x 3 (Primes: prosocial vs. neutral vs. proself) between-subjects ANOVAs for participants with a high consistent interpersonal orientation and participants with a low consistent interpersonal orientation.

First, we conducted a 2 x 3 (Interpersonal Orientation x Primes) between-subjects ANOVA on own cooperative behavior displayed by participants with a high consistent interpersonal orientation. We obtained two significant main effects. Fist of all, we obtained a significant main effect of Interpersonal Orientation, $\underline{F}$(1,92) = 37.92, $\underline{p}$ < .0001. High consistent prosocials ($\underline{M}$ =

2.34) showed greater cooperation than high consistent proselfs (M = 1.10). Second, we obtained a significant main effect of Primes, $F(1,92)$ = 9.90, p < .0001. Subsequent planned comparisons revealed no significant contrast of prosocial primes vs. neutral primes, $F(1,92)$ < 1, ns. On the other hand, there were significant contrasts of neutral primes vs. proself primes (M = 2.11 vs. (M = 1.09), $F(1,92)$ = 17.06, p < .0001, and of prosocial primes vs. proself primes (M = 1.95 vs. M = 1.08), $F(1,92)$ = 12.38, p < .001. These two main effects have to be qualified by a significant two-way interaction between Interpersonal Orientation and Primes, $F(1,92)$ = 13.19, p < .0001. This interaction is depicted in Figure 2. A subsequent planned comparison revealed that high consistent prosocials behaved more cooperatively than high consistent proselfs in the neutral priming condition (M = 2.47 vs. M = 1.75), $F(1,92)$ = 4.35, p < .05, in the prosocial priming condition (M = 3.29 vs. M = 0.62), $F(1,92)$ = 59.72, p < .0001, but not in the proself priming condition, (M = 1.25 and M = 0.93), $F(1,92)$ < 1, ns. As predicted, a planned comparison revealed that high consistent prosocials acted more cooperatively after being primed with prosocial primes (M = 3.29) than after being primed with neutral primes (M = 2.47), $F(1,92)$ = 5.86, p < .05. It was also revealed that high consistent prosocials behaved less cooperatively in the proself priming condition (M = 1.25) than in the neutral priming condition (M = 2.47), $F(1,92)$ = 12.49, p < .001. Furthermore, planned comparisons indicated that high consistent proselfs behaved less cooperatively in the prosocial priming condition than in the neutral priming condition (M = 0.62 vs. M = 1.75), $F(1,92)$ = 10.29, p < .01, and that they behaved also less cooperatively in the proself priming condition than in the neutral priming condition (M = 0.93 vs. M = 1.75), $F(1,92)$ = 5.37, p < .05. A planned comparison also revealed that there was no difference for high consistent proselfs in prosocial vs. proself priming conditions (M = 0.62 and M = 0.93) , $F(1,92)$ < 1, ns.

We also conducted a 2 x 3 (Interpersonal Orientation x Primes) between-subjects ANOVA on own cooperation behavior for participants with low consistent interpersonal orientations. This analysis revealed two significant main effects. We obtained a main effect of Interpersonal Orientation, $F(1,82)$ = 5.10, p < .05. Low consistent prosocials (M = 2.11) showed greater cooperation than low consistent proselfs (M = 1.67). Although the interaction between Interpersonal Orientation and Primes was not significant, $F(2,82)$ < 1, ns, we checked whether the main effect of Interpersonal Orientation was mainly due to a difference between low consistent prosocials and low consistent proselfs at the neutral priming level, as predicted before running Experiment 2. Planned comparisons revealed that low consistent prosocials behaved more cooperatively than low consistent proselfs at the neutral priming level (M = 2.20 vs. M = 1.48), $F(1,80)$ = 4.28, p < .05, while there was no significant difference at the prosocial priming level (M = 2.86 vs. M = 2.73), $F(1,80)$ < 1, ns, and at the proself priming level (M = 1.26 vs. M = 0.78) , $F(1,80)$ = 2.02, ns. There was also a significant main effect of Primes, $F(2, 82)$ = 28.09, p < .0001. Planned comparisons revealed that

prosocial primes elicited more cooperation than neutral primes ($\underline{M}$ = 2.80 vs. $\underline{M}$ = 1.85), $\underline{F}$(1,82) = 16.07, $\underline{p}$ < .001, and that proself primes elicited less cooperation than neutral primes ($\underline{M}$ = 1.02 vs. $\underline{M}$ = 1.85), $\underline{F}$(1,82) = 11.87, $\underline{p}$ < .001.

Mediation analysis

It was hypothesized that the priming effects on own cooperative behavior are mediated by expectations of partner's cooperation. This hypothesis was tested separately for each category of orientations (i.e., high consistent prosocials, high consistent proselfs, low consistent prosocials, low consistent proselfs) by means of regression analysis (Baron & Kenny, 1986).

We started to test mediation in the group of high consistent prosocials. First, the direct relationship between Primes and own cooperative behavior was significant, $\underline{\beta}$ = -0.63, $\underline{t}$(48) = -5.56, $\underline{p}$ < .0001. Second, Primes affected significantly expectations of partner's cooperation, $\underline{\beta}$ = -0.65, $\underline{t}$(48) = -5.95, $\underline{p}$ < .0001. Third, when Primes and expectations of partner's cooperation were entered simultaneously into the analysis, expectations of partner's cooperation were predictive of own cooperative behavior, $\underline{\beta}$ = 0.78, $\underline{t}$(47) = 8.12, $\underline{p}$ < .0001, while the effect of Primes on own cooperative behavior disappeared, $\underline{\beta}$ = -0.11, $\underline{t}$(47) = -1.17, $\underline{p}$ = .25.

Next, we tested mediation for high consistent proselfs. We have to notice here that testing mediation for this group of participants was somewhat more complicated. The reason was that prosocial primes and proself primes had different effects on expectations of partner's cooperation but the same effect on own behavior. Compared to neutral primes prosocial primes had an increasing effect on expectations of partner's cooperation but a decreasing effect on own cooperative behavior whereas proself primes had, compared to neutral primes, both a decreasing effect on expectations of partner's cooperation and on own cooperative behavior. Therefore, we decided to run two mediation analyses for high consistent proselfs: one with prosocial primes and neutral primes and one with proself primes and neutral primes. The mediation analysis with prosocial and neutral primes revealed the following results. First, Primes exerted a significant influence upon own cooperative behavior, $\underline{\beta}$ = 0.51, $\underline{t}$(30) = 3.25, $\underline{p}$ < .01. Second, Primes also influenced expectations of partner's cooperation, $\underline{\beta}$ = -0.45, $\underline{t}$(30) = -2.79, $\underline{p}$ < .01. Third, when we entered Primes and expectations of partner's cooperation together in the analysis, expectations of partner's cooperation predicted significantly own cooperative behavior, $\underline{\beta}$ = -0.49, $\underline{t}$(30) = -3.24, $\underline{p}$ < .01, while the significant effect of Primes on own cooperative behavior was reduced and became no longer significant, $\underline{\beta}$ = 0.28, $\underline{t}$(29) = 1.84, $\underline{p}$ = .08. Next, we performed a mediation analysis with only neutral and proself primes. First of all, own cooperative behavior was significantly influenced

by Primes, $\beta = -0.42$, $t(30) = -2.57$, $p < .05$. Second, also expectations of partner's cooperation were influenced by Primes, $\beta = -0.37$, $t(30) = -2.21$, $p < .05$. Third, upon entering Primes and expectations of partner's cooperation simultaneously in the analysis, expectations of partner's cooperation significantly affected own cooperative behavior, $\beta = 0.39$, $t(29) = 2.36$, $p < .05$, while the effect of Primes on own cooperative behavior failed to reach significance, $\beta = -0.27$, $t(29) = -1.67$, $p = .11$.

Mediation was also tested for low consistent prosocials. First, there was a significant effect of Primes on own cooperative behavior, $\beta = -0.59$, $t(43) = -4.84$, $p < .0001$. Second, expectations of partner's cooperation were significantly affected by Primes, $\beta = -0.62$, $t(43) = -5.22$, $p < .0001$. Third, when Primes and expectations of partner's cooperation were both entered into the equations, expectations of partner's cooperation significantly impacted on own cooperative behavior, $\beta = 0.71$, $t(42) = 6.18$, $p < .0001$, while the significant effect of Primes on own cooperative behavior vanished, $\beta = -0.15$, $t(42) = -1.31$, $p = .20$.

Finally, we tested mediation for low consistent proselfs. First, Primes significantly affected own cooperative behavior, $\beta = -0.67$, $t(41) = -5.82$, $p < .0001$. Second, Primes predicted expectations of partner's cooperation, $\beta = -0.73$, $t(41) = -6.99$, $p < .0001$. Third, entering Primes and expectations of partner's cooperation simultaneously in the analysis revealed that expectations of partner's cooperation significantly predicted own cooperative behavior, $\beta = 0.61$, $t(40) = 4.25$, $p < .001$, while the effect of Primes on own cooperative behavior became no longer significant, $\beta = -0.22$, $t(40) = -1.54$, $p = .13$.

