KATHOLIEKE UNIVERSITEIT LEUVEN
FACULTEIT PSYCHOLOGIE EN PEDAGOGISCHE WETENSCHAPPEN

CENTRUM VOOR MOTIVATIEPSYCHOLOGIE

Rendering Sustainable Consumer Behavior more Sustainable

Psychological Tools for Marketing Pro-Social Commitment

Proefschrift aangeboden tot het verkrijgen van de graad van
Doctor in de Psychologie

Door **Gert Cornelissen**

Promotor: Prof. Dr. Siegfried Dewitte
Copromotor: Prof. Dr. Luk Warlop

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INTRODUCTION

In the past months, the preservation of our environment has become an important issue on the public agenda. The impact of the film "An Inconvenient truth" (Guggenheim, 2006), depicting the imminent dangers associated with our careless management of natural resources, should not be underestimated in this respect. Its immediate impact has been impressive, evidenced, for example, by the actions of a Belgian housewife, who organized a screening of the movie attended by a large number of Belgian politicians. The release of the film was followed by a vast increase of news items covering climate change and other environmental topics in the media. Soon, however, a second wave of responses emerged. Some accused the messenger, Al Gore, of being partisan, having (financial and professional) ulterior motives and not presenting his facts right. Irrespective of whether these allegations are true, such reactions were to be expected. Psychological motives for such a backlash will be discussed later. For now it suffices to observe that people seem to be very concerned with topics like environmental preservation. Providing them with food for thought raises awareness and concern for environmental problems and fosters values, goals and behavioral intentions to do an effort to solve them. Quickly, however, the awareness trickles through that acting on these intentions will involve certain personal costs. After all, doing *the right thing* is often less convenient, more effortful, or more expensive than the traditional alternatives. It seems easier to ease our conscience by rejecting the message rather than by changing our lifestyle. Possibly, the current upsurge in environmental awareness might just prove to be a temporary fad.

I hope the present dissertation will contribute to a better fate for people's commitment to pro-environmental action. It deals with the question how to persuade individuals to pursue the interest of others (i.e., other people, the environment, society at large, or even their future selves), in spite of consistent temptation by immediate self-interested motives. In a first manuscript we analyze the decision making process in situations characterized by a conflict between personal en collective interest. In manuscripts II and III we present persuasion tools which can complement traditional, information-based social marketing strategies aimed at promoting pro-environmental conduct. The resulting insights can easily be adapted for application in other fields of sustainable development, like purchasing fair trade products, or for the promotion of other socially desirable behaviors, like healthy behavior, careful driving, helping, or courteous behavior.

Environmental Decision Making as a Social Dilemma

A social dilemma is an interdependence situation in which each participant experiences a conflict between pursuing his or her personal interest, and pursuing the collective interest (Hardin, 1968). When a salesman tries to persuade someone into buying a certain car, he wants to show how getting that car is *in the client's best interest*: it is a safe, reliable car for a good price. When a politician tries to win your vote, he will attempt to convince you that voting for him or her is *in your best interest*, because s/he is more able at defending you rights than the opposition. This is a powerful persuasion technique, as people are always motivated to serve their self-interest. It is trickier business, however, to try persuading the client, who just bought his new car, to respect speed limits and traffic regulations. In such a situation the individual experiences a *conflict* between pursuing his or her self-interest and the interest of others. The self-interested choice consists of enjoying testing the limits of the car, to arrive at the destination quicker, or simply the freedom to do what one wants. Slower and more careful driving would be in the interest of the other road users, because it decreases their risk of being involved in an accident. In a social dilemma the outcome for a certain individual depends on his or her behavior and on the behavior of others involved. Every individual must decide between a selfish (drive fast) and socially desirable (drive slow and safe) option. For every individual, it is tempting to make a selfish choice. But, if everybody involved makes that selfish choice, the final outcome will be less desirable for everyone (i.e., more frequent and more serious accidents) than in the case in which everybody makes the socially desirable choice. It is a challenge for social marketers to convince people to take the benefit of others into account when making choices in social dilemmas.

Several researchers have identified the decision whether or not to behave pro-environmentally as a social dilemma (e.g., Cialdini *et al.*, 1990; Mark Van Vugt *et al.*, 1996a; Wiener & Doescher, 1991). Choosing to conserve the environment is considered to be a cooperative behavior because it serves the interest of society in the long term. On the other hand, behavioral costs associated with this type of actions, like money, time, effort, and inconvenience tempt individuals to make selfish choices (Follows & Jobber, 2000a; Pieters, 1989; Pieters *et al.*, 1998; Thøgersen, 1994a). Take the example of car use. Traveling by car instead of by public transportation or the bike is in the individual's personal interest. It is usually faster, more flexible, more comfortable and it protects against rain and wind. If all people would do so, however, the collective interest will be hurt, because roads become congested and CO_2 emissions will increase, which adds to global warming effects. The task of environmental policy makers and social marketers is to encourage individuals to pursue the interest of others, the collective, or society at large, despite the persistent temptation to do the opposite by self-interested motives.

The traditional social marketing approach

Social marketing is a field which specializes in promoting socially desirable behavior by using insights and concepts from marketing. Traditionally, the social marketing approach relies on the assumption that in order to change people's behavior, it is necessary to make them think about the consequences of behavioral alternatives (Andreasen, 1995). Wiener and Doescher (1991), for example, propose that consumers need to be convinced of the fact that the collective goal is worth pursuing and that it is likely to materialize. Further, they claim that social marketers should emphasize the importance of each individual's contribution. The associated preference for using educational campaigns, which communicate information and arguments in favor of socially desirable behavior, has led to successful efforts at generating awareness about certain issues and at fostering positive values, attitudes, and behavioral intentions. In spite of these positive shifts, such campaigns have been disappointingly unsuccessful at making people change their behavior (McKenzie-Mohr, 2000). This way a value-behavior gap has developed (Kollmuss & Agyeman, 2002; Mainieri *et al.*, 1997; Oskamp *et al.*, 1991). For social marketing to be successful at changing people's behavior, the development of a complementary persuasion approach seems to be required. In what follows, we will first describe a series of reasons why information-based campaigns might fail to change behavior. Afterwards we will propose a complementary persuasion strategy that may steer clear of the pitfalls associated with the traditional social marketing approach.

Backlash effects associated with information-based campaign strategies

Research in social psychology and marketing has identified several reasons why encouraging people to think, through campaigns based on education and argumentation, may result in backlash effects. We will list and describe five of them here. First, targets may show psychological reactance (Brehm & Brehm, 1981; Reich & Robertson, 1979); people are motivated to counter a perceived threat to their freedom of personal choice by doing the opposite of what the persuasion message suggests. Second, messages using a fear appeal aim at motivating people to think about possible disastrous consequences of non-ecological behavior. Provoking fear, however, might lead to a process called fear control. Extreme fear is an aversive state, which individuals may try to evade by minimizing the perceived risks through source derogation ("these studies can't be right", see the second wave reaction to "An Inconvenient Truth"), defensive denial ("It won't happen to me"), or wishful thinking ("Probable scientists will come up with a way to solve it"). Successful fear reduction strategies will lead to a decreased likelihood of engaging in corrective action to avoid the undesirable consequences (Witte & Allen, 2000). Third, social marketing messages discouraging non-desirable behavior may hold a "descriptive norm meta-message" (Cialdini, 2003). Saying that "a problematic behavior needs urgent attention because it is very prevalent" implies that it *is* a

common behavior. Research on descriptive norms (Cialdini et al., 1990) suggests that simply *doing what everyone else is doing* is often preferred over doing what the minority does, even if that would be a morally superior course of action. Therefore such a message, ironically, might be interpreted as a justification to keep on engaging in the undesirable behavior. Fourth, these messages may elicit a state of cognitive dissonance (Festinger, 1957), as people experience a contradiction between what they think they should be doing and their actual behavior. Individuals may reduce dissonance by acting upon the (pro-environmental) value. However, cognitive dissonance may be resolved via other routes that do not result in the desired behavioral change. It is less effortful to reduce cognitive dissonance when one does not change his or her behavior, but rather assimilates his or her behavioral and moral values regarding environmentalism to the present (less pro-environmental) behavior (Albarracín & McNatt, 2005). Alternatively, avoiding dissonance may even be achieved by simply ignoring the request. Fifth, making people think about why they *should* act ecological, makes them think about why they *should not* as well (Albarracin & Wyer, 2001; Warlop *et al.*, 2003, p. 205). For example, making people think about the environmental benefits of taking one's bike leads to contemplating the private costs of this behavior (e.g., getting wet in the rain) and the private benefits of alternatives (e.g., the comfort of one's car) as well. As private costs and benefits are more salient than public costs and benefits (Rothschild, 1979), such a deliberation process is likely to result in the individual choosing the selfish option (i.e., the non-environmentally friendly behavior).

These examples show that encouraging people to think about the benefits of social desirable (e.g., environmentally friendly) behavior, might result in the ironic effect of making them decide to pursue their self-interest. It is possible that the contribution of traditional social marketing actions is limited to cultivating such preservation values and attitudes. Another approach, then, is necessary to translate these values into preservation behavior.

A Complementary Approach: influence automatic decision making

People are not always the rational and reasoned decision makers they are assumed to be according to the social marketing tradition. To the contrary, many choices in daily life are executed as part of a continuous stream of behaviors which are executed fairly automatically, based on heuristics and minimal informational input (Alba *et al.*, 1991; Warlop et al., 2003). Low-involvement choices with an environmental impact are no exception. The social intuitionist model (Haidt, 2001) states that judgments are generally the result of quick, automatic evaluations or intuitions. In a decision situation, it will be the value that is temporarily most salient and perceived to be relevant that determines the behavioral choice.

Construal level theory (Liberman & Trope, 1998; Trope & Liberman, 2000) predicts that positive beliefs about a goal or value are more readily accessible in long-term decisions,

whereas negative beliefs related to that goal (e.g., the difficulty to obtain it) predominate in short-term decisions. When challenged to contemplate the environmental impact of behavior alternatives by social marketing messages, one thinks on an abstract level about future behavior. In this case, positive beliefs related to conservation behavior are likely to be salient. This may lead to making personal resolutions to act upon this value in the future. In the here and now of making a decision, however, the benefits of the concrete, lower-order goal of serving the self-interest is likely to be more salient than the higher-order preservation goal. From this analysis follows that a successful complementary persuasion approach should (1) make the relevant (pro-environmental) values more accessible and (2) avoid active contemplation *at the moment of decision making*.