Discussion

The results of Experiment 2 replicated the findings of Experiment 1. In the neutral priming condition, prosocials behaved more cooperatively than proselfs. In the proself priming condition, all participants cooperated less compared to neutral priming conditions. In the prosocial priming condition, high consistent proselfs behaved less cooperatively whereas all the other participants behave more cooperatively compared to the neutral priming condition. However, the results of Experiment 2 extended those of Experiment 1. We asked our participants to indicate how much cooperation they expected from their partner. We found that both interpersonal orientations and primes significantly influenced expectations of partner's cooperation. However, the effect of interpersonal orientations on expectations was only significant at the neutral priming level but not at the prosocial priming level and the proself priming level. This indicated that a participant's own

chronic orientation dominates expectations of partner's cooperation in ambiguous situations, but not at the prosocial priming level and the proself priming level. Participants had higher expectations of partner's cooperation after being primed with prosocial primes compared to neutral primes and had lower expectations after being primed with proself primes compared to neutral primes. Moreover, a mediation analysis showed that expectations of partner's cooperation mediated the effect of primes on own cooperative behavior. This also indicated that participants used these automatically formed expectations of partner's cooperation as a starting-point for their own decisions and not vice versa. This can be illustrated by the behavior of the high consistent proselfs in the prosocial priming condition. If these participants used their own decision to form expectations of their partner's cooperation, than you would expect that these participants showed the same low degree of expectations in the prosocial priming condition as in the proself priming condition, because they exhibited the same (low) degree of cooperative behavior in the prosocial and proself priming conditions. Instead, high consistent proselfs, when primed with prosocial primes, showed a high degree of expectations of their partner's cooperation. Moreover, we did not find any difference in expectations before and after own choices were made.

The results of Experiment 2 suggested that expectations of partner's cooperation mediated the effect of primes on own cooperative behavior. Furthermore, it seemed that the participants' own cooperative behavior was influenced by how their own interpersonal orientations interacted with these automatically formed expectations. We did not find support for the hypothesis that interpersonal orientations can be directly and automatically activated by situational features. In the next experiments, we investigated whether this mediated effect could also be obtained using a subliminal priming technique (Experiment 3) and using a N-person dilemma game (Experiment 4).

Experiment 3

In Experiment 3 we wanted to investigate whether the priming effects on expectations of partner's behavior could also be obtained nonconsciously. This would dispel any doubts about the demand or conscious, strategic nature of the obtained priming effects (Bargh & Chartrand, 2000). We tried to replicate the results of Experiment 2 using a subliminal priming technique (Dijksterhuis & Corneille, 2001, Experiment 2). Compared to Experiment 2, we omitted the neutral primes and used only prosocial and proself primes.

Method

Participants and design

One hundred forty students (XX women, XX men) at the Catholic University of Leuven participated in the experiment as partial fulfillment of course requirements. Two participants were

nonnative Dutch speakers and their data were excluded from all subsequent analysis. As a result, 138 participants were left.

The experimental design included three between-subjects factors. These three factors were Interpersonal Orientation (pro-social vs. pro-self), Consistency (strong vs. weak), and Primes (pro-social vs. pro-self). Like in Experiment 2, we assessed expectations of partner's cooperation and own cooperative behavior in a prisoner's dilemma game.

Procedure and materials

The same procedure as in previous experiments was followed. The experiment started again by assessing each participant's interpersonal orientation and its consistency, using the Ring Measure of Social Values (Liebrand, 1984). Of the 138 participants, 64 could be identified as prosocials and 68 could be identified as proselfs. Six participants could not be identified because of an orientation vector of exactly 22.5°.

The average level of consistency was 86.1%. Of the remaining 132 participants, 67 were labeled as individuals with a high consistent interpersonal orientation and 61 were labeled as individuals with a low consistent interpersonal orientation. Four additional participants were discarded from the analysis because they exhibited a consistency score between 84% and 91% or because they had a consistency score that was less than 60%. This means that a total of 128 participants remained for the analyses. Thirty-two participants were classified as high consistent prosocials, 30 participants were classified as low consistent prosocials, 35 participants were classified as high consistent proselfs, and 31 participants were classified as low consistent proselfs.

After performing the filler-experiment, participants were subjected to a subliminal priming experiment. Participants were randomly assigned to one of two priming conditions (prosocial vs. proself primes). Participants seated in front of a computer screen. The experimenter told the participants that they were going to perform a lexical decision task. A series of letters strings were going to be presented on the screen and participants had to indicate after each presentation of a letter string whether this string was an existing word or not. The participants were informed that each presentation would be very brief. The lexical decision task started with 6 practice trials, followed by 30 experimental trials. On each trial, a fixation point first appeared on the computer screen. Participants had to press the key '2' to start the presentation of a letter string. This letter string remained on the screen for 27 ms. and was immediately replaced by a mask ('XQFBZRMQWGBX'), which remained on the screen for 225 ms.   After each trial, participants faced a blank screen and were asked to indicate their decision by pressing a key on the keyboard ('1' for an existing word, '3' for a nonword). Once the answer was given, a new fixation point

appeared on the screen after a 1500 ms. pause. The same prosocial and proself primes as in Experiments 1 and 2 were used. All these words were used once. Hence, the thirty experimental trials existed of fifteen prime-words and fifteen nonwords. The six practice trials and the thirty experimental trials were randomized for each participant.

After participants completed the lexical decision task, they took part in the same fictitious 2-person give-some game as in Experiments 1 and 2. Like in Experiment 2, we also asked each participant about his/her expectations of their partner's cooperation. Again, we counterbalanced this question with the own choice: one half of the participants received this question before making their own decision; the other half received this question after making their own decision. All participants comprehended the task structure and, therefore, no additional data were excluded. A post-experimental questionnaire revealed that participants could not retrieve any of the presented primes. Moreover, all participants were really surprised and could not believe that there was actually 'something' that was represented on their screen before the mask.

Finally, after making their decisions, participants were thanked for their participation and debriefed.

Results and discussion

Expectations of partner's cooperation

A 2 (Interpersonal Orientation: prosocial vs. proself) x 2 (Consistency: strong vs. weak) x 3 (Primes: prosocial vs. neutral vs. proself) between-subjects ANOVA on expectations of partner's cooperation was conducted. This analysis revealed two significant main effects. First of all, a main effect of Interpersonal Orientation, $\underline{F}(1,120) = 7.76$, $\underline{p} < .01$, revealed that prosocials ($\underline{M} = 2.01$) had higher expectations of partner's cooperation than proselfs ($\underline{M} = 1.59$). Second, a main effect of Primes, $\underline{F}(1,120) = 117.62$, $\underline{p} = .0001$, revealed that prosocial primes ($\underline{M} = 2.63$) elicited higher expectations of partner's cooperation than proself primes ($\underline{M} = 0.97$).

Own cooperative behavior

We conducted a 2 (Interpersonal Orientation: prosocial vs. proself) x 2 (Consistency: strong vs. weak) x 3 (Primes: prosocial vs. neutral vs. proself) between-subjects ANOVA on own cooperative behavior. This analysis revealed three significant main effects. First of all, we obtained a main effect of Interpersonal Orientation, $\underline{F}(1,120) = 27.30$, $\underline{p} < .0001$. Prosocials ($\underline{M} = 1.95$) displayed more cooperation than proselfs ($\underline{M} = 1.14$). Second, a main effect of Consistency, $\underline{F}(1,120) = 7.01$, $\underline{p} < .01$, revealed that participants with a low consistent interpersonal orientation ($\underline{M}$

= 1.75) displayed more cooperative behavior than participants with a high consistent interpersonal orientation (M = 1.34). Primes showed a third significant main effect, $F(1,120)$ = 81.89, p < .0001, revealing that prosocial primes (M = 2.24) elicited more own cooperative behavior than proself primes (M = 0.85).

There were also three significant two-way interactions: between Interpersonal Orientation and Consistency, $F(1,120)$ = 9.02, p < .01, between Interpersonal Orientation and Primes, 10.58, p < .01, and between Consistency and Primes, $F(1,120)$ = 5.54, p < .05. However, these significant two-way interactions have to be qualified by a significant three-way interaction between Interpersonal Orientation, Consistency and Primes, $F(1,120)$ = 18.43, p < .0001. Table 3 presents the means of this interaction. To further analyze this three-way interaction we performed two separate 2 (Interpersonal Orientation: prosocial vs. proself) x 2 (Primes: prosocial vs. proself) between-subjects ANOVAs on own cooperation for participants with a high consistent interpersonal orientation and on own cooperation for participants with a low consistent interpersonal orientation.

A 2 x 2 (Interpersonal Orientation x Primes) between-subjects ANOVA on own cooperation for participants with a high consistent interpersonal orientation revealed in the first place two significant main effects. A main effect of Interpersonal Orientation, $F(1,63)$ = 42.16, p < .0001, unveiled that high consistent prosocials (M = 1.97) cooperated more than high consistent proselfs (M = 0.71). A main effect of Primes, $F(1,63)$ = 27.91, p < .0001, showed that prosocial primes (M = 1.85) elicited more own cooperative behavior than proself primes (M = 0.83). However, these two significant main effect have to be qualified by a significant two-way interaction between Interpersonal Orientation and Primes, $F(1,63)$ = 35.46, p < .0001. This interaction is displayed in Figure 3. Planned comparisons revealed that high consistent prosocials behaved more cooperatively after being primed with prosocial words (M = 3.06) than after being primed with proself words (M = 0.88) , $F(1,63)$ = 60.34, p < .0001. There was no differences for high consistent proselfs between the prosocial and the proself priming condition (M = 2.71 and M = 2.53) , $F(1,63)$ < 1, ns. After being primed with prosocial words, high consistent prosocials (M = 3.06) displayed more cooperation than high consistent proselfs (M = 0.64), $F(1,63)$ = 74.05, p < .0001. There were no differences between high consistent prosocials and high consistent proselfs in the proself priming condition (M = 0.88 and M = 0.77), $F(1,63)$ < 1, ns.

A 2 x 2 (Interpersonal Orientation x Primes) between-subjects ANOVA on own cooperation for participants with a low consistent interpersonal orientation revealed only one significant effect, namely a main effect of Primes. This effect revealed that prosocial primes (M = 2.62) elicited more cooperative behavior than proself primes (M = 0.87), $F(1,57)$ = 52.91.

<u>Mediation analysis</u>

Like Experiment 2, we also conducted a mediation analysis for each category of orientations. We hypothesized again that the effect of priming on own cooperative behavior was mediated by participants' expectations of partner's cooperation.

First, we conducted a mediation analysis for high consistent prosocials. Primes had a significant impact on own cooperative behavior, $\underline{\beta}$ = -0.76, $\underline{t}$(30) = -6.53, $\underline{p}$ < .0001. Primes also influenced significantly expectations of partner's cooperation, $\underline{\beta}$ = -0.75, $\underline{t}$(30) = -6.30, $\underline{p}$ < .0001. Finally, when Primes and expectations of partner's cooperation were entered simultaneously in the analysis, expectations about partner's cooperation significantly affected own cooperative behavior, $\underline{\beta}$ = 0.84, $\underline{t}$(29) = 8.92, $\underline{p}$ < .0001, while the significant effect of Primes on own cooperative behavior disappeared, $\underline{\beta}$ = -0.13, $\underline{t}$(29) = -1.42, $\underline{p}$ = .17.

Testing mediation for high consistent proselfs was impossible because Primes did not influence own cooperative behavior, $\underline{\beta}$ = 0.10, $\underline{t}$(33) < 1, <u>ns</u>. High consistent proselfs in the prosocial priming condition ($\underline{M}$ = 0.64) did not differ significantly from high consistent proselfs in the proself priming condition ($\underline{M}$ = 0.77). Nevertheless, Primes did impact on expectations of partner's cooperation, $\underline{\beta}$ = -0.62, $\underline{t}$(33) = -4.61, $\underline{p}$ < .0001. High consistent proselfs expected more cooperation from their partner in the prosocial priming condition ($\underline{M}$ = 2.47) than in the proself priming condition ($\underline{M}$ = 1.05). Thus, although high consistent proselfs had different expectations in the prosocial and proself priming conditions, they behaved in the same way in both conditions.

Next, we tested mediation for low consistent prosocials. First of all, Primes significantly affect own cooperative behavior, $\underline{\beta}$ = -0.67, $\underline{t}$(28) = -4.83, $\underline{p}$ < .0001. Second, Primes significantly influenced expectations of partner's cooperation, $\underline{\beta}$ = -0.69, $\underline{t}$(28) = -5.10, $\underline{p}$ < .0001. Third, when Primes and expectations of partner's cooperation were both used in the analysis, expectations of partner's cooperation significantly predicted own cooperative behavior, $\underline{\beta}$ = 0.75, $\underline{t}$(27) = 5.65, $\underline{p}$ < .0001, while the effect of Primes on own cooperative behavior became no longer significant, $\underline{\beta}$ = -0.15, $\underline{t}$(27) = -1.12, $\underline{p}$ = .28.

Finally, we conducted a mediation analysis for low consistent proselfs. First, Primes had a significant effect on own cooperative behavior, $\underline{\beta}$ = -0.71, $\underline{t}$(29) = -5.45, $\underline{p}$ < .0001. Second, Primes significantly affected expectations of partner's cooperation, $\underline{\beta}$ = -0.74, $\underline{t}$(29) = -5.97, $\underline{p}$ < .0001. Third, upon entering Primes and expectations of partner's cooperation simultaneously in the mediation analysis, expectations of partner's cooperation significantly predicted own cooperative behavior, $\underline{\beta}$ = 0.83, $\underline{t}$(28) = 6.85, $\underline{p}$ < .0001, while the significant impact of Primes on own

cooperative behavior vanished, $\underline{\beta} = -0.09$, $\underline{t}(28) = -0.78$, $\underline{p} = .44$.

In Experiment 3, we again obtained evidence for the fact that primes did not influence own cooperative behavior through a direct and automatic activation of interpersonal orientations but rather in an indirect fashion via expectations of partner's cooperation. The results again showed that high consistent prosocials and participants with a low consistent interpersonal orientation behaviorally assimilated to their automatically created expectations. High consistent proselfs seemed to be less influenced by their automatically formed expectations. Although these participants created different expectations in different subliminal priming conditions, they behaved exactly the same in both conditions. This finding could be either the result of a 'competitive' reaction (in the proself priming condition, i.e. low expectations of partner's cooperation) or an 'exploitation' reaction (in the prosocial priming condition, i.e. high expectations of partner's cooperation) or it could be the result of the fact that high consistent proselfs are in general less influenced by expectations than other individuals (and only follow their 'selfish instinct').

Experiment 4

In Experiment 4, we tried to obtain further evidence for the idea that primes do not influence own cooperative behavior in interdependence situations through a direct and automatic activation of interpersonal orientations. To obtain additional evidence we investigated whether priming influenced expectations in a N-person mixed-motive game context instead of in a 2-person mixed-motive game context. In a 2-person game context, creating expectations of your partner's cooperation has an important information function for determining your own cooperative behavior, and especially for high consistent prosocials and individuals with a low consistent interpersonal orientation. Mutual cooperation will only be achieved when it is expected that the partner is ready to cooperate. When the partner is not expected to cooperate, a player will defect himself not willing to be exploited by the partner. We raised the question whether individuals in a N-person game also spontaneously form expectations of other persons' cooperation as in the 2-person game. There is a lot of evidence that expectations play an important role in a 2-person game (e.g., De Bruin & Van Lange, 1999; Kelley & Stahelski, 1970; Van Lange & Kuhlman, 1994). There is not much evidence whether expectations have an important information function in a N-person game just like in a 2-person game. Kuhlman & Wimberley (1976) demonstrated that individuals are capable of creating expectations of other individuals' orientations and, as a consequence, of their cooperation. However, research lacks evidence about how expectations of other individuals' cooperation in a N-person game affects own cooperative behavior. In the present experiment, we investigated whether participants automatically created expectations of other individuals' cooperation, whether priming

affected these expectations, and whether expectations of other individuals' cooperation influenced own cooperative behavior.

We told our participants that they would participate in a 10-person game. We used an equivalent version of the 2-person game used in Experiments 1, 2 and 3. Except for the number of individuals involved in the game, we like to point to another difference with the game used in previous experiments. In a 2-person game, one has to give to the partner and vice versa. Given chips are considered as a loss. In the 10-person game, participants were told that they had to give to group as a whole (the value of what they gave would be doubled). Afterwards, the monetary value of the group total would be divided by the number of individuals involved in the game (i.e., 10). This means that every participant would receive back one fifth of the original value of every own given chips. For example, if a participant decides to give one chip to the group, this chip gained a value of 2 x 10 BEF = 20 BEF. Every participant in the 10-person game will receive one tenth of this value, i.e., 2 BEF. This means that the participant, that gave one chip to the group, received back one fifth of the original value of that given chip (i.e., one fifth of 10 BEF). This game had every characteristic of a dilemma game (Dawes, 1980): noncooperation always yields higher outcomes than cooperation and mutual cooperation is always better than mutual noncooperation.

Method

Participants and design

One hundred sixty-seven students (XX women, XX men) at the Catholic University of Leuven participated in the experiment as partial fulfillment of course requirements. All were native Dutch speakers.

The experimental design included three between-subjects factors. These three factors were Interpersonal Orientation (pro-social vs. pro-self), Consistency (strong vs. weak), and Primes (pro-social vs. neutral vs. pro-self). We also assessed expected cooperation of all the other participants in the 10-person game and the participant's own cooperative behavior.

Procedure and materials

We followed the same procedure as in the previous experiments. The experiment started again by assessing each participant's interpersonal orientation and consistency with the Ring Measure of Social Values (Liebrand, 1984). Of the 167 participants, 86 could be identified as prosocials and 76 could be identified as proselfs. Five participants could not be identified because of

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an orientation vector of exactly 22.5°.

The average level of consistency was 87.1%. Of the remaining 162 participants, 78 were labeled as individuals with a high consistent interpersonal orientation and 77 were labeled as individuals with a low consistent interpersonal orientation. Seven additional participants were discarded from the analysis because they exhibited a consistency score between 84% and 91% or because they had a consistency score that was less than 60%. This means that a total of 155 participants remained for the analyses. Of those remaining participants, 40 were classified as high consistent prosocials, 41 were classified as low consistent prosocials, 38 were classified as high consistent proselfs, and 36 were classified as low consistent proselfs.

After performing the filler-experiment, participants were instructed to resolve the same Scrambled-Sentence Test as in Experiments 1 or 2. Participants were randomly assigned to one of three priming conditions (prosocial vs. neutral vs. proself primes).

After participants completed the Scrambled-Sentence Test, they took part in a one-trial simultaneous 10-person give-some game. Participants were informed that they were members of a 10-person group, but they would not receive any information about the identity of their fellow group members. All group members were given four chips to their disposal, which could be used to invest. The chips one did not invest would accrue totally to one-self. Each chip invested, however, would result in a group pay-off of two times the value of that chip. The total group pay-off would be divided equally among all group members. Each own chip had a value of 10 BEF. to the person himself or herself and a value of 20 BEF. to the group. Participants were told that their task was to decide how many chips (none, one, two, three, or four) they would give to the group. They were also told that all the other participants had to make the same decision. In reality, this game was a fictitious 10-person give-some game. Maximal cooperation was to give four chips and maximal noncooperation was to give zero chips.

We also asked each participant about his/her expectations of the other members' cooperation ("How many chips do you think the other nine members will give collectively to the group?"). We counterbalanced this question with the own choice: one half of the participants received this question before making their own decision; the other half received this question after making their own decision. All participants comprehended the task structure and, therefore, no additional data were excluded. After making their decisions, participants were thanked for their participation and debriefed.