It is important to remark here that we do not imply that education and providing arguments are a waste of time and money. First, the social intuitionist model (Haidt, 2001) emphasizes the importance of social and cultural influences on the shaping of automatic behavior. People's decisions are often the result of automatic evaluations rather than of a reasoning process, but these automatic evaluations can be manipulated. We will show this in Manuscript I. Repeated exposure to arguments in favor of preservation efforts, might result in such beliefs to become internalized and automatically activated.

Second, as we argued, the traditional marketing approach has been successful at fostering favorable attitudes and values regarding preservation efforts. It should continue to do so, as this is a first step towards realizing a sustainable change in people's behavior. It seems necessary, however, to complement an argument-based approach with other tools which can activate these existing values at the moment of environmental decision making. In manuscript II and III we will present two such tools, named Positive Cueing and Social Labeling.

Overview of the Manuscripts

In this doctoral dissertation we present three manuscripts. A first one has a more theoretical focus and deals with the decision making process in social dilemmas. Manuscript II and III are of an applied nature and each presents a persuasion tool which can be used to translate existing pro-environmental values in consistent behavior. Each manuscript is written so that it can be read independently of the others. Therefore there might be some overlap between the introductions of these manuscripts and the general introduction.

Manuscript I

In this manuscript, we analyze the decision making process in social dilemmas. In this context, Social value orientation (SVO) is a heavily studied concept (e.g., Van Lange *et al.*, 1998; e.g., Mark Van Vugt *et al.*, 1995). It categorizes people according to preferred patterns of outcomes between the self and others in interdependence situations. Commonly used categorizations distinguish people who are cooperators, individualists, or competitors. Cooperators (or pro-socials) prefer to maximize group outcomes and equality in outcomes. Individualists and competitors (or pro-selfs) prefer to maximize personal outcomes. Van Lange, De Bruin, Otten, and Joireman (1997b) argued that these tendencies develop during our lifetime through experiences with interdependence situations. The analogy with moral intuitions, which, according to Haidt (2001), are automatically activated moral judgments that develop through social and cultural interactions, made us expect that these social value orientations may be automatically activated preferences.

This idea contrasts with the commonly held believe that pursuing the self-interest is an automatically activated goal (van den Bos *et al.*, 2006), and that engaging in pro-social behavior requires some kind of cognitive operation. We hypothesized that this would be true for pro-selfs, but not for pro-socials. On the other hand, we expected that if decisions would be based on a more elaborated thinking process, pursuing the self-interest would be a salient motive for all people. We attribute this to the fact that behaving selfishly has become a social norm in our society (D. T. Miller, 1999) and that private costs and benefits are more salient than public costs and benefits (Rothschild, 1979; Warlop et al., 2003) when thinking about outcome distributions.

A series of four studies, in which Dictator Games were played as a simulation for decision making in real life social dilemmas, supported these hypotheses. In a Dictator Game two participants are paired. One of them receives an amount of money and is instructed to divide the money between himself and his partner. The size of a dictator's "donation" is a measure for cooperation level. We showed that decisions to donate are the result of a two-step process. In an initial, automatic and intuitive, step, participants anchored their donations according to their social value orientations. Pro-socials intuitively tend to cooperate to a larger degree than pro-selfs. In a second step, in which individuals reason more elaborately about the decision at hand, both pro-socials and pro-selfs tend to benefit their immediate self-interest.

Additionally we showed that the automatic effect of social value orientations is due to a differential perception of the closeness of one's relationship with the interaction partner. Pro-socials chronically feel closer to anonymous other people than pro-selfs. This is, at least partly,

the reason for their intuitive tendency to cooperate. Interestingly, we also showed it is possible to *influence* such perceptions and the resulting automatic decisions. By making people feel closer to their interaction partner, donation sizes increase if the decision is made automatically, but not when it is contemplated more elaborately.

We argued before that most of our daily behavior is executed rather automatically. In this light, the present results may offer new perspectives on the way social marketing strategies may reach their objectives. They suggest that techniques, which activate people's pro-environmental values, while preventing them from contemplating extensively on a current decision, should be efficient in changing people's automatic evaluations in a pro-environmental direction. We will present and test two such tools in Manuscript II and III.

Manuscript II

In this manuscript we studied the potential of "social labeling" for the promotion of pro-environmental behavior. Social labeling is a persuasion technique that consists of providing a person with a statement about his or her personality or values (i.e., the social label) in an attempt to provoke behavior that is consistent with the label. Like a bottle of wine carries a label, describing its content, we can "label" other people, describing some aspect of their personality. For example, Miller, Brickman, and Bolen (1975) showed that telling a group of fifth-graders that they are very tidy was more efficient in making them keep their classroom free of litter than an explicit plea for tidiness. The technique is believed to rely on a self-perception process and the fact that people's (interpretation of) past behavior guides future action (Albarracín & McNatt, 2005; Burger & Caldwell, 2003; Ouellette & Wood, 1998; Tybout & Yalch, 1980).

We propose and test an adapted version that allows this technique to be applicable as a social marketing tool in mass-media campaigns. In a first step of this two-step procedure, the individual is provoked to perform a certain pro-environmental act. This could be, for example, the purchase of an environmentally friendly variety of a product, like bio-products or propellant-free deodorant. In some cases this will require some type of external motivation, like a price promotion. In other cases, the consumer might simply prefer the environmentally friendly product, because of other product features than its environmental friendliness. In a second step, a social label is communicated which attributes the purchase to the consumers' environmental values. For example, one could print a message on the packaging (e.g., "[brand X] – For those who care about their environment"), which invites the consumer to (mis)-attribute the ecological purchase to their value of caring for the environment. We hypothesized that if this reattribution process is successful, the individual is likely to perceive

himself as more concerned with the environment and act upon this new self-perception subsequently.

In four studies we applied such a procedure which suggests an internal attribution of an externally motivated pro-environmental choice. Participants were asked to indicate which TV-set they preferred from a list of seven TVs. These were evaluated on seven dimensions, including "Image quality", "sound quality", and "environmental aspects". One TV-set, which was most popular (chosen by 95-100% of participants) scored best on image and sound quality, but it also happened to have a maximum score on environmental aspects. Subsequently, we provided a social label describing the typical consumer who preferred this particular TV-set as "very concerned with the environment, and ecologically conscious".

Results indicated that this procedure is most successful at eliciting pro-environmental choices, if participants were distracted, either at the moment of processing the label or at the moment of making decisions. This suggests the labeling effect is an automatic one and that it works best in common, cognitively demanding circumstances. Additionally, results indicated that the label is not merely used as a guide in subsequent decisions; it also results in a re-attribution of the initial pro-environmental behavior to pro-environmental motives.

Manuscript III

In this manuscript we propose and test another persuasion tool, which we named "positive cueing". Analogous to social labeling, it attempts to promote pro-environmental decision making by increasing individual's self-perceptions as being a person who is concerned with environmental issues. People tend to use (perceptions of) previous behavior as a heuristic for current decision making. Previous research suggests, however, that individuals *underestimate* the level of their previous pro-environmental conduct (Raghubir & Menon, 2005). The main reason is that many commonly displayed environmental behaviors are somewhat ambiguous with respect to their ecological nature. Common behaviors, like switching off light in unused rooms, for example, tend to be attributed to a concern to reduce one's electricity bill or to mere habit. Therefore these behaviors are not considered diagnostic to infer one's environmental concern from.

With four studies, we showed that cueing such commonly performed environmental behaviors *as environmental* results in increased pro-environmental decision making. We also revealed the process responsible for this effect. Positive cueing increases the perceived diagnosticity of common environmental behaviors to derive environmental attitudes from. Subsequent, the manipulation renders people's attitudes towards ecological behaviors more favorable and makes them perceive themselves more as concerned with the environment.

Using the self-perception that one is "the kind of person that usually makes pro-environmental decisions" as a decision heuristic, accounted for the success of the positive cueing manipulation.

Manuscript I

Me First and the Gimme Gimmes: Social Value Orientation as a Moral Intuition

Abstract

We studied the decision making process in the Dictator Game and showed that decisions are the result of a two-step process (Study 2). In a first step, decision makers generate an automatic, intuitive proposal, which they adjust in a second, more deliberated phase. In line with the social intuitionist model, we show that one's Social Value Orientation determines intuitive choice tendencies in the first step, and that this effect is mediated by the dictator's perceived interpersonal closeness with the receiver (Study 1 and 3). Self-interested concerns subsequently lead to a reduction of donation size in step 2. Study 4 shows that increasing interpersonal closeness can promote pro-social decision-making.

The conception of man as solely driven by self-interest, the *homo economicus* (Etzioni, 1990; Luce & Raiffa, 1957; Schwartz, 1986; Wallach & Wallach, 1983) has been challenged repeatedly over the last 30 years (Camerer, 2003; Fehr & Fischbacher, 2003; Fehr & Gächter, 2000; Haidt, 2001; Henrich *et al.*, 1991; Kolm, 2000; Roth *et al.*, 1981). Most researchers now accept the existence of prosocial motives, such as serving the interests of others or the collective, or achieving equality in resource distributions (Frey & Meier, 2004; Mansbridge, 1990; Sober & Wilson, 1998). These motives have been attributed to factors like reciprocity (Van Lange, 1999), empathy (Batson *et al.*, 1988), a justice motive (Lerner, 1977), norms of fairness (Kahneman *et al.*, 1986), a concern for social welfare (Charness & Rabin, 2001), moral intuitions (Haidt, 2001), or the experience of a 'warm glow' (Andreoni, 1990). Inter-individual differences in tendencies towards cooperation and defection are captured by the "social value orientation" (SVO) concept (McClintock, 1972; Messick & McClintock, 1968). SVO has been shown to predict several types of pro-social behavior (McClintock & Allison, 1989; Nauta *et al.*, 2002; van Vugt et al., 1996).

In this paper we aim at getting more insight in the nature of the decision process underlying giving in the dictator game (DG). We chose the DG because it lacks clear norms specifying "fair behavior", a feature which we suggest to be characteristic of natural social dilemmas. We argue that SVOs represent automatic, intuitive judgments of appropriate behavior (i.e., moral intuitions) in situations characterized by a conflict between personal and collective interests. We also examined the nature of these intuitive judgments. We argue and show, by means of both mediation and experimental analyses, that the spontaneous effect of SVOs operates via perceptions of interpersonal closeness. Further, we argue that decisions in such situations are the result of a two-step process. An automatic process elicits more or less cooperative behavior in a first step, determined by one's moral intuitions. These intuitions are captured by the SVO concept. In the second step, a controlled cognitive process corrects this initial inclination, usually in a self-serving direction.