Results and discussion

Expectations of partners' cooperation

A 2 (Interpersonal Orientation: prosocial vs. proself) x 2 (Consistency: strong vs. weak) x 3 (Primes: prosocial vs. neutral vs. proself) between-subjects ANOVA on expectations of partners' cooperation was conducted. This analysis revealed two significant main effects. A main effect of Interpersonal Orientation, $\underline{F}(1,143) = 12.31$, $\underline{p} < .0001$, displayed that prosocials ($\underline{M} = 21.11$) expected more cooperation from the other members than proselfs ($\underline{M} = 18.60$). There was also a main effect of Primes, $\underline{F}(2,143) = 95.37$, $\underline{p} < .0001$. Planned comparisons revealed that prosocial primes elicited higher expectations of partner's cooperation than neutral primes ($\underline{M} = 25.76$ vs. $\underline{M} = 20.21$), $\underline{F}(1,143) = 40.52$, $\underline{p} < .0001$, and that proself primes elicited lower expectations of partner's cooperation than neutral primes ($\underline{M} = 13.60$ vs. $\underline{M} = 20.21$), $\underline{F}(1,143) = 55.74$, $\underline{p} < .0001$.

However, these two main effects were qualified by a two-way interaction between Interpersonal Orientation and Primes, $\underline{F}(2,143) = 3.50$, $\underline{p} < .05$. Planned comparisons showed that prosocials ($\underline{M} = 22.78$) had higher expectations of their partners' cooperation than proselfs ($\underline{M} = 17.63$) in the neutral priming condition, $\underline{F}(1,143) = 17.27$, $\underline{p} < .0001$. Expectations of partners' cooperation did not differ between prosocials and proselfs in the prosocial priming condition, $\underline{F}(1, 143) = 1.90$, $\underline{ns}$, and in the proself priming condition, $\underline{F}(1,143) < 1$, $\underline{ns}$. Planned comparisons further revealed that prosocials had higher expectations of the other members in the prosocial priming condition ($\underline{M} = 26.60$) compared to the neutral priming condition ($\underline{M} = 22.78$), $\underline{F}(1,143) = 10.09$, $\underline{p} < .01$, but had lower expectations in the proself priming condition ($\underline{M} = 13.96$) compared to the neutral priming condition, $\underline{F}(1,143) = 51.78$, $\underline{p} < .0001$. It was further revealed that proselfs had higher expectations of the other members in the prosocial priming condition ($\underline{M} = 24.91$) compared to the neutral priming condition ($\underline{M} = 17.63$), $\underline{F}(1,143) = 33.23$, $\underline{p} < .0001$, but had lower expectations in the proself priming condition ($\underline{M} = 13.25$) compared to the neutral priming condition, $\underline{F}(1,143) = 11.82$, $\underline{p} < .001$.

Own cooperative behavior

A 2 (Interpersonal Orientation: prosocial vs. proself) x 2 (Consistency: strong vs. weak) x 3 (Primes: prosocial vs. neutral. vs. proself) between-subjects ANOVA was conducted on own cooperative behavior in the fictitious 10-person game. We obtained three significant main effects. First of all, we obtained a main effect of Interpersonal Orientation, $\underline{F}(1,143) = 51.54$, $\underline{p} < .0001$, which indicated that prosocials ($\underline{M} = 2.55$) cooperated more than proselfs ($\underline{M} = 1.65$). Second, we obtained a main effect of Consistency, $\underline{F}(1,143) = 9.22$, $\underline{p} < .01$, which showed that participants with a low consistent interpersonal orientation ($\underline{M} = 2.29$) cooperated more than participants with a

high consistent interpersonal orientation ($\underline{M}$ = 1.91). Third, we obtained a main effect of Primes, $\underline{F}$(2,143) = 45.74, $\underline{p}$ < .0001. Planned comparisons showed that prosocial primes ($\underline{M}$ = 2.73) elicited more own cooperative behavior than neutral primes ($\underline{M}$ = 2.29), $\underline{F}$(1,143) = 8.21, $\underline{p}$ < .01, and that neutral primes elicited more own cooperative behavior than proself primes ($\underline{M}$ = 1.29), $\underline{F}$(1,143) = 42.12, $\underline{p}$ < .0001.

Next, we obtained two significant two-way interactions: between Interpersonal Orientation and Consistency, $\underline{F}$(1,143) = 14.19, $\underline{p}$ < .001, and between Interpersonal Orientation and Primes, $\underline{F}$(2,143) = 5.96, $\underline{p}$ < .01. These significant two-way interactions have to be qualified by a significant three-way interaction between Interpersonal Orientation, Consistency and Primes, $\underline{F}$(2,143) = 3.94, $\underline{p}$ < .05. The means for this three-way interaction are shown in Table 4. To further analyze this three-way interaction we conducted two separate 2 (Interpersonal Orientation: prosocial vs. proself) x 3 (Primes: prosocial vs. neutral vs. proself) between-subjects ANOVAs on own cooperative behavior for participants with a high consistent interpersonal orientation and for participants with a low consistent interpersonal orientation.

A 2 x 3 (Interpersonal Orientation x Primes) between-subjects ANOVA conducted on own cooperative behavior for participants with a high consistent interpersonal orientation revealed two significant main effects. A main effect of Interpersonal Orientation, $\underline{F}$(1,72) = 55.69, $\underline{p}$ < .0001, revealed that high consistent prosocials ($\underline{M}$ = 2.60) behaved more cooperatively than high consistent proselfs ($\underline{M}$ = 1.23). We also obtained a main effect of Primes, $\underline{F}$(2,72) = 13.87, $\underline{p}$ < .0001. Planned comparisons revealed no significant contrast of prosocial primes vs. neutral primes, $\underline{F}$(1,72) < 1, $\underline{ns}$, a significant contrast of neutral primes vs. proself primes ($\underline{M}$ = 2.19 vs. $\underline{M}$ = 1.23), $\underline{F}$(1,72) = 17.90, $\underline{p}$ < .0001, and a significant contrast of prosocial primes vs. proself primes ($\underline{M}$ = 2.32 vs. $\underline{M}$ = 1.23), $\underline{F}$(1,72) = 23.68, $\underline{p}$ < .0001. These two main effects were qualified by a significant two-way interaction between Interpersonal Orientation and Primes, $\underline{F}$(2,72) = 8.81, $\underline{p}$ < .001, depicted in Figure 4. Planned comparisons revealed that high consistent prosocials cooperated more in the prosocial priming condition than in the neutral priming condition ($\underline{M}$ = 3.50 vs. $\underline{M}$ = 2.84), $\underline{F}$(1,72) = 4.38, $\underline{p}$ < .05, and that high consistent prosocials cooperated less in the neutral priming condition than in the proself priming condition ($\underline{M}$ = 1.46 vs. $\underline{M}$ = 2.84), $\underline{F}$(1,72) = 18.95, $\underline{p}$ < .0001. Planned comparisons revealed no significant contrast concerning own cooperative behavior for high consistent proselfs in the prosocial vs. the neutral priming condition ($\underline{M}$ = 1.15 and $\underline{M}$ = 1.53), $\underline{F}$(1,72) = 1.46, $\underline{ns}$, the neutral vs. the proself priming condition ($\underline{M}$ = 1.53 and $\underline{M}$ = 1.00), $\underline{F}$(1,72) = 2.75, $\underline{ns}$, or the prosocial vs. the proself priming condition ($\underline{M}$ = 1.15 and $\underline{M}$ = 1.00), $\underline{F}$(1,72) < 1, $\underline{ns}$. Further planned comparisons revealed that high consistent prosocials differed significantly from high consistent proselfs in the prosocial priming condition ($\underline{M}$ = 3.50 vs. $\underline{M}$ = 1.15), $\underline{F}$(1,72) = 56.42, $\underline{p}$ < .0001, in the neutral priming condition ($\underline{M}$ = 2.84 vs. $\underline{M}$ = 1.53), $\underline{F}$(1,72) = 16.90, $\underline{p}$ <

.001, but not in the proself priming condition ($\underline{M}$ = 1.46 and $\underline{M}$ = 1.00), $\underline{F}$(1,72) = 2.02, $\underline{ns}$.

A 2 x 3 (Interpersonal Orientation x Primes) between-subjects ANOVA conducted on own cooperative behavior for participants with a low consistent interpersonal orientation revealed two significant main effects. First, a main effect of Interpersonal Orientation, $\underline{F}$(1,71) = 6.32, $\underline{p}$ < .05, revealed that low consistent prosocials ($\underline{M}$ = 2.51) cooperated more than low consistent proselfs ($\underline{M}$ = 2.08). In line with our predictions, planned comparisons revealed that low consistent prosocials behaved more cooperatively than low consistent proselfs at the neutral priming level ($\underline{M}$ = 2.71 vs. $\underline{M}$ = 2.08), $\underline{F}$(1,71) = 4.63, $\underline{p}$ < .05, while there was no significant difference at the prosocial priming level ($\underline{M}$ = 3.35 and $\underline{M}$ = 2.91), $\underline{F}$(1,71) = 2.26, $\underline{ns}$, and at the proself priming level ($\underline{M}$ = 1.46 and $\underline{M}$ = 1.25), $\underline{F}$(1,80) < 1, $\underline{ns}$. Second, we obtained a main effect of Primes, $\underline{F}$(2,71) = 36.60, $\underline{p}$ < .0001. Planned comparisons revealed that prosocial primes ($\underline{M}$ = 3.13) elicited more own cooperative behavior than neutral primes ($\underline{M}$ = 2.39), $\underline{F}$(1,71) = 12.69, $\underline{p}$ < .001, which in turn elicited more own cooperative behavior than proself primes ($\underline{M}$ = 1.35), $\underline{F}$(1,71) = 24.90, $\underline{p}$ < .0001.

Mediation analysis

To test for expectations of partners' cooperation as a mediator of priming effects on own cooperative behavior, we conducted a series of mediation analyses for each category of interpersonal orientations. First, we conducted a mediation analysis for high consistent prosocials. Primes had a significant effect upon own cooperative behavior, $\underline{ß}$ = -0.76, $\underline{t}$(38) = -7.34, $\underline{p}$ < .0001. Next, Primes had significant impact upon expectations of partners' cooperation, $\underline{ß}$ = -0.78, $\underline{t}$(38) = -7.70, $\underline{p}$ < .0001. When Primes and expectations of partners' cooperation were entered into the equation simultaneously, expectations of partners' cooperation were predictive of own cooperative behavior, $\underline{ß}$ = 0.65, $\underline{t}$(37) = 4.97, $\underline{p}$ < .0001, while the effect of Primes on own cooperative behavior became no longer significant, $\underline{ß}$ = -0.25, $\underline{t}$(37) = -1.96, $\underline{p}$ = .06.

Testing mediation for high consistent proselfs was again impossible because Primes did not influence own cooperative behavior, $\underline{\textbf{ß}}$ = -0.06, $\underline{t}$(36) < 1, $\underline{ns}$. High consistent proselfs in the prosocial priming condition ($\underline{M}$ = 1.15), in the neutral priming condition ($\underline{M}$ = 1.53) and in the proself priming condition ($\underline{M}$ = 1.00) did not differ from each other. Nevertheless, Primes did impact on expectations of partner's cooperation, $\underline{\textbf{ß}}$ = -0.66, $\underline{t}$(36) = -5.27, $\underline{p}$ < .0001. High consistent proselfs expected more cooperation from their partners in the prosocial priming condition ($\underline{M}$ = 25.07) than in the neutral priming condition ($\underline{M}$ = 16.76), but expected less cooperation from their partners in the proself priming condition ($\underline{M}$ = 13.75) than in the neutral priming condition. Thus, although high consistent proselfs had different expectations in the prosocial, neutral and proself priming conditions, they behaved in the same way in all three conditions.

Next, we tested mediation for low consistent prosocials. First, Primes had a significant impact on own cooperative behavior, β = -0.72, $t(39)$ = -6.50, p < .0001. Second, Primes also influenced significantly expectations of partners' cooperation, β = -0.74, $t(39)$ = -7.03, p < .0001. Third, when Primes and expectations of partners' cooperation were entered together in the mediation analysis, expectations of partners' cooperation were predictive of own cooperative behavior, β = 0.63, $t(38)$ = 4.68, p < .0001, while the effect of Primes on own cooperative behavior became no longer significant, β = -0.24, $t(36)$ = -1.84, p = .08.

Finally, we tested mediation for low consistent proselfs. First, Primes significantly influenced own cooperative behavior, β = -0.69, $t(34)$ = -5.59, p < .0001. Second, Primes also significantly influenced expectations of partners' cooperation, β = -0.81, $t(34)$ = -8.09, p < .0001. Third, when Primes and expectations of partners' cooperation were entered simultaneously into the equation, expectations of partners' cooperation predicted significantly own cooperative behavior, β = 0.56, $t(33)$ = 2.94, p < .01, while the significant effect of Primes on own cooperative behavior vanished, β = -0.23, $t(33)$ = -1.23, p = .23.

Experiment 4 provided evidence that primes did not have a significant impact on own cooperative behavior when we controlled for expectations of partners' cooperation in a N-person give-some game. Primes had again a powerful impact upon expectations of the other group members' cooperation. High consistent prosocials and participants with a low consistent interpersonal orientation seemed to behaviorally assimilate to their automatically altered expectations. Although primes influenced high consistent proselfs' expectations, primes did not impact on their own cooperative behavior. In all three priming conditions, high consistent proselfs exhibited the same degree of (non)cooperative behavior. This suggests that, although they can have different expectations about other group members' cooperation, expectations are not an important ingredient in the decisions of high consistent proselfs in a N-person game.

General Discussion

Four experiments using mixed-motive interdependence situations showed that interpersonal orientations are not activated in a direct and unmediated fashion by situational features (i.e., primes). Instead, we found that primes nonconsciously influenced expectations about partner's cooperation and that these expectations mediated the effect of primes on own cooperative behavior. Moreover, the way in which expectations determined own cooperative behavior depended on each individual's interpersonal orientations. Where prosocials and low consistent proselfs behaviorally assimilated to partner's expectations, high consistent proselfs basically acted in a very noncooperative manner.

Our research has implications to both the literature on interpersonal orientations and automaticity. Our data suggested that cooperative behavior in interdependence situation is not influenced by an automatic and unmediated activation of interpersonal orientations by situational features. This contradicts with the our arguments and the arguments of Van Lange (2000) that cooperative behavior should be influenced by activation of interpersonal orientations caused by relevant situational features. Instead, cooperative behavior was influenced by an interplay between (measured) interpersonal orientations and expectations about partner's cooperation. Our findings seem to support the 'schema theory' on interpersonal orientations (Sattler & Kerr, 1991). This theory assumes that individuals develop a complex network of associations about interdependence situations. It is further assumed that the content of this network may differ between individuals with different interpersonal orientations. This theory also assumes that interpersonal orientations are part of that network as dispositions. The content of a network may exist of associations between interpersonal orientations embodied in dispositions and situational features. Furthermore, the content of a network or schema may influence own cooperative behavior. For example, the schema of a high consistent prosocial individual may state to cooperate in case of moral partner but to defect in case of mighty partner. The schema of high consistent proself may state to always defect on others. What might have been influenced in our studies is the specific content of a schema, which might differ between individuals with different interpersonal orientations embodied in dispositions. Thus, the schema theory of Sattler & Kerr (1991) states that differences in interpersonal orientations embodied in dispositions reflect different schemas, but our data indicated that (high and low consistent) prosocials and low consistent proself have the same schema when they think they are confronted with a moral/cooperative partner (i.e., the prosocial priming condition) and when they think they are confronted with a mighty/noncoopertive partner (i.e., the proself priming condition). One may then wonder whether prosocials and low consistent proselfs do really differ from each other and that we have to do with different interpersonal orientations embodied in dispositions. Several argument argue against this. First, in neutral priming conditions there are clear differences in terms of own cooperative behavior between prosocials and low consistent proselfs. Second, a study by Smeesters et al. (2001) found that differences between high consistent prosocials and individuals with low consistent orientations. They found that individuals with low consistent orientations do not show any reciprocal cooperation towards stupid persons whereas high consistent do. They also found that high consistent prosocials forgive an intelligent person's defection whereas individuals with low consistent orientations do not. Together, these results suggest clear differences in terms of schema between high consistent prosocials, low consistent prosocials and low consistent proselfs. Furthermore, these results indicated that high consistent prosocials and low consistent prosocials behave the same in ambiguous conditions but not always in situations with salient situational features. These results also indicated that there are clear differences between low

consistent prosocials and low consistent proselfs in ambiguous situations but that these individuals behave almost the same in situations with salient situational features. Finally, high consistent proselfs' schemas seem to have a rather simple schema. These people are less influenced by situational features. That has been demonstrated in our four experiments but also in the study of Smeesters et al. (2001), where it has been shown that high consistent proselfs never showed any reciprocal cooperation or any forgiveness.

Apparently, in our research behavior has not been influenced by a direct activation of internal goal structures like interpersonal orientations. The auto-motive model (Bargh, 1990; for empirical evidence, e.g., see Chartrand & Bargh, 1996) states that environment itself can trigger goal directly, without an explicit conscious choice, and that they then operate without the person knowing it. Our research suggested that the auto-motive model does not work for activation of interpersonal orientations in interdependence situations. In these situations the environment seems to automatically influence expectations about partner's cooperation. Subsequently, own cooperative behavior will be determined by how interpersonal orientations embodied in dispositions interact with these expectations (as according to individuals' schemas). Our research clearly indicated that social perceptions mediated the effect of primes on own social behavior. Future search may try to find other situations in which the effects of unobtrusive (even subliminal) situational features on own social behavior are mediated by social perceptions and judgments.

There are several other issues for future research. First, our studies found that expectations about partner's cooperation mediated the effect of primes on own cooperative behavior. However, not only expectations might have been influenced by the primes. Also impressions of the partner might have mediated the effect of primes on own cooperative behavior. For instance, prosocial primes might have influenced individuals to create a prosocial/moral impression of the partner and proself primes might have influenced individuals to create a proself/mighty impression of the partner. Impressions might have been influenced simultaneously with expectations of partner's cooperation. Second, we were not able to directly activated interpersonal orientations because expectations of partner's cooperation play a significant role. However, interpersonal orientations may be capable of becoming automatically activated by situational features in situations where expectations about partner's cooperation do not play a role. For instance, one could think of situations (e.g., charity) where people do not have to think about outcomes for other people. In these situations, one could expected that own cooperative behavior may be influenced by an automatic activation of interpersonal orientations.

To conclude, our results suggest that a large group of individuals (i.e., high consistent prosocials, low consistent prosocials, and low consistent proselfs) assimilate to what they think other people will do in interdependence situations. If they think that others will behave

noncooperatively than they will also behave noncooperatively, if they think that others will behave cooperatively than they will also behave cooperatively. Another, but smaller, group of individuals behaves almost always in a very noncooperative manner, no matter whether others cooperate or not.

What are the implications for real-life situations? There are lot of real-life problems (e.g., the recycling issue, the commuting issue, the arms race, hoarding, business negotiations) that are interdependent in nature. Therefore, research on experimental games is perceived as a laboratory simulation of real-life situations (Pruitt & Kimmel, 1977). Laboratory research tries to uncover fundamental human processes that are also operative in real-life. Results obtained in the lab are therefore oftentimes discussed in terms of their implications for a real-life context. Our results can have important implications for how to deal with people's (non)cooperative behavior in society. We argue that for high consistent prosocials, low consistent prosocials, and low consistent proselfs psychological solutions may be good enough to promote more cooperation in society. If these individuals expect that other are willing to cooperate, they will cooperate themselves. Therefore, psychological (or individual) solutions (e.g., emphasizing that other individuals can be trusted or focusing people's attention on cooperative efforts of others; see Samuelson, Messick, Rutte, & Wilke, 1984) may be effective enough for these individuals to enhance cooperation. However, psychological solutions may not work for high consistent proselfs. They do not care if others can be trusted or not. Therefore, only structural solutions might work for high consistent proselfs. One may try to change the payoff matrix of the interdependence situation and making the cooperative option more attractive than the noncooperative option. One can change the payoff matrix by rewarding cooperative behavior or by punishing noncooperative behavior. What we learned is that one should be very careful with the group of high consistent proselfs.