Social Value Orientations

Messick and McClintock (1968; McClintock, 1972) proposed the social value orientation (SVO) concept to describe individual differences in the extent to which people take others' outcomes into account when making decisions in interdependence dilemma's. A SVO describes a relatively stable preference for a certain pattern of outcome distributions between the self and others. Usually three types are distinguished (McClintock, 1972; Messick & McClintock, 1968; Van Lange, 1999; Van Lange & Liebrand, 1989, 1991): cooperators, individualists, and competitors. Cooperators (or pro-socials) prefer to maximize joint outcomes and maximize equality in outcomes. Individualists aim at maximizing personal outcomes with little or no regard for others' outcomes. Competitors prefer to maximize the difference between their and

others' outcomes. Individualists and competitors are often treated as one group with a pro-self orientation, because they prefer to maximize their outcomes either absolutely (individualists) or relatively (competitors).

SVOs have shown to predict behavior in interdependence dilemmas (e.g., Kramer *et al.*, 1986; Van Vugt et al., 1995). These are characterized by a choice conflict between pursuing the collective and the personal interest. Individual outcomes are determined by both the choice the individual makes and those of the others involved. Individual rationality tempts people to make non-cooperative, defective choices, because these result in higher personal outcomes, regardless of what others do. If everyone involved follows this individual rationality, however, individual outcomes will be lower than in the case that everyone behaves according to collective rationality, which prescribes making cooperative choices (Dawes, 1980). Many daily life situations are analogous to this pay-off structure. SVO has shown to predict choices between traveling by public transport and taking one's own car (Van Lange et al., 1998; van Vugt et al., 1996), willingness to pursue the goals of an organization one belongs to at a personal cost (Nauta et al., 2002), willingness to sacrifice in close relationships (Van Lange *et al.*, 1997a), helping behavior (McClintock & Allison, 1989), and intentions to behave pro-environmentally (Gärling *et al.*, 2003; Joireman *et al.*, 2001). In some situations, however, behavior of pro-socials and pro-selfs coincides. We will propose a two-step decision process in interdependence dilemmas that may provide an explanation for this inconsistency.

Fairness and decision making in social dilemmas

Decision makers in social interdependence situations often rely on cognitively efficient processing and follow simple rules or heuristics to guide their responses (Burger *et al.*, 2004; Cialdini, 2001; De Dreu & Boles, 1998; Messick, 1993; Roch *et al.*, 2000). Most researchers agree that *fairness* is an important concern in such situations (e.g., Turillo *et al.*, 2002). Some situations, like resource dilemmas or public good games, offer objective indications about the fair contribution of each group member (Harris & Joyce, 1980; Ledyard, 1995; Messick, 1993; Rutte *et al.*, 1987). The instructions of the resource dilemma, for example, frame the endowment as a *common* pool. This provokes participants to calculate their fair share by dividing the size of the pool by the number of participants in the game.

Many N-person real life social dilemmas do not provide such objective guides to decision making, however: How much of the waste I produce should I select so it can be recycled? How often should I take the bus instead of my own car to contribute fairly to a reduction in carbon-dioxide emission? How much money should I donate to charity organizations to be a good citizen? In such situations, other heuristics must play a role. We argue that a Dictator Game (DG) is a better model of real-life social dilemmas than a resource

game. In a DG an amount of money is provided to one of two players, named the dictator. He or she decides on the allocation of this endowment between the dictator and the recipient, who does not have any power over that decision at all. In this situation, objective guidelines of how much one should donate to the recipient are absent, like in many real life contexts. Dictators have to rely on another decision principle. Ruffle (1998) showed that dictators are concerned with enhancing their self-concept and hence have to resolve the trade-off between maintaining a positive self-perception as a fair person on the one hand and the pursuit of personal gains on the other hand. Like in resource dilemmas, most researchers agree that dictator giving is largely affected by concerns for a fair distribution of the endowment (Bolton *et al.*, 1998; Ruffle, 1998; Schotter *et al.*, 1996). Dictators appear to decide on an appropriate donation according to how much they think the recipient *deserves* to receive (Eckel & Grossman, 1996; Hoffman *et al.*, 2000; Hoffman & Spitzer, 1985). "Deservingness" might be inferred from a recipient's personal wealth, or the effort s/he did in a task related to the DG, for example. However, in many real life situations, even this information is lacking or not applicable. We argue that there is a deeper level process that guides people's decisions in social dilemmas that lack clear norms of conduct, and that do not provide information on the characteristics of the other player. This process is based on the perceived interpersonal closeness with an interaction partner. In the next paragraph, we argue why this process is important in explaining decisions in social dilemmas, and explain how the perception of interpersonal closeness may explain individual differences in social value orientation.

Social value orientations and interpersonal closeness

Biologists have suggested that cooperative tendencies have developed because promoting reproductive success of genetically related individuals benefits the proliferation of shared genes (Hamilton, 1964). The degree of shared genes can not be detected directly, so we have to rely on cues that are associated with genetic commonality (Krebs, 1991), like kinship, friendship, similarity, and familiarity (Cunningham, 1986; Rushton *et al.*, 1984). This suggests that we tend to be more cooperative with people we consider to be close to us. Work on social discounting supports this idea (Jones & Rachlin, 2006; Rachlin & Raineri, 1992): People are less willing to forgo a fixed amount of money to benefit the other, with increasing social distance between themselves and the other. Other research has shown that cues affecting perceived interpersonal closeness lead to automatic and spontaneous expressions of interconnectedness (Holland *et al.*, 2004). It is therefore reasonable to assume that individual differences in SVO are related to stable individual differences in the perception of social distance with other people in general.

We hypothesize that SVOs are related to differences in *interpersonal closeness* (Aron *et al.*, 1992; Aron *et al.*, 1991; Aron & Fraley, 1999; Cialdini *et al.*, 1997; De Cremer &

Stouten, 2003) with random and anonymous other people, and that this perception mediates the effect of SVO on cooperative behavior. According to Aron et al. (1991), close relationships are characterized by the feeling that some of the partner's aspects are partially the person's own. Aron et al. (1991) found that people's decisions in a resource allocation task were more fair when their relationship with the interaction partner was closer. When they imagined their partner to be a close friend, they gave more than in the case that the partner was assumed to be friendly acquaintance, and they gave even less when they imagined the partner to be a stranger. We hypothesize that pro-socials chronically perceive "other people" in general as closer to themselves, which elicits cooperative behavior in interdependence dilemmas that do not provide further cues to steer their decisions. Giving to the other, in this perspective, equals giving to oneself, to a certain degree (Cialdini et al., 1997), and the group interest becomes interchangeable with the self-interest (De Cremer & Van Vugt, 1999).

We consider this a relevant topic, as N-person real life dilemmas typically involve many anonymous interaction partners. If differences in cooperative behavior are due to how the anonymous interaction partners are perceived, then manipulating these perceptions may be used as a tool to promote cooperative behavior in interdependence dilemmas. We will test this hypothesis and verify whether this feeling of interpersonal closeness mediates the effect of SVO on cooperative behavior. We will do so by means of both mediation analyses and experimental design.

We further argue that the process we outlined (SVO – interpersonal closeness – decisions in social dilemmas) is spontaneous. We first propose a two-step model of decision making in an anonymous DG, describing how dictators deal with the trade-off between self-perception and personal gains. Then we outline how SVOs and interpersonal closeness operate within the framework of this two-step model.

A two-step model of decision making in the anonymous Dictator Game

Decision making in interdependence dilemmas usually consists of a two-step process (Roch et al., 2000). In line with dual process models of cognition, an initial heuristic-based automatic anchoring step is followed by a deliberation phase in which these initial action tendencies are adjusted according a systematic analysis of the interaction situation (Chaiken *et al.*, 1989; Chen & Chaiken, 1999). The decision maker only engages in this second phase if he is sufficiently motivated and has sufficient cognitive resources at his disposal to do so.

The social intuitionist model (Haidt, 2001) states that moral decisions, like the one between cooperation and defection, are generally the result of quick, automatic evaluations or intuitions. These intuitions are shaped by social and cultural influences that become

internalized during the course of personality development. Van Lange et al. (1997b) provided evidence for SVO being such a socially shaped orientation, developed through experiences with situations of interdependence. This suggests that SVOs represent inter-individual differences in moral intuitions. These would result in quick, automatic reactions in interdependence situations, triggering either a tendency to cooperate (pro-socials) or to defect (pro-selfs) in a first step.

In a second step, decision makers engage in a more effortful cognitive analysis of the interaction situation, which leads to an adjustment of these initial inclinations. Immediate self-interested motives are very salient in such an analysis (Roch et al., 2000). This implies that dictators are very sensitive to arguments which allow them to deviate from the distribution proposed by their intuitive system and pursue these self-serving tendencies. They may find several reasons to do so. First, Miller (1999) showed that in Western cultures, a norm prevails that says that self-interest ought to be a powerful determinant of behavior. Dictators might argue they should comply with this norm, which avoids them to become the "sucker" (Orbell & Dawes, 1991). Second, the "I'm no saint"-hypothesis of Bolton, Katok and Zwick (1998) implies that within constraints of personal and social rules dictators do behave in a self-interested manner. They might consider it their right to keep a large share or the full endowment because the rules by which they were assigned as the dictator were fair. Dictators might reason that recipients simply had tough luck that roles were assigned as they were, but it is not the dictator's responsibility to correct for this situation. Kagel, Kim, and Moser (1996) illustrated this tendency to twist fairness interpretations in a self-serving direction in games with asymmetric information and asymmetric pay-offs. Proposers in a standard ultimatum game[1], where 100 chips were to be divided, offered the usual shares, approaching 50%. When the proposer, but not the responder, knew that chips were worth 30 cents to the proposer but only 10 cents to the responder, the proposer could take 75% of the total outcome and still appear fair, by giving 50% of the chips. That is indeed what the researchers observed. This illustrates that proposers will tend to behave self-interested, if they can justify it to themselves (Babcock *et al.*, 1995; Thompson & Loewenstein, 1992). We predict that such a self-serving adjustment phase will influence donation of pro-socials to a larger extent than pro-selfs, because pro-socials' intuitive system anchored on a higher donation size.

Automatic and systematic reasoning differ in their demand for cognitive resources (e.g., Chen & Chaiken, 1999). Since automatic processes do not require as many cognitive resources, they will be not disrupted by cognitive distractions (Ferreira *et al.*, 2006). Therefore we can test the proposed two-step model by introducing a cognitive load manipulation during decision making. Because step 1 is the result of a fast, effortless, cognitively undemanding

[1] An Ultimatum Game is similar to the DG, but in this game responders have the power to reject a proposal made. If the proposal is rejected, both the proposer and the receiver get nothing.

process, it is unaffected by manipulations that interfere with reasoning capacity (Haidt, 2001; van den Bos et al., 2006), whereas a cognitive load manipulation should interfere with the reasoning process of step 2. Therefore, such a manipulation can prevent dictators from proceeding to engage in the process of finding justifications for non-cooperation after step 1. We hypothesize that SVOs determine allocation decisions when they are made under load conditions. We predict that pro-socials will donate more than pro-selfs in this situation. If sufficient cognitive resources are available to allow further deliberation, in a situation without cognitive load, dictators will adjust their donations in a self-serving direction after finding justifications for doing so. Therefore we expect donations to be lower in a situations without load, especially for pro-socials, compared to the donations of those whose cognitive resources are constrained.

Overview of the studies

We test our two-step model, see Figure 1, in four studies. In a first study we verify the relation between SVO and interpersonal closeness (arrow 1 in Figure 1). In Study 2 we test our model's prediction that SVO-effects will be larger when dictators show low levels of deliberation, compared to high levels of deliberation (arrow 3 in Figure 1). Since the deliberation phase that results in self-interested decisions is effortful, we can suppress it with a cognitive load manipulation. We predict that dictators, when under cognitive load, will not proceed further than step 1, and will base their allocations only on their SVO. After additional deliberation, however, dictators, especially pro-social ones, will decrease the size of their donations. In Study 3 we examine whether interpersonal closeness mediates the effect of SVO and interacts with deliberation level to influence the size of the donation (arrows 1, 2, and 3 in Figure 1). In a last study we verify whether we can manipulate interpersonal closeness to promote pro-social behavior (arrows 2 and 3 in Figure 1).

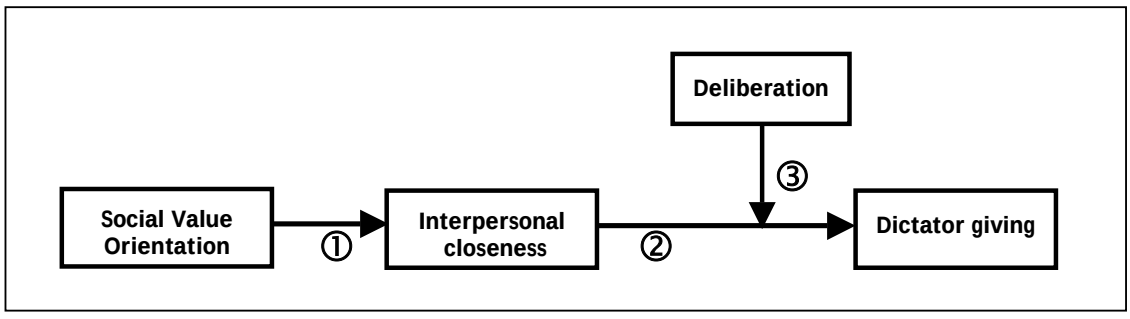

Figure 1. The two-step model of dictator decision making: SVO effects are mediated by interpersonal closeness and subsequently moderated by deliberation level.

Study 1

According to our model, interpersonal closeness mediates the automatic effect of SVO on pro-social behavior. In a first step, we want to verify whether pro-socials and pro-selfs indeed have a chronic different perception of the closeness of their relationship with an anonymous interaction partner. To that end, we measured participants' SVOs and asked them to indicate how close they perceived their relationship to be with the virtual interaction partner.

Method

Participants and procedure

The participants were 108 undergraduate students (59 male, 49 female), for partial fulfillment of a course requirement. They came to the lab in groups of five to eight and were seated individually in front of a computer screen in semi-closed cubicles. First they completed the Ring Measure of Social Values and the closeness measure. The order of both measures was counterbalanced. This took about 10-15 minutes, after which they continued with other tasks unrelated to this study.

Materials

Ring Measure of Social Values

We measured SVO using the Ring Measure of Social Values (Liebrand, 1984). This measure contains 24 items, each representing two imaginary money distributions between the self and another person. Participants are asked to indicate which distribution they prefer. They are instructed to imagine they play with an anonymous person who receives the same items and individual outcomes are determined by the choices that both players make. Amounts of money can be positive or negative. Distributions are selected from a circle in the own/other outcome plane defined by two orthogonal dimensions. One represents the outcomes for the self and the other represents outcomes for the other. The center of the circle is the origin of the outcome plane (of which the coordinates are 0 € for the self and 0 € for the other), and its radius is 150 €[2]. On the circle 24 equidistant points are selected. Each point represents a distribution between the self and the other. Each item in the measure contains two such points which are located adjacent on the circle. An example of an item is a choice between alternative A: 130 € for the self and 75 € for the other, and alternative B: 145 € for the self and 39 € for the other. After making the 24 choices, we calculated the total amount of money allocated to the self and the other. These two totals can be represented as coordinates on the

[2] 150 € equals about 180 US $

horizontal (own outcomes) and vertical (other's outcomes) axis, defining a single point in the plane. This point provides an estimate of the direction of the participant's vector in the outcome plane. The vector represents the participant's social value orientation. Each vector reflects a unique pattern of choices. Participants are classified on the Ring Measure as making choices consistent with one of the social value orientations. Participants with vectors falling between 22.5° and 112.5° are classified as pro-socials and participants with orientation vectors falling between 292.5° (or –67.5°) and 22.5° are classified as pro-selfs. Of the 112 participants, 31 (28.7 %) could be identified as pro-socials and 73 (67.6 %) could be identified as pro-selfs. Such a skewed distribution is not uncommon (Liebrand & McClintock, 1988; Sheldon *et al.*, 2003). Four participants (3.7 %) could not be identified because they had an orientation vector of exactly 22.5° or because the vector was out of range (more than 112.5°). The data on the Ring Measure allow calculating the length of each vector, which is an index for the consistency with which the SVO is manifested (Hertel & Fiedler, 1998). A maximal consistency score implies that the participant's preferred orientation on the Ring Measure remains consistent across all trials (Liebrand, 1984). The consistency score is expressed as a percentage representing the ratio of the length of a vector, compared to the maximal length a vector can have. Usually, only the data of those participants with a consistency index higher than 60% are retained for analysis (Liebrand, 1984; Smeesters *et al.*, 2003). Four participants (3.7 %) had a consistency score lower than 60 % and were discarded from further analysis. A total of 100 participants (71 pro-selfs and 29 pro-socials) remained for further analysis.

Inclusion of Other in the Self Scale

We measured interpersonal closeness with the "Inclusion of Other in the Self Scale" (IOS scale; Aron et al., 1992). This is a single-item, pictorial measure of closeness, see figure 2. In the IOS Scale, respondents select the picture that best describes their relationship with an interaction partner from a set of Venn-like diagrams each representing different degrees of overlap of two circles. One circle represents the self (S) and the other represents the other person (O). The figures were designed so that the degree of overlap progresses linearly, creating a seven-step, interval-level scale. The anchors are, at one end, two circles that touch each other, but do not overlap and, at the other end, two circles showing complete overlap.

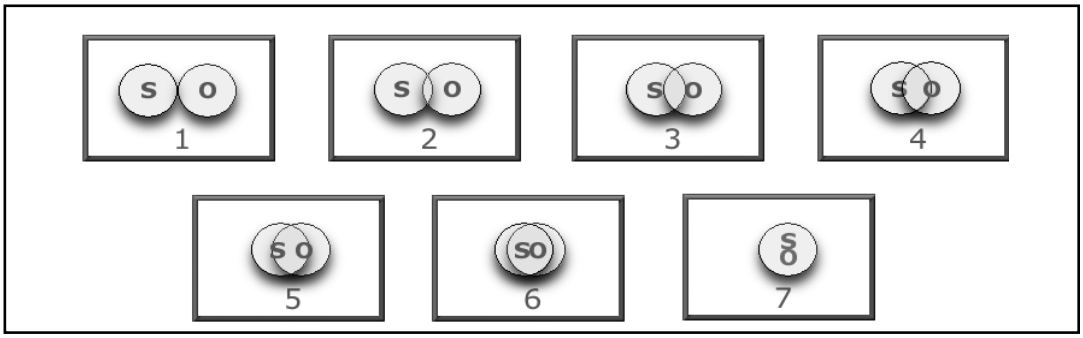

Figure 2. The Self–Other Merging scale contains seven pairs of circles. One circle represents yourself (S), and the other circle represents the other (O). Indicate which pair of circles reflects the relation between you and person you *just played the game with / will play the game with* best.

Results and discussion

We conducted an ANOVA to verify whether pro-socials and pro-selfs have a different perception of the closeness of their relationship with the anonymous interaction partner in the Ring Measure. Results indicated this is the case, $F(1, 98) = 18.32$, $p < .01$. Pro-socials indicated to feel closer ($M = 4.52$, $SD = 1.30$) than pro-selfs ($M = 2.99$, $SD = 1.74$). An alternative, continuous measure for SVO consists of using the vector angle. Higher numbers indicate a larger tendency to be pro-social. Therefore we can calculate a correlation between this vector angle and closeness. That correlation was significant, $r(100) = .48$, $p < .01$, indicating again that a higher tendency to behave pro-socially is associated with perceiving the relationship with an anonymous interaction partner as closer.

In this study we verified the first part of our model (arrow 1 in Figure 1), and found that SVOs indeed represent chronic differences in the perceived closeness with an anonymous interaction partner.

Study 2

In study 2 we tested whether level of deliberation (manipulated with a cognitive load task) moderates the effect of SVO on DG giving. Our model predicts that when level of deliberation is low, people base their donation decisions in DGs on their SVOs. If level of deliberation is high, however, dictators will analyze the situation more elaborately and look for reasons why they can reduce donations and still consider themselves fair and just people. The intuitive system of pro-socials anchors on higher donation sizes, compared pro-selfs, in step 1, so their decisions will be affected by the deliberation phase to a larger extend. Therefore we expect an interaction effect between deliberation and SVO.

Method

Participants and design

The participants were 160 undergraduate students (64 male, 96 female), for partial fulfillment of a course requirement. The experimental design included two between-subjects factors. These were SVO (pro-social versus pro-self) and level of deliberation (cognitive load versus no cognitive load). The dependent measure was the number of 20 cent coins donated in a DG (ranging from 0 to 5).

Procedure and Materials

Participants came to the lab in groups of eight and were seated individually in front of a computer screen in semi-closed cubicles. After a short introduction to the procedure they were expected to follow in the next hour, they completed the DG. Then, after 25 minutes of unrelated filler tasks, they completed the Ring Measure of Social Values.

The instructions for the DG appeared on the computer screen. Participants learned they were to keep any money they gained from these transactions. Then followed the deliberation level manipulation, for which we used a cognitive load task. Half of the participants were instructed to remember a random seven digit number (5684524); the others remembered an easier, structured sequence of seven digits (1234567). Then participants received five coins of € .20 and were asked to divide these between themselves and their interaction partner. Finally, they were asked to reproduce the number they had to remember. The Ring Measure was identical to the one in Study 1.