References

Agnew, C.R., Van Lange, P.A.M., Rusbult, C.E., & Langston, C.A. (1998). Cognitive interdependence: Commitment and the cognitive representation of close relationships. Journal of Personality and Social Psychology, 74, 939-954.

Allison, S.T., & Messick, D.M. (1990). Social decision heuristics in the use of shared resources. Journal of Behavioral Decision Making, 3, 195-204.

Bargh, J.A. (1990). Auto-motives: Preconscious determinants of thought and behavior. In E.T. Higgins & R.M. Sorrentino (Eds.), Handbook of motivation and cognition (Vol. 2, pp. 93-130). New York: Guilford.

Bargh, J.A. (1994). The four horsemen of automaticity: Awareness, intention, efficiency, and control in social cognition. In R.S. Wyer Jr. & T.K. Srull (Eds.), Handbook of social cognition (2nd ed., pp. 1-40). Hillsdale, NJ: Erlbaum.

Bargh, J.A. (1996). Principles of automaticity. In E.T. Higgins & A. Kruglanski (Eds.), Social psychology: Handbook of basic principles (pp. 169-183). New York: Guilford.

Bargh, J.A. (1997). The automaticity of everyday live. In R.S. Wyer & T.K. Srull (Eds.), Advances in social cognition (Vol. 10, pp. 1-61). Hillsdale, NJ: Erlbaum.

Bargh, J.A., & Barndollar, K. (1996). Automaticity in action: The unconscious as repository of chronic goals and motives. In P.M. Gollwitzer & J.A. Bargh (1996), The psychology of action: Linking cognition and motivation to behavior (pp. 457-481). New York: Guilford.

Bargh, J.A., Bond, R.N., Lombardi, W.J., & Tota, M.E. (1986). The additive nature of chronic and temporary sources of construct accessibility. Journal of Personality and Social Psychology, 50, 869-878.

Bargh, J.A., & Chartrand, T.L. (1999). The unbearable automaticity of being. American Psychologist, 54, 462-479).

Bargh, J.A., & Chartrand, TL. (2000). The mind in the middle: A practical guide to priming and automaticity research. In H. Reis & C. Judd (Eds.), Handbook of research methods in social psychology (pp. 253-285). New York: Cambridge University Press.

Bargh, J.A., Chen, M., & Burrows, L. (1996). Automaticity of social behavior: Direct effects of trait construct and stereotype action on construct accessibility. Journal of Personality and Social Psychology, 50, 869-878.

Bargh, J.A., & Ferguson, M.J. (2000). Beyond behaviorism: On the automaticity of higher mental processes. Psychological Bulletin, 126, 925-945.

Baron, R.M., & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. Journal of Personality and Social Psychology, 51, 1173-1182.

Chaiken, S., Giner-Sorolla, R., & Chen, S. (1996). Beyond accuracy: Defense and impression motives in heuristic and systematic information processing. In P.M. Gollwitzer & J.A. Bargh (1996), The psychology of action: Linking cognition and motivation to behavior (pp.553-578). New York: Guilford.

Chartrand, T.L., & Bargh, J.A. (1996). Automatic activation of impression formation and memorization goals: Nonconscious priming reproduces effects of explicit task instruction. Journal of Personality and Social Psychology, 71, 464-478.

Chen, M., & Bargh, J.A. (1997). Nonconscious behavioral confirmation processes: The self-fulfilling consequences of automatic stereotype information. Journal of Experimental Social Psychology, 33, 541-560.

Dawes, R.M. (1980). Social dilemmas. Annual Review of Psychology, 31, 169-193.

De Bruin, E.N.M., & Van Lange, P.A.M. (1999). Impression formation and cooperative behavior. European Journal of Social Psychology, 29, 305-328.

De Bruin, E.N.M., & Van Lange, P.A.M. (2000). What people look for in others: Influences of the perceiver on information selection. Personality and Social Psychology Bulletin, 26, 206-219.

De Dreu, C.K.W., & Van Lange, P.A.M. (1995). The impact of social value orientation on negotiator cognition and behavior. Personality and Social Psychology Bulletin, 21, 1178-1188.

Dehue, F.M.J., McClintock, C.G., & Liebrand, W.B.G. (1993). Social value related response latencies: Unobtrusive evidence for individual differences in information processing. European Journal of Social Psychology, 23, 273-293.

Deutsch, M. (1982). Interdependence and psychological orientation. In J. Derlaga & J. Grzelak (Eds.), Cooperation and helping behavior (pp. 15-42). San Diego: Academic Press.

Dijksterhuis, A., Aarts, H., Bargh, J.A., & van Knippenberg, A. (2000). On the relation between associative strength and automatic behavior. Journal of Experimental Social Psychology, 36, 531-544.

Dijksterhuis, A., & Corneille, C. (2001). On the relation between stereotype activation and intellectual performance. Unpublished manuscript, University of Nijmegen.

Dijksterhuis, A., Spears, R., Postmes, T., Stapel, D.A., Koomen, W., van Knippenberg, A., & Scheepers, D. (1998). Seeing one thing and doing another. Contrast effects in automatic

behavior. Journal of Personality and Social Psychology, 75, 862-871.

Dijksterhuis, A., & van Knippenberg, A. (1998). The relation between perception and behavior or
how to win a game of Trivial Pursuit. Journal of Personality and Social Psychology, 74, 865-
877.

Gollwitzer, P.M., Heckhausen, H., & Steller, B. (1994). Deliberative, and implemental mind-sets:
Cognitive tuning towards congruous thought and information. Journal of Personality and Social
Psychology, 59, 1119-1127.

Griesinger, D.W., & Livingston, J.W. (1973). Toward a model of interpersonal orientation in
experimental games. Behavioral Science, 18, 173-188.

Herr, P.M. (1986). Consequences of priming: Judgment and behavior. Journal of Personality and
Social Psychology, 51, 1106-1115.

Hertel, G., & Fiedler, K. (1994). Affective and cognitive influences in a social dilemma game.
European Journal of Social Psychology, 24, 131-145.

Hertel, G., & Fiedler, K. (1998). Fair and dependent versus egoistic and free: Effects of semantic
and evaluative priming on the 'Ring Measure of Social Values'. European Journal of Social
Psychology, 28, 49-70.

Higgins, E.T. (1989). Knowledge accessibility and activation: Subjectivity and suffering from
unconscious sources. In J.S. Uleman & J.A. Bargh (Eds.), Unintended thought (75-123). New
York: Guilford.

Higgins, E.T., & Bargh, J.A., & Lombardi, W. (1985). The nature of priming effects on
categorization. Journal of Experimental Psychology: Learning, Memory and Cognition, 11, 59-
69.

Higgins, E.T., Rholes, W.S., & Jones, C.R. (1977). Category accessibility and impression
formation. Journal of Experimental Social Psychology, 13, 141-154.

Kelley, H.H., & Stahelski, A.J. (1970). Social interaction basis of cooperators' and competitors'
beliefs about others. Journal of Personality and Social Psychology, 16, 66-91.

Kelley, H.H., & Thibaut, J. (1978). Interpersonal relations. New York: Wiley.

Kramer, R.M., McClintock, C.G., & Messick, D.M. (1986). Social values and cooperative response
to a simulated resource conservation crisis. Journal of Personality, 54, 101-117.

Kruglanski, A. (1996). Goals as knowledge structures. In P.M. Gollwitzer & J.A. Bargh (1996), The
psychology of action: Linking cognition and motivation to behavior (pp. 599-618). New York:
Guilford.

Kuhlman, D.M., Camac, C.G., & Messick, D.M. (1986). Individual differences in social orientation. In H.A.M. Wilke, D.M. Messick, & C. Rutte (Eds.), Experimental Social Dilemmas (pp. 151-176). New York: Verlag Peter Lang.

Kuhlman, D.M., & Marshello, A. (1975). Individual differences in game motivation as moderators of preprogrammed strategic effects in prisoner's dilemma. Journal of Personality and Social Psychology, 32, 922-931.

Kuhlman, D.M., & Wimberley, D.C. (1976). Expectation of choice behavior held by cooperators, competitors, and individualists across four classes of experimental games. Journal of Personality and Social Psychology, 34, 69-81.

Liebrand, W.B.G. (1984). The effect of social motives, communication and group size on behavior in an N-person multi-stage, mixed-motive game. European Journal of Social Psychology, 14, 239-246.

Liebrand, W.B.G., & McClintock, C.G. (1988). The ring measure of social values: A computerized procedure for assessing individual differences in information processing and social value orientation. European Journal of Personality, 2, 217-230.

Liebrand, W.B.G., Jansen, R.W.T.L., Rijken, V.M., & Suhre C.J.M. (1986a). Might over morality: The interaction between social values and the interpretation of decision-making in experimental games. Journal of Experimental Social Psychology, 22, 203-215.

Liebrand, W.B.G., & Van Run, G.J. (1985). The effects of social motive across two cultures on behavior in social dilemmas. Journal of Experimental Social Psychology, 21, 86-102.

Liebrand, W.B.G., Wilke, H.A.M., Vogel, R., & Wolters, F.J.M. (1986b). Value orientation and conformity: A study using 3 types of social dilemma games. Journal of Conflict Resolution, 30, 77-97.

McClintock, C.G. (1972). Social motivation - A set of propositions. Behavioral Science, 17, 438-454.

McClintock, C.G. (1978). Social values: Their definition, measurements and development. Journal of Research and Development in Education, 12, 121 - 137.

McClintock, C.G., & Allison, S.T. (1989). Social value orientation and helping behavior. Journal of Applied Social Psychology, 19, 353-362.