Results

Seventy participants (43.8 %) could be identified as pro-socials and 85 (53.1 %) could be identified as pro-selfs. The SVO of five participants (3.1 %) could not be identified because they had an orientation vector of exactly 22.5°. Five additional participants (3.1%) were discarded from further analysis because their consistency score was lower than 60%. This way, 150 observations (70 pro-socials and 80 pro-selfs) remained for further analysis .

An ANOVA revealed a significant main effect of SVO on the number of coins donated ($F(1, 146) = 7.92$, $p < .01$). Pro-socials ($M = 2.15$, $SD = .96$) donated more than pro-selfs ($M = 1.68$, $SD = 1.08$). We did not find a main effect of cognitive load, $F < 1$. The main effect of SVO was, however, qualified by a significant interaction effect of SVO and deliberation level ($F(1, 146) = 7.10$, $p < .01$). As expected, we found a significant effect of SVO under cognitive

load conditions, (F(1, 146) = 14.52, p < .01), with pro-socials (M = 2.45, SD = .95) donating more than pro-selfs (M = 1.53, SD = .97). Under no load conditions, we did not observe differences between pro-socials (M = 1.85, SD = .91) and pro-selfs (M = 1.83, SD = 1.20, F(1, 146) < 1). After deliberation, in the no load condition, pro-socials donated significantly less than in the condition with cognitive load (F(1, 146) = 5.91, p < .01). Donations by pro-selfs did not significantly differ between the load and the no load condition (F(1,146) = 1.69, p=.20).

Discussion

The results in this study confirmed that SVOs represent automatic, intuitive judgments in situations of interdependence. When we imposed a cognitive load, participants did not proceed further than step 1 and followed their moral intuition: Pro-socials donated more than pro-selfs. When level of deliberation was high, however, participants proceeded to a second phase in which they corrected their initial inclination and seemed to generate justifications for reducing the number of coins donated. This process mainly influences pro-socials, as they anchored on a high amount in step 1. When they deliberated their choice, the effect of their SVO was overruled and they donated as little as pro-selfs. These pro-selfs had anchored their decisions at a low number of coins in step 1. Apparently they do not deem it appropriate to donate even less in the deliberation condition. We attribute this to a floor effect.

Study 3

Our full model states that SVO effects in step 1 are mediated by perceived interpersonal closeness with the anonymous interaction partner. In a second phase, in which one deliberates his or her choice more elaborately, one looks for reasons to reduce the donation (D. T. Miller, 1999). In the previous study we showed that in such a case, the effect of SVO is overruled. Therefore, we predict that if we run an identical design like the one in Study 2, a measure of interpersonal closeness should mediate the effects of SVO in low deliberation conditions but not in high deliberation conditions.

Method

Participants and design

The participants were 107 undergraduate students (36 male, 71 female), for partial fulfillment of a course requirement. The experimental design was identical to that of the previous study. We added an interpersonal closeness measure: the Inclusion of the Other in the Self Scale (Aron et al., 1992).

Procedure and Materials

Participants came to the lab in groups of eight and were seated individually in front of a computer screen in semi-closed cubicles. After a short introduction to the procedure they were expected to follow in the next hour, they completed the DG. The only difference between this version and the one in Study 2 is that participants now received 11 coins of € .10 instead of 5 coins of € .20, to increase the potential variance in the behavior. The manipulation of cognitive load was identical to the one in Study 2.

After 25 minutes of unrelated filler tasks, respondents completed the Ring Measure of Social Values and the IOS scale. Half of the participants completed the Inclusion of the Other in the Self Scale before answering the 24 items of the Ring Measure, and the other half did so afterwards. We did not find any effect of the position of this measure, so it will not be considered in further analyses.

Results

Of 107 participants, 36 could be identified as pro-social (33.6 %) and 71 as pro-self (66.3 %). Five participants (4,7 %) were discarded from further analysis because their consistency score was lower than 60. This way, 102 observations (34 pro-social, 68 pro-self) remained for further analysis.

Replicating Study 1, an ANOVA indicated that SVO was related to perceived interpersonal closeness, $F(1, 100) = 16.70$, $p < .01$. Pro-socials indicated to feel closer to an unknown interaction partner ($M = 3.76$, $SD = 1.76$) than pro-selfs ($M = 2.50$, $SD = 1.31$). Further, we replicated the interaction effect of Study 2 ($F(1, 98) = 5.50$, $p < .02$). Under load, pro-socials ($M = 5.50$, $SD = .89$) gave more coins than pro-selfs ($M = 3.56$, $SD = 2.87$, $F(1, 98) = 6.87$, $p < .01$). After deliberation, in the no load condition, we did not find an effect of SVO ($F<1$). Donations of pro-socials decreased after deliberation ($M = 3.78$, $SD = 2.21$), compared to the load condition ($F(1, 98) = 4.31$, $p < .04$). Donations of pro-selfs did not differ between load conditions ($M_{\text{no load}} = 4.22$, $M_{\text{load}} = 3.56$, $F(1, 98) = 1.27$, $p = .26$). Neither the main effect of SVO ($F(1, 98) = 2.16$, $p = .15$) nor the one of cognitive load ($F(1, 98) = 1.09$, $p = .30$) was significant.

To verify whether interpersonal closeness mediates the effect of SVO on donations in the load condition, but not in the no load condition, we used the bootstrapping procedure of Preacher, Rucker and Hayes (2005)[3]. The OLS regression model indicated that SVO (with 0 for prosocials and 1 for proselfs) was related to interpersonal closeness ($t(100) = -4.09$, $p < .01$).

[3] We used this procedure instead of the test of mediation proposed by Baron and Kenny (1986) because it allows us to test the predicted mediated moderation directly.

The interaction effect of closeness and load on number of coins donated was significant ($t(97) = -2.78$, $p < .01$). Under load, the bootstrapped estimate of the indirect effect of SVO on number of coins donated, via interpersonal closeness, was significant with 99% confidence. The correlation between closeness and number of coins donated was significant, $r(48) = .45$, $p < .01$. In the no load condition, the indirect effect was not significant, $p = .52$. In this case, closeness was not related to the number of coins donated ($r(54) = -.09$, $p = .54$).

Discussion

We provided evidence for our hypothesis that the automatic effect of SVO is at least partly due to a differential perception of the closeness of one's relationship with an anonymous interaction partner. When we provoked intuitive reactions to the interdependence situation by imposing a cognitive load, participants anchored their decisions according to their SVO. The effect was mediated by the perceived closeness of their relation with the receiver. However, when they deliberated their answers more elaborately, pro-socials reduced the size of their donation, to a level equal to that of pro-selfs. In this condition perceived closeness was not related to the number of coins passed through. Apparently, when dictators have sufficient cognitive resources at their disposal to deliberate their decisions, the salience of immediate self-interested concerns motivates them to build a case for pursuing these self-serving tendencies, which overrules the effects of closeness.

Study 4

In this study we want to provide further evidence for our model. Specifically, we will test our hypothesis that perceived closeness influences donation behavior, but only when the decision is made intuitively (i.e. under load). In the previous studies we measured SVO and showed that its influence on donation behavior is mediated by perceived closeness. However, it remains possible that perceived closeness is only a proxy of the process that links SVO to donation behavior (Spencer *et al.*, 2005). To further corroborate the causal role of closeness, we manipulated it. We did so by identifying the receiver in a DG as a person who was either similar or dissimilar to the dictator with respect to the daily activities he or she engages in. We expect participants to feel closer to people who have a similar lifestyle. Further we predict that manipulated interpersonal closeness should influence donation amounts only when deliberation is constrained and choices are made in an automatic and intuitive way. If deliberation level is higher we expect donations of those who feel closer to the receiver to be as low as donations of those who feel more distant to the receiver. Therefore we predict an interaction effect between manipulated closeness and cognitive load, analogous to the interaction effects of Study 2 and 3 between SVO and cognitive load.

Method

Participants and design

The participants were 169 undergraduate students (43 male, 126 female). They were paid 6 € for participating one hour in a series of studies. The experimental design included two between-subjects factors: interpersonal closeness (distant versus close) and cognitive load (load versus no load).

Procedure and Materials

Participants came to the lab in groups of eight and were seated individually in front of a computer screen in semi-closed cubicles. After a short introduction, they started with a 15-item questionnaire. Items probed how often participants engaged in certain leisure and other activities, like how often they watch the news, go to the movies, go shopping, buy CD's, engage in sports, and how much they spend monthly using their cell phone. After 15 minutes of filler tasks they played a DG. Instructions were mostly identical to the ones used in Study 3, apart from the identification of the interaction partner. Instead of being explained that they would play with an anonymous other person participating with the same session, they learned that they would play with that participant whose answers on the 15-item questionnaire resembled their own answering profile most (Close condition) or least (Distant condition). Cognitive load was manipulated in the same way as in previous studies.

Results

We conducted a 2 (closeness) by 2 (cognitive load) ANOVA. We found a main effect of the closeness manipulation (M_{close} = 4.56, $M_{distant}$ = 3.88, $F(1, 165) = 6.46$, $p < .01$), but not of cognitive load ($F(1, 165) = 2.77$, $p = .09$). This main effect was qualified by a significant interaction, showing exactly the same pattern as the one in Study 2 and 3 ($F(1, 165) = 7.27$, $p < .01$). In the cognitive load condition, we found a significant effect of our closeness manipulation ($F(1, 165) = 12.06$, $p < .01$), showing that those in the Close condition (M = 5.15, SD = 1.48) gave more coins than those in the Distant condition (M = 3.74, SD = 1.85). After deliberation, there was no effect of Closeness (M_{close} = 3.98, $M_{distant}$ = 4.02, $F < 1$). Those in the Close condition gave significantly less (M = 3.98, SD = 1.84) after more deliberation (i.e. in the no load condition) than when under load ($F(1, 165) = 9.00$, $p < .01$). We found no effect of deliberation level on participants in the Distance condition, $F < 1$.

Discussion

We provided further evidence for the two step process of decision making in a DG. In a first step, dictators anchor on what they think is a fair amount to give, or their moral intuitions. Manipulating interpersonal closeness influenced the amount they consider to be fair. In a second, more deliberate step they try to make a case for the alternative intuition, the pursuit of immediate self-interest. This only influenced those who feel close to their interaction partner, as those who feel distant anchored on a low number to begin with, and seem not to deem it appropriate to donate even less. This implies that manipulating one's perceived relationship with his or her interaction partner can be an efficient tool to promote pro-social behavior.

General Discussion

In this paper we provided evidence for four facts. First, we showed that SVOs represent automatic, intuitive tendencies towards cooperation or defection in social dilemmas. Second, decision making in D(O)Gs follows a two-step process. Dictators first anchor their decisions according to their SVO (their moral intuitions), and in a second step they look for justifications to reduce their donations (Miller, 1999). Third, the effects of SVO are mediated by the perceived closeness of one's relationship with an (anonymous) interaction partner. Fourth, it is possible to promote pro-social behavior by manipulating perceived interpersonal closeness.

A two-step decision model in anonymous Dictator Games

In line with dual-process theories of cognition (Chaiken and Trope, 1999), we hypothesized and found that when deciding on a donation amount in a DG, dictators engage in a two-step process. First, they anchor their allocations according to their moral intuitions, which are captured by the SVO concept and driven by perceptions of interpersonal closeness. This perception of social distance is, at least partly, responsible for SVO effects. In a second step, dictators adjust these anchored amounts in a self-serving direction. Imposing a cognitive load will stop them from proceeding further than step 1. If no cognitive load is imposed, predictive effects of SVO and interpersonal closeness are suppressed, because dictators engage in a search for justifications to reduce donation sizes, independent of perceived interpersonal closeness. We found that interpersonal closeness was not related to the number of coins donated in the no load condition of Study 3 and that manipulated closeness did not lead to increased donation sizes when participants were not cognitively loaded in Study 4.

Other two-step models

We decided to use the DG as a measure for cooperation because of its high ecological validity. Most real life social dilemmas do not provide clear indications about what would constitute a fair contribution. Additionally, an individual's contribution in real life dilemmas is spread over such a large population that the benefit of a contribution for the self is negligible. These characteristics are present in the DG, unlike in resource or public good games, for example. Therefore we expect the decision process we uncovered in this paper to resemble the one in real life interdependence dilemmas more closely than the process guiding decisions in most other economic games. For example, Roch et al. (2000) found that in resource games, participants anchor on their fair share in a first step, and adjust their choices according to their SVO in a second step. Another anchor and adjustment process is found in van den bos et al. (2006). These authors found that people judge advantageous inequity to be more satisfying when cognitive processing is reduced, compared with the situation in which it is not reduced. They concluded that judging selfish advantage is automatic (step 1) whereas taking fairness concerns into account requires cognitive resources (step 2). However, they did acknowledge that the relation they found between preferences and fairness might be dependent on specific conditions and other models of preferences and their adjustment processes might be applicable in other situations. In this paper, we have found such an alternative model of preferences and adjustment. Several differences between their decision situation and ours may be responsible for the alternative decision making process. In their case, participants judged how satisfying a certain resource distribution was, whereas we asked participants to decide on such a distribution. These two are likely to activate different mental concepts and different types of evaluations. Allowing dictators to decide on the distribution provides them with a certain power, which participants in the studies by van den bos et al. (2006) did not have. Our intention was to provide insight into the decision making process in large-scale dilemmas. Two aspects of decision making in N-person real life dilemmas, the absence of objective indications for fair decisions, and the fact that benefits of contributions are negligible for the self, motivated our choice for the DG. We agree with van den bos et al. (2006) that future research should further specify models related to people's preferences and their adjustment processes. It should search for the nature of the moderators that determine which of the models is more appropriate in a certain social dilemma situation.

Generalization to real life dilemmas

In our studies, we introduced an artificial manipulation to provoke intuitive judgments. One could wonder whether the predictive effect of SVOs, as a measurement of moral intuitions, generalizes to real life situations. We would argue it does, for several reasons. First, previous research has provided empirical proof, as SVOs have been used to predict choices

between traveling by public transport and taking one's own car (Van Lange et al., 1998; van Vugt et al., 1996), willingness to pursue the goals of an organization one belongs to at a personal cost (Nauta et al., 2002), willingness to sacrifice in close relationships (Van Lange et al., 1997a), helping behavior (McClintock & Allison, 1989), and intentions to behave pro-environmentally (Gärling et al., 2003; Joireman et al., 2001). Second, it has been argued that in most situations in our daily lives a large number of stimuli compete for our limited cognitive resources and behavior is therefore often executed rather automatically (Bargh & Thein, 1985; Bargh *et al.*, 1994; Gilbert & Osborne, 1989). Additionally, in interdependence situations we are often required to react very quickly, which promotes intuitive decision making. The decision whether to stop to talk to a street campaigner who, you know, will ask for a donation for charity, or decisions to comply with a request for a favor from a colleague are usually made in a split second, which precludes people from engaging in a reasoning process. Third, intuitions also guide behavior in an indirect way. They have an effect on information retrieved from memory during more elaborated reasoning (Bower, 1981) and in many cases facts are bended to fit beliefs rather than the other way around (Kunda, 1990; Most *et al.*, 2001). Fourth, the transparent nature of gains and losses in the DG might be an artificial situation which stimulates contemplating the decision at hand. In real life situations pay-off structures might not be as clear, discouraging cognitive analysis.

Public policy implications

Our findings provide some public policy suggestions regarding the promotion of pro-social or socially desirable decision making. Policy strategies could deal with either or both phases of the decision process. Regarding the intuitive phase, we propose three ways for action.

First, our studies suggest that it is possible to *manipulate people's intuitive judgments* in decision situations. SVOs seem to be one such dimension of moral intuitions. We manipulated these intuitions through influencing decision makers' perceived closeness of their relationship with the interaction partner. Future research should examine whether this effect can be generalized to situations in which there is not a single interaction partner, but rather a whole community, like in real life social dilemmas. Furthermore, it should be examined whether SVO as a measure for moral intuitions predicts decisions in other domains. It would be interesting to investigate which are the optimal moral intuitions to trigger in specific areas of behavioral management. For example, in the context of promoting pro-environmental decision making one could use a social labeling technique to favor people to perceive themselves as a pro-environmental person (see Manuscript II). If it is possible to influence such self-perceptions, they are likely to translate into pro-environmental intuitions which affect subsequent environmental behavior.

Second, policy makers could attempt to influence the type of activated intuitions by manipulating interpretations of the decision situation. Spellman and Holyoak (1992) showed that making people apply a different metaphor to think about a situation is a good persuasion principle to influence moral decisions. For example: If Saddam Hussein is like Hitler, it follows that he must have been stopped. But if Iraq is Vietnam, it follows that the United States should not have become involved (Haidt, 2001). In the case of environmental issues, for example, educating people about the imminence of the threat of global warming could influence their intuitions. If people assume that since global temperature has fluctuated during history, they may conclude there is no reason for concern, or at least there is nothing we can do about it. Consequently, they will not develop moral intuitions motivating them to behave pro-environmentally. On the other hand, if these people learn that present CO_2 level in the atmosphere are immensely higher compared to its usual range of fluctuation and that CO_2 levels are positively related to global temperature, they may be convinced that taking measures is urgent and develop an intuition to behave pro-environmentally. Especially if these environmental issues are framed in terms of personal gains and losses, individuals might be more motivated to engage in preservation efforts.

Third, Moore and Loewenstein (2004) argued for setting up education and training methods which encourage strong social values to become internalized. This way moral values, rather than self-interest, would become automatized. These authors recognize, however, that in our Western society, this promises to be an arduous task. Progressively, self-interest has become to be embraced as a worthy goal. Because of confusing *is* with *ought*, the idea that people do maximize self-interest has developed in the idea that they *should* pursue self-interest (Frank *et al.*, 1993). People have become to perceive the pursuit of self-interest as a social norm rather than as egoism, a morally inferior choice (D. T. Miller, 1999).

Policy efforts directed at step 2 of the decision process should make it more difficult to find justifications for adjusting one's contribution in a self-serving direction. The use of social norms has shown to be efficient in this respect (Cialdini, 2003; Cialdini et al., 1990). For example, a convenient justification for not following one's intuition to reduce alcohol consumption is the (mis)perception that others drink a lot as well (Lewis & Neighbors, 2006). A solution could be to (over)correct these perceived social norms. By showing that other people do not drink much at all, on average, this justification is removed. By communicating examples of other people pursuing the collective well-being, the availability of justifications for an individual not to do so is reduced.

Manuscript II

Whatever people say I am that's what I am: Social labeling as a social marketing tool

Abstract

In this paper, we present a procedure to apply the social labeling technique as a social marketing tool. With four studies, we tested its potential for the promotion of pro-environmental consumer behavior. The procedure first provokes an environmentally friendly act and, subsequently, invites the target to attribute that behavior to his personal values, by communicating a social label. If successful, consumers will act upon the resulting self-perception as an environmentally friendly person. Results indicated that social labeling is more successful when cognitive resources are distracted, either at the moment of processing the label, or at the moment of making decisions related to the content of the label. Second, we found that the social label not merely guides subsequent decisions, but motivates people to re-interpret their previous behavior.

Assuring a sustainable future requires us to use earth's resources cautiously. Consumer's choices and post-consumption behaviors have a considerable impact on, for example, energy use, toxic emissions, and waste production (Daly, 1996). A continued study of behavioral management techniques to promote pro-environmental consumer behavior is warranted.

Several researchers have identified the decision whether or not to behave pro-environmental as a social dilemma (e.g., Cialdini et al., 1990; van Vugt et al., 1996; Wiener & Doescher, 1991). Choosing to conserve the environment is considered to be a pro-social behavior because it serves the interest of society in the long term. On the other hand, behavioral costs associated with this type of actions, like money, time, effort, and inconvenience (Follows & Jobber, 2000; Pieters, 1989; Pieters et al., 1998; Thøgersen, 1994a) tempt individuals to make selfish choices. It is the responsibility and the challenge of social marketers to persuade individuals to act in the benefit of society. In the social marketing tradition, the strategies chosen for this aim typically rely on the assumption that it is necessary to provoke some active contemplation of behavioral alternatives (Andreasen, 1995). Wiener and Doescher (1991) propose, for example, that consumers need to be convinced that the collective goal is worth pursuing and that it is likely to materialize. Further, they claim that social marketers should emphasize the importance of each individual's contribution. However, the traditional social marketing approach has not always met with unequivocal success. We propose another, complementary strategy, which consists of subtly activating the right (environmental) values and goals at the appropriate time. We will present the social labeling technique, which builds on this principle, as a promising method for promoting pro-environmental conduct. In four studies, we tested the possibilities and scope of this procedure.

The Traditional Social Marketing Approach

Social marketers generally use two types of persuasion strategies: the provision of incentives, and of information that should motivate the target audience to contemplate the consequences of their behavioral options. Both strategies have their merits, but are associated with possible backlash effects.