McClintock, C.G., & Liebrand, W.B.G. (1988). Role of interdependence structure, individual value orientation and another's strategy in social decision making: A transformational analysis. Journal of Personality and Social Psychology, 55, 396-409.

Messé, L.A., & Sivacek, J.M. (1979). Predictions of others' responses in a mixed-motive game: Self-Justification or false consensus. <u>Journal of Personality and Social Psychology</u>, <u>37</u>, 602-607.

Messick, D.M., & Brewer, M.B. (1983). Solving social dilemmas: A review. In L. Wheeler & P. Shaver (Eds.), <u>Review of Personality and Social Psychology</u> (Vol. 4, pp. 11-44). Beverly Hills, CA: Sage.

Messick, D.M., & McClintock, C.G. (1968). Motivational bases of choice in experimental games. <u>Journal of Experimental Social Psychology</u>, <u>4</u>, 1-25.

Neuberg, S.L. (1988). Behavioral implications of information presented outside of conscious awareness: The effect of subliminal presentation of trait information on behavior in the prisoner's dilemma game. <u>Social Cognition</u>, <u>6</u>, 207-230.

Parks, C.D. (1994). The predictive ability of social values in resource dilemmas and public good games. <u>Personality and Social Psychology Bulletin</u>, <u>20</u>, 431-438.

Pendry, L, & Carrick, R. (2001). Doing what the mob do: Priming effects on conformity. <u>European Journal of Social Psychology</u>, <u>31</u>, 83-92.

Pruitt, D.G., & Kimmel, M.J. (1977). Twenty years of experimental gaming: Critique, synthesis, and suggestions for the future. <u>Annual Review of Psychology</u>, <u>28</u>, 363-392.

Ross, L., Green, D., & House, P. (1977). False consensus effect: Egocentric bias in social-perception and attribution processes. <u>Journal of Experimental Social Psychology</u>, <u>13</u>, 279-301.

Rusbult, C.E., & Van Lange, P.A.M. (1996). Interdependence processes. In E.T. Higgins & A.W. Kruglanski (Eds.), <u>Social psychology: Handbook of basic principles</u> (pp. 564-596). New York: Guilford.

Rusbult, C.E., Verette, J., Whitney, G.A., Slovik, L.F., & Lipkus, I. (1991). Accommodation processes in close relationships: Theory and preliminary empirical evidence. <u>Journal of Personality and Social Psychology</u>, <u>60</u>, 53-78.

Samuelson, C.D., Messick, D.M., Rutte, C.G., & Wilke, H.A.M. (1984). Individuals and structural solutions to resource dilemmas in two cultures. <u>Journal of Personality and Social Psychology</u>, <u>47</u>, 94-104

Sattler, D.N., & Kerr, N.L. (1991). Might versus morality explored: Motivational and cognitive bases for social motives. <u>Journal of Personality and Social Psychology</u>, <u>60</u>, 756-765.

Smeesters, D., Warlop, L., & Van Avermaet, E. (2001). <u>Consistency of Interpersonal Orientations: Impact on reciprocal cooperation and forgiveness</u>. Unpublished raw data.

Snyder, M., & Ickes, W. (1985). Personality and social behavior. In G. Lindzey & E. Aronson

(Eds.), <u>Handbook of social psychology</u> (pp. 883-947). New York: Random House.

Srull, T.K., & Wyer, R.S., Jr. (1979). The role of category accessibility in the interpretation of information about others: Some determinants and implications. <u>Journal of Personality and Social Psychology</u>, <u>37</u>, 1660-1672.

Uleman, J.S., & Bargh, J.A. (1989). <u>Unintended thought</u>. New York: Guilford.

Van Lange, P.A.M. (1999). The pursuit of joint outcomes and equality in outcomes: An integrative model of social value orientation. <u>Journal of Personality and Social Psychology</u>, <u>77</u>, 337-349.

Van Lange, P.A.M. (2000). Beyond self-interest: A set of propositions relevant to interpersonal orientations. In W. Stroebe & M. Hewstone (Eds.), <u>European Review of Social Psychology</u> (Vol. 11, pp. 297-331). New York: Wiley.

Van Lange, P.A.M., & Kuhlman, D.M. (1994). Social value orientations and impressions of a partner's honesty and intelligence: A test of the might versus morality effect. <u>Journal of Personality and Social Psychology</u>, <u>67</u>, 126-141.

Van Lange, P.A.M., & Liebrand, W.B.G. (1989). On perceiving morality and potency: Social values and the effects of person perception in a give-some dilemma. <u>European Journal of Personality</u>, <u>3</u>, 209-225.

Van Lange, P.A.M., & Liebrand, W.B.G. (1991a). Social value orientation and intelligence: A test of the goal-prescribes-rationality principle. <u>European Journal of Social Psychology</u>, <u>21</u>, 273-292.

Van Lange, P.A.M., & Liebrand, W.B.G. (1991b). The influence of other's morality and own social value orientation on cooperation in the Netherlands and the U.S.A. <u>International Journal of Psychology</u>, <u>26</u>, 429-449.

Van Lange, P.A.M., Otten, W., De Bruin, E.N.M., & Joireman, J.A. (1997a). Development of prosocial, individualistic, and competitive orientations: Theory and preliminary evidence. <u>Journal of Personality and Social Psychology</u>, <u>73</u>, 733-746.

Van Lange, P.A.M., Rusbult, C.E., Drigotas, S.M., Arriage, X.B., Witcher, B.S., & Cox, C.L. (1997b). Willingness to sacrifice in close relationships. <u>Journal of Personality and Social Psychology</u>, <u>72</u>, 1373-1395.

Van Vugt, M., Meertens, R.M., & Van Lange, P.A.M. (1995). Car versus public transportation? The role of social value orientations in a real-life social dilemma. <u>Journal of Applied Social Psychology</u>, <u>25</u>, 258-278.

Wieselquist, J., Rusbult, C.E., Foster, C.A., & Agnew, C.R. (1999). Commitment, pro-relationship behavior, and trust in close relationships. <u>Journal of Personality and Social Psychology</u>, <u>77</u>, 942-

966.

Winter, L., & Uleman, J.S. (1984). When are social judgments made: Evidence for the
spontaneousness of train inferences. <u>Journal of Personality and Social Psychology</u>, <u>47</u>, 237-252.

Winter, L., Uleman, J.S., & Cunniff, C. (1985). How automatic are social judgments? <u>Journal of
Personality and Social Psychology</u>, <u>49</u>, 904-917.

Notes

1. An individualistic orientation reflects no real outcome transformation because outcome preference is consistent with the outcomes displayed in the given matrix.

2. We never used the words cooperation, noncooperation, prosocial behavior or proself behavior in the instructions.

3. Generating expectations is not necessarily automatic. After all, participants are placed in a mixed-motive interdependent situation in which their outcomes are in part influenced by the behavior of their partners. With automatically created expectations we mean that these expectations can be influenced in a specific direction, without participants being aware of that influence. Post-experimental questionnaires in all our experiments revealed that not a single participant was aware of the link between the priming phase and the give-some game.

4. Remember that according to the might-versus-morality phenomenon proselfs judge cooperative other players as rather weak, stupid persons.

5. We found no effects of different expectation-choice orders in Experiment 2, 3 and 4. Therefore, we will not report anymore on this factor.

Table 1

Cooperation as a function of Interpersonal Orientation, Consistency, and Primes (Experiment 1)

Interpersonal Orientation	Consistency	Primes		
		Prosocial	Neutral	Proself
Prosocial	High	3.16^{a}_{1}	2.41^{a}_{2}	1.22^{a}_{3}
Proself	High	0.94^{b}_{1}	1.68^{b}_{2}	0.95^{a}_{1}
Prosocial	Low	2.88^{a}_{1}	2.23^{a}_{1}	1.06^{a}_{3}
Proself	Low	2.92^{a}_{1}	1.50^{b}_{2}	0.92^{a}_{2}

Note. Within columns, means that do not share a common superscript differ significantly ($p <$ .05). Within rows, means that do not share a common subscript differ significantly ($p <$ .05).

Table 2

Cooperation as a function of Interpersonal Orientation, Consistency, and Primes (Experiment 2)

Interpersonal Orientation	Consistency	Primes		
		Prosocial	Neutral	Proself
Prosocial	High	3.29^{a}_{1}	2.47^{a}_{2}	1.25^{a}_{3}
Proself	High	0.62^{b}_{1}	1.75^{bc}_{2}	0.93^{a}_{1}
Prosocial	Low	2.86^{a}_{1}	2.20^{ab}_{2}	1.26^{a}_{3}
Proself	Low	2.73^{a}_{1}	1.48^{c}_{2}	0.78^{a}_{3}

Note.   Within columns, means that do not share a common superscript differ significantly ($p <$ .05). Within rows, means that do not share a common subscript differ significantly ($p <$ .05).

Table 3

Cooperation as a function of Interpersonal Orientation, Consistency, and Primes (Experiment 3)

Interpersonal Orientation	Consistency	Primes	
		Prosocial	Proself
Prosocial	High	3.06^{a}_{1}	0.88^{a}_{2}
Proself	High	0.64^{b}_{1}	0.77^{a}_{1}
Prosocial	Low	2.71^{a}_{1}	1.12^{a}_{2}
Proself	Low	2.53^{a}_{1}	0.62^{a}_{2}

Note.   Within columns, means that do not share a common superscript differ significantly ($p <$ .05). Within rows, means that do not share a common subscript differ significantly ($p < $ .05).

Table 4

Cooperation as a function of Interpersonal Orientation, Consistency, and Primes (Experiment 4)

Interpersonal Orientation	Consistency	Primes		
		Prosocial	Neutral	Proself
Prosocial	High	3.50^{a}_{1}	2.84^{a}_{2}	1.46^{a}_{3}
Proself	High	1.15^{b}_{1}	1.53^{b}_{1}	1.00^{a}_{1}
Prosocial	Low	3.35^{a}_{1}	2.71^{a}_{2}	1.46^{a}_{3}
Proself	Low	2.91^{a}_{1}	2.08^{b}_{2}	1.25^{a}_{3}

Note.   Within columns, means that do not share a common superscript differ significantly ($p <$ .05). Within rows, means that do not share a common subscript differ significantly ($p <$ .05).