The provision of incentives has proven its effect in the short term. However, it has been argued that it is associated with two types of drawbacks. First, incentives are costly and their effect tends to disappear as soon as the incentive system is withdrawn. Second, providing incentives to individuals who were already intrinsically motivated to display the requested behavior may undermine this intrinsic motivation (Cameron & Pierce, 1994; Frey &

Oberholzer-Gee, 1997; Ryan & Deci, 2000; Thøgersen, 1994b). In that case, withdrawing the incentive system may even result in a drop of the occurrence of the desired behavior below the initial baseline (Kahan, 1997).

Informative, argument-based pro-environmental messages are an essential tool to educate and sensitize a target audience on important issues. Caution is required, however, as research literature documents several mechanisms through which these messages might backfire. First, targets may show psychological reactance (Brehm & Brehm, 1981; Reich & Robertson, 1979); people are motivated to counter a perceived threat to their freedom of personal choice by doing the opposite of what the persuasion message suggests. Second, messages using a fear appeal aim at motivating people to think about possible disastrous consequences of non-ecological behavior. Provoking extreme fear, however, might lead to a process called fear control. Extreme fear is an aversive state, which individuals may try to evade by minimizing the perceived risks through source derogation, defensive denial, or wishful thinking. Successful fear reduction strategies will lead to a decreased likelihood of engaging in corrective action to avoid the undesirable consequences (Witte & Allen, 2000). Third, social marketing messages discouraging non-desirable behavior may hold a "descriptive norm meta-message" (Cialdini, 2003). Saying that "a problematic behavior needs urgent attention because it is very prevalent" implies that it *is* a common behavior. Research on descriptive norms (Cialdini et al., 1990) suggests that simply *doing what everyone else is doing* is often preferred over *doing the right thing.* Therefore such a message, ironically, might be interpreted as a justification to keep on engaging in the undesirable behavior. Fourth, these messages may elicit a state of cognitive dissonance (Festinger, 1957), as people experience a contradiction between what they think they should be doing and their actual behavior. People might reduce dissonance by acting upon the (pro-environmental) value. However, cognitive dissonance may be resolved via other routes that do not result in the desired behavioral change. The least effortful way to reduce dissonance is not to change behavior, but to assimilate one's behavioral and moral values regarding environmentalism to the (less pro-environmental) behavior (Albarracín & McNatt, 2005). Alternatively, avoiding dissonance may even be achieved by simply ignoring the request. Fifth, making people think about why they *should* act ecological, makes them think about why they *should not* as well (Warlop et al., 2003, p. 205). Making people think about public benefits will be likely to make them consider the private costs of the same behavior as well (Albarracín & Wyer, 2001). Additionally, this will also lead to thinking about the private benefits of alternatives. As private costs and benefits are more salient than public costs and benefits (Rothschild, 1979), such a deliberation process is likely to end with an individual choosing the selfish option (i.e., the non-environmentally friendly behavior).

Values versus Behavior

Because of the aforementioned reasons, promoting pro-environmental (consumer) behavior has proven to be a tough task with limited success. Notwithstanding, social marketers have been successful at creating awareness of environmental problems and many people have adopted ecological preservation values (EC, 2005). Thus has developed a value-behavior gap (Kollmuss & Agyeman, 2002; Mainieri et al., 1997; Oskamp et al., 1991). It seems that the traditional social marketing actions can not have more ambition than to cultivate these preservation values. Another approach, then, is necessary to translate these values into preservation behavior.

Many consumer choices are executed as part of a continuous stream of behaviors which are executed fairly automatically, based on minimal informational input (Alba et al., 1991; Warlop et al., 2003). We consider low-involvement choices with an environmental impact to be no exception. In a decision situation, it will be the value that is temporarily most salient and perceived to be relevant that determines the behavioral choice. Construal level theory (Liberman & Trope, 1998; Trope & Liberman, 2000) predicts that positive beliefs about a goal or value are more readily accessible in long-term decisions, whereas negative beliefs related to that goal (e.g., the difficulty to obtain it) predominate in short-term decisions. When challenged to contemplate the environmental impact of behavior alternatives by social marketing messages, one thinks abstractly about future behavior. In this case, positive beliefs related to conservation behavior are likely to be salient. This may lead to making personal resolutions to act upon this value in the future. In the here and now of making a decision, however, the benefits of the concrete, lower-order goal of serving the self-interest is likely to be more salient than the higher-order preservation goal. In a heuristic decision process, based on minimal information input, these proximal and salient personal consequences are more likely to be spontaneously on the top of one's mind. An alternative social marketing approach, then, could consist of making the relevant (pro-environmental) thoughts more likely to be accessible *at the moment of decision making*.

We will test the potential of the social labeling technique for this aim. People prefer their actions to be consistent with their self-perceptions (Wells & Iyengar, 2005), and therefore we suggest that activating consumers' self-perceptions as environmentally friendly people should result in more ecological decisions.

Social Labeling

Social labeling is a persuasion technique that consists of providing a person with a statement about his or her personality or values (i.e., the social label) in an attempt to provoke behavior that is consistent with the label. The technique is believed to rely on a self-perception process and the fact that people's (interpretation of) past behavior guides future action (Albarracín & McNatt, 2005; Burger & Caldwell, 2003; Ouellette & Wood, 1998; Tybout & Yalch, 1980). According to Bem's (1972) self-perception theory, people get to know themselves much like they develop a perception of values and traits of others: by observing behavior and attributing it internal or to external influences. When they "see" themselves engaging in a certain act, for no apparent external reasons like incentives or social pressure, that behavior is internally attributed. It informs the individual about his or her personality traits and values. We propose that social labels, provided by others, can be an important source of information about an individual's traits and values as well, and can guide future decisions (Strenta & DeJong, 1981). According to this reasoning, environmental decisions are based on the implicit question "Am I the type of person who usually chooses the pro-environmental option?" (Burger & Caldwell, 2003; Vaidyanathan & Praveen, 2005). Providing a label offers an appealing answer to that question, as it involves minimal cognitive effort.

An early example of the effect of social labels is offered by Miller, Brickman and Bolen (1975). Describing a group of fifth-graders as tidy was more efficient in making them keep their classroom free of litter than an explicit plea for tidiness. Similarly, Allen (1982) showed that labeling a certain social group ("American consumers are willing participants in solving the energy problem") in television adds lead to increased intentions to engage in energy-efficient consumption compared to a persuasive appeal. Labeling has shown to be especially effective when (1) it follows recent behavioral evidence, as people seek confirmation for their attributions before changing their attitudes (Carol A. Scott & Yalch, 1980), and (2) it is consistent with the initial self-schema of the target (Tybout & Yalch, 1980). Kraut (1973) showed, for example, that individuals who were labeled as generous after making a donation were more likely to donate to a second charity two weeks later, than those who were not labeled. Tybout and Yalch (1980) provided false feedback on a survey, which supposedly measured interest in politics and elections. Participants, who heard they scored above average, were more likely to actually vote in an election a week later, than those said to be scoring average, but this effect only showed for participants who already had an initial voter self-schema. This led them to conclude that "strategies to influence behavior, like labeling, are likely to be particularly effective in situations where individuals have an initial interest in the focal behavior" (Tybout & Yalch, 1980, p. 412). We indicated before that research has observed a growing interest in environmental consumption over the past years (EC, 2005). Most people, therefore, have a self-schema, which includes the value of conserving the

environment. This suggests that labeling should be an effective technique to promote environmental consumer behavior.

An Alternative Labeling Procedure

The foot-in-the-door procedure, which also relies on a self-perception process, requires that individuals are targeted personally (Carol A. Scott, 1977). This limits the size of the audience that can be reached. In this paper, we will examine whether labeling is applicable in a mass-media approach. The increase in the size of the audience that can be addressed is at the expense of a loss of control and flexibility in addressing the individual. Unlike the foot-in-the-door procedure, which permits individuals to draw their own conclusions from manipulated behavior, a label actively proposes a certain (re-)attribution of previous behavior.

Allen (1982) included labeling messages in video ads, which targeted an entire target community at once. The ads referred to certain energy conservation behaviors most Americans engaged in, like switching off lights and turning down thermostats. This allowed him to link the label ("American consumers are willing participants in solving the energy problem") to previous behavioral evidence, at least for those who actually engage in these behaviors. We propose a modified procedure, with a stronger link between the label and recent behavioral evidence, which should add to the strength of its effect, as discussed above (Carol A. Scott & Yalch, 1980). Additionally, the consumer might feel more personally addressed, which should increase the feeling that the label applies to him or her.

In a first step of the alternative procedure, the consumer is provoked to perform a certain pro-environmental act. This could be, for example, the purchase of an environmentally friendly variety of a product, like bio-products or propellant-free deodorant. In some cases this will require some type of external motivation, like a price promotion. In other cases, the consumer might simply prefer the environmentally friendly product, because of other product features than its environmental friendliness. For example, consumers might prefer the smell of a certain deodorant which happens to be propellant-free. In a second step, a social label is provided which attributes the purchase to the consumers' environmental values. For example, one could print a message on the packaging (e.g., "[brand X] – For those who care about their environment"). This procedure allows for repeated exposure of the label to the consumer, each time he or she uses the product. As explained before, the social label informs the individual about his or her (pro-environmental) personality traits and values, in this case about environmentally friendliness. It invites the consumer to attribute the ecological purchase to their value of caring for the environment. In this paper, we want to examine whether it is possible to provoke an internal re-attribution of an externally motivated behavior. Internally

attributed behavior is expected to lead to persistence of this type of behavior (Deci & Ryan, 1991).

Distraction Effects

Previous demonstrations of the labeling technique, in which the label followed a manipulated behavior, were mostly extensions of the foot-in-the-door procedure. After a first, modest request for help, targets who were labeled as helpful showed more compliance with a second, larger request for help than those who did not receive such a label (Crano & Sivacek, 1982; Gorassini & Olson, 1995; Hornik, 1988; Stimpson & Waranusuntikule, 1987). In the mentioned studies, attributing the helping behavior in the first request to the self is very plausible. Even without receiving the label, participants would have attributed their compliance to their helpfulness. The label merely confirmed this interpretation and made it more explicit. In our case, however, the social label proposes a *re-attribution* of a first behavior (Snyder & Uranowitz, 1978). Referring to our example, rather than attributing the provoked purchase to the lower price or the superiority of a product, the consumer is invited to attribute the choice to his or her pro-environmental values. We will test the labeling procedure's potential at convincing consumers to re-attribute their initial behavior.