Figure 1

Own cooperation as a function of Interpersonal Orientation and Primes for participants with a high consistent interpersonal orientation (Experiment 1)
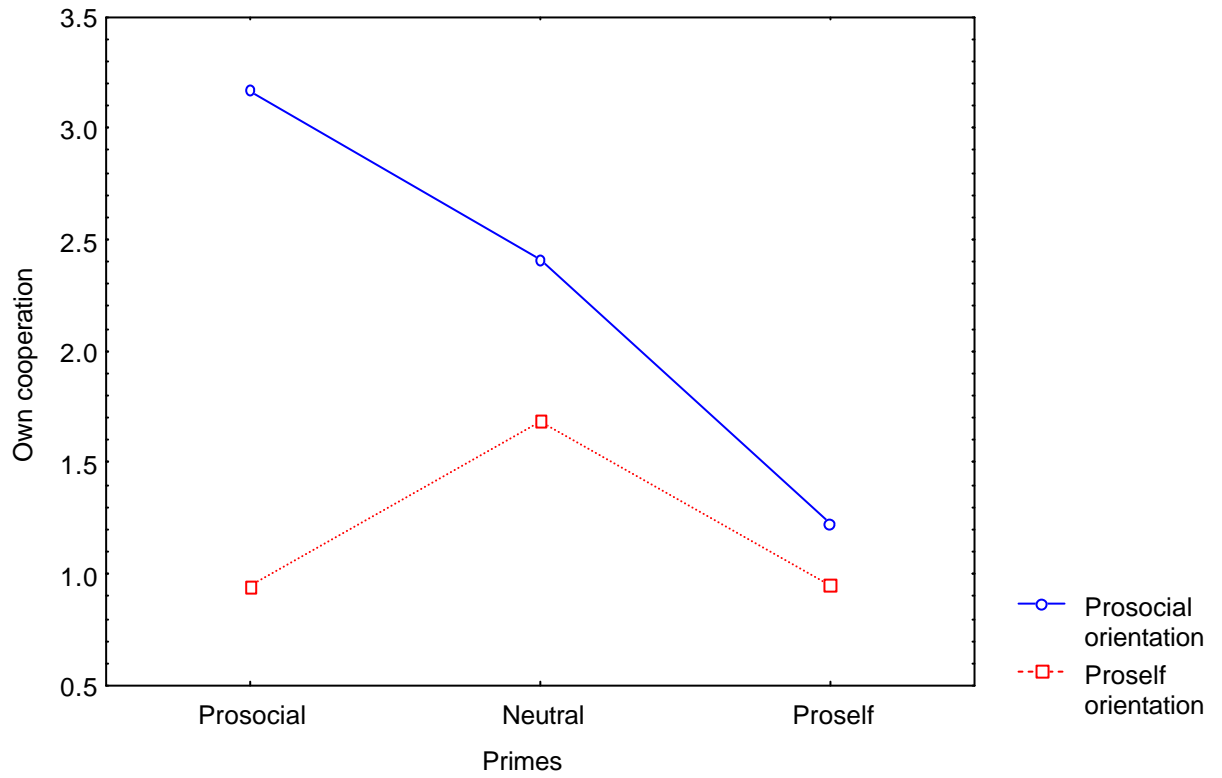
Figure 2

Own cooperation as a function of Interpersonal Orientation and Primes for participants with a high consistent interpersonal orientation (Experiment 2)
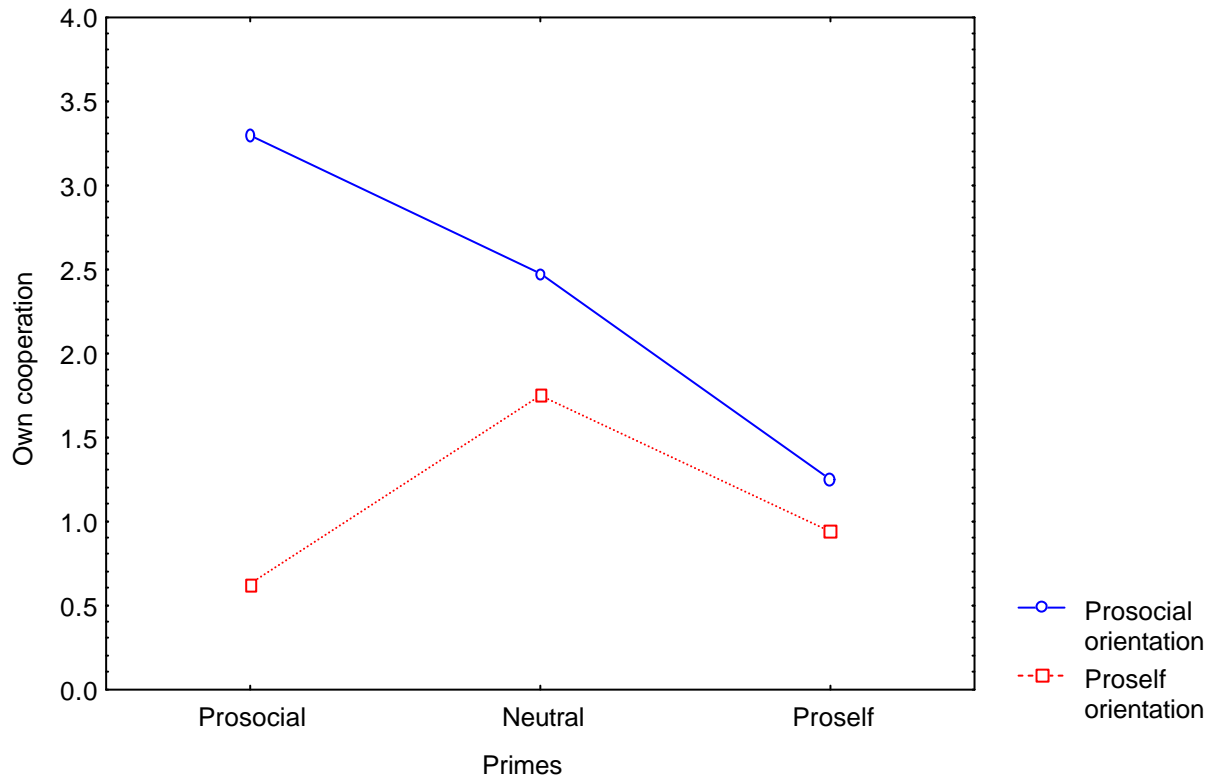
Figure 3

Own cooperation as a function of Interpersonal Orientation and Primes for participants with a high consistent interpersonal orientation (Experiment 3)
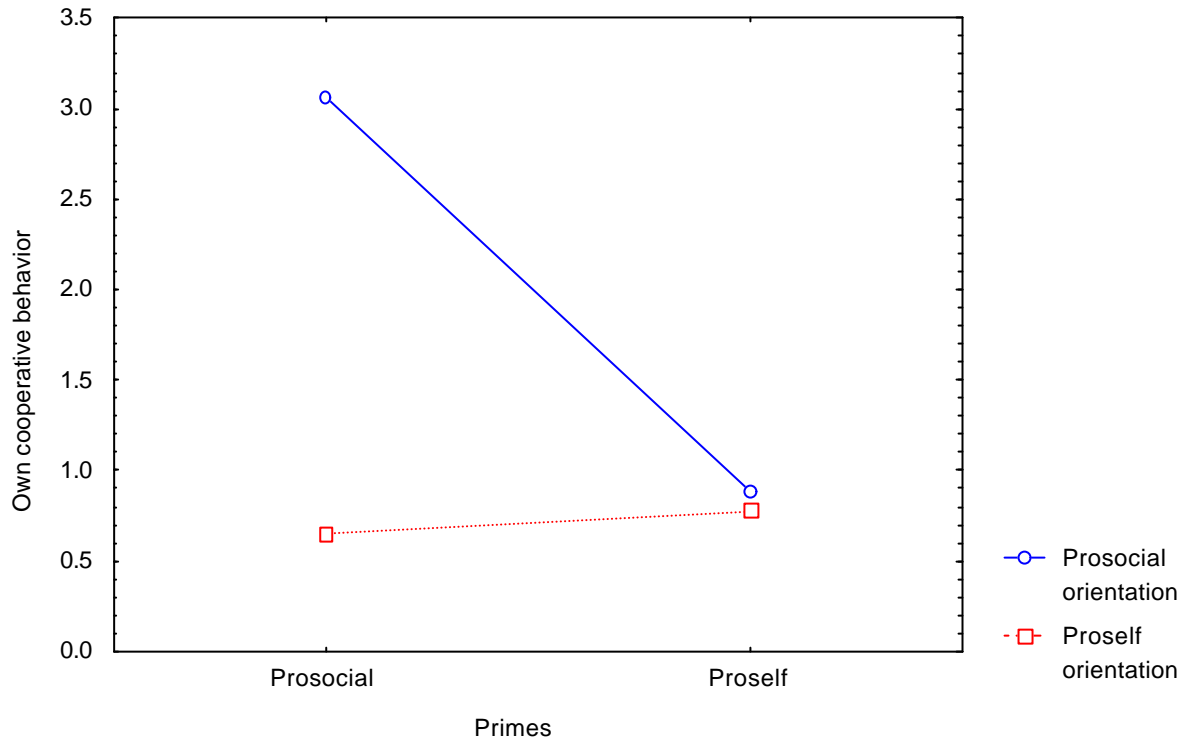
Figure 4

Own cooperation as a function of Interpersonal Orientation and Primes for participants with high consistent interpersonal orientation (Experiment 4)