Consumers, who are aware of the actual determinants of their purchase, might realize the label is some sort of manipulation attempt, and reject its content (Burger, 1999). In order to maximize the probability that the target accepts and acts upon the label, it should be communicated in such a way that it minimizes activation of persuasion knowledge (Friestad & Wright, 1994). In the case that information processing is constrained because people are under cognitive load, under time pressure, or distracted, it is harder to engage in such reflection (R. S. Baron *et al.*, 1973; Gilbert *et al.*, 1990). This implies that social labeling messages may have more impact when they are accompanied by some form of distraction (Bither, 1972; Festinger & Maccoby, 1964; Kumkale & Albarracín, 2004; Rosenblatt, 1966). Campbell and Kirmani (2000) observed that when their participants were cognitively "busy" (i.e., when they had to perform other simultaneous and cognitive demanding tasks), they were more prone to judge a salesperson giving a promotional talk as sincere, and thus be sensitive to his arguments. This effect even holds when the ulterior (persuasive) motive of the salesperson is highly salient (Bosmans & Warlop, 2005). This suggests that if, at the moment that the target receives the social label, cognitive resources are limited or directed elsewhere, the probability of accepting the label as a truthful self-description would increase, and hence would the impact of this information on subsequent decisions.

These effects might be accounted for by the literature on mindlessness in consumer decision making (e.g., Cialdini, 2001; Dijksterhuis *et al.*, 2005; Dolinski *et al.*, 2002; Langer,

1992). Research in this area proposes that complying with a request as a result of social influence techniques is often a rather automatic response, which is especially prone to occur under conditions of relative mindlessness. For example, based on dual process theories (Chaiken & Trope, 1999), Fennis, Das, and Pruyn (2004) showed that the Disrupt-Then-Reframe technique (Davis & Knowles, 1999) works because the disruption acts as a distractor. It induces mindlessness and reduces counter-argumentation. When cognitive resources are scarce, people are not capable of processing message characteristics carefully, and tend to rely on peripherical cues, like a social label (Chaiken, 1987; Petty & Cacioppo, 1986).

It seems reasonable to assume that these distraction conditions apply in the daily consumer context. Both the moments of purchasing and of using products, which carry the labeling message, are embedded in a continuous stream of mental activities. Either when coming across the social label while paying at the cash register and trying to remember where the car is parked, or when going over that day's appointments while applying deodorant in the morning, our limited cognitive resources are directed elsewhere. We expect the labeling procedure to work in common, cognitively demanding circumstances.

Overview of the Studies

In a first study we tested our alternative labeling procedure, and verified whether cognitive distractions facilitate the labeling effect. In Study 2 we tested our explanation for the distraction effect more directly: distraction prevents the activation of persuasion knowledge. It reduces contemplation on the veracity of the self-description the label provides. In this study, we also tested whether the social label merely acts as a guide for future decisions or whether it also provokes a re-attribution of the initial pro-environmental behavior. We went on to test whether the labeling effect generalizes to situations in which the cognitive impairment occurs *during* choice making choices rather than during the exposure to the label (Study 3) and to other types of cognitive impairments (Study 4).

Study 1

Allen (1982) tested the potential of social labeling for mass communication application. Like in that study, we compared the effect of providing a social label with that of a content-based persuasion message, which communicates arguments in favor of pro-environmental behavior. We predicted a superior effect of the social label compared to content-based persuasion messages. Rather than using a general label, addressing a community as a whole (Allen, 1982), we applied a more individualized approach which links the label to recent behavioral evidence. To do so, we used a task that provokes a pro-environmental choice that is, however, not driven by pro-environmental values but by a subtle external motivation. The

subsequently provided label suggested an internal re-attribution of that choice to personally held pro-environmental values. We hypothesized that the social label would be effective if the participants' cognitive resources are impaired or directed elsewhere at the moment of processing it. If they are not distracted, however, we predict that elaborate processing of the content of the social label will lead to its dismissal. Therefore we expect no effect of the social label in the condition where participants are not distracted.

Method

Participants and Design

One hundred and one undergraduate students (40 male, 61 female) were paid 6 € for participation in this study, which took about 50 minutes. Upon arrival in our lab, in groups from five to eight, they were seated in front of a computer screen in a semi-closed cubicle. The experimental design included two between-subject factors. These were communication type (label, explicit plea, and control) and cognitive load (load and no load).

Procedure and materials

TV-choice task

First, participants completed a TV-choice task on paper (adapted from Verplanken & Holland, 2002). This task was meant to provoke an environmentally friendly choice. We constructed a list of seven TV's, which were rated on seven attributes (Image quality, image quality in sunlight, sound quality, remote control quality, ecological aspects, ease of programming and speed of changing channels). This information was represented in a 7 by 7 brand-by-attribute matrix, see Figure 3. In the rows of the matrix the seven TV's were listed, represented with letters from A to G. The seven attributes were listed in the columns of the matrix. One of five possible symbols (--, -, 0, +, ++) evaluated every TV on every attribute. Above the choice matrix a short legend explained what the attributes referred to. The 'ecological aspects' attribute was explained to refer to electricity consumption and the degree to which the TV-set set contains polluting components and (non)recyclable materials. TV-set 'C' was superior on both image and sound quality. These dimensions were pre-tested (N = 54) as the most important features in the choice for a TV-set. Consistently, all participants chose this TV. Importantly, TV C was also rated best on 'ecological aspects' (++). This way, participants were provoked to make an externally motivated environmentally friendly choice.

TV-set	Image Quality	Image Quality in sunlight	Sound Quality	Remote Control Quality	Ecological Aspects	Ease of Programming	Speed of Changing Channels
A	+	– –	+	0	0	++	–
B	– –	0	+ +	+	–	0	+
C	++	0	+	+	++	+	+
D	+	–	– –	0	–	+	++
E	–	–	0	++	+	+	–
F	++	–	0	0	– –	0	–
G	0	+ +	– –	+	–	0	+

Figure 3. The TV-choice task

Manipulations of communication type and cognitive load

Subsequently, participants were randomly assigned to one of three conditions. Those in the labeling condition received feedback on their choice. This feedback communicated the social label. Instructions that appeared on the screen explained that the TV-choice task was used by an important consumer organization to identify different segments of consumers. For every possible TV-choice, a description was given of the typical consumer choosing that TV-set. The description for the specific TV a participant chose was highlighted. For TV C, the description said that the typical consumer choosing this option was 'very concerned with the environment, and ecologically conscious'. A second group, assigned to the explicit plea condition, read an explicit plea for ecologically conscious consumer behavior. Additionally, it provided some tips for reducing waste production and efficient recycling. A third, control group did not get any information in this phase.

Within each of the three groups, half of the participants were assigned to the cognitive load condition. The cognitive load task consisted of remembering a six-digit number (Gilbert *et al.*, 1988; Shiv & Fedorikhin, 1999). Participants were instructed to do so after entering the TV-set of their choice and before getting feedback. After reading either the social label, the explicit plea, or nothing at all, they were asked to recall the number they were supposed to remember. Five participants (5 %) failed to reproduce the correct number, and they were discarded from further analysis.

Dependent measure: the product choice task

After 15 minutes of unrelated filler tasks, participants completed a product choice task. This task consisted of making 10 product choices. Participants were presented with 10 product pairs: five filler pairs and five critical ones. In each critical pair, one product was a more environmentally friendly but more expensive alternative of the other. We asked participants to indicate which product they would pick if they were to purchase them now. The critical product categories were cookies (differing in the amount of plastic used for wrapping), kitchen paper, deodorants, (energy-efficient) lamps, and detergents. For eight product categories, the price

of the more environmental product was 1.05 € whereas the less environmental product cost 0.95 €. For the lamps, the prices were 1.50 € and 1.30 €, respectively, and for detergents, they were 1.40 € and 1.30 €, respectively. These prices were pre-tested in a different sample of the same student population (N = 34), by informing participants about the shop value of a certain object and asking them which (higher) price they would be willing to pay for a more ecological variant of that product. We used the median price mentioned for the ecological products in the choice task. The 10 product choices appeared in random order on the screen. We counted the number of environmentally friendly choices participants made on the five critical items, which constituted our dependent variable.

Results

We conducted a three (communication type: label, explicit plea, and control) by two (cognitive load) ANOVA. This revealed a significant interaction between communication type and cognitive load (F(2, 90) = 5.77; p < .01), and a marginally significant main effect of communication type (F(2, 90) = 2.86; p = .06), see Figure 4. As expected, planned contrasts revealed that within the no load condition, communication type had no effect (F < 1), whereas in the load condition, it had (F(2, 42) = 6.61, p < .01). Tukey pairwise comparisons showed that, under cognitive load, participants in the social label condition (M = 3.67) made more environmental choices than those in the explicit plea (M = 2.56, p < .02) and the control condition (M = 2.29, p < .01). We found no differences between the explicit plea and control group within the load condition (F< 1).

Within the social label condition, cognitive load (M = 3.67) led to more environmental choices than the absence of load (M = 2.53, F(1, 90) = 9.44, p < .01). Neither in the explicit plea condition (F(1, 90) = 1.44, p = .23) nor in the control condition (F < 1), we observed a cognitive load effect.

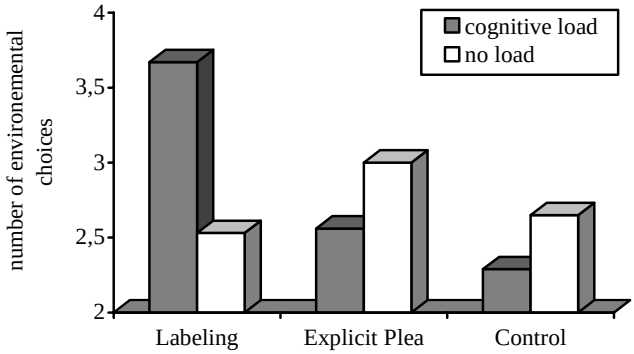

Figure 4. Number of environmental choices as a result of communication type and mental load conditions, Study 1

Discussion

We found evidence for cognitive distractions moderating the impact of a labeling procedure. Processing the label while cognitive resources are directed elsewhere resulted in using it as a guide in subsequent decisions. When cognitive resources were not limited, the social label did not have any effect. We assume that cognitive distractions, such as load, prevent the activation of persuasion knowledge, because it impairs reflection on the actual reason of the TV-choice. If that is true, then motivating participants to reflect on the actual reasons for the purchase, after receiving the social label when mentally distracted, should suppress the labeling effect. We will test this hypothesis in the next Study. The content-based persuasive message did not influence later decisions in any case.

Study 2

The aim of this study was to replicate the labeling effect of Study 1, and to provide additional insight in the process. We tested the hypothesis that cognitive distractions prevent the activation of persuasion knowledge because they impair reflection on the actual reason of the TV-choice. We used the same procedure as in Study 1, and added a factor. We asked half of the participants to reflect on the actual reasons for choosing the TV-set that they did. We asked them to indicate, after completing the TV-choice task and the subsequent manipulation, for each of the seven attributes on which the TV's were rated, how important it had been in making the TV-choice. Each attribute was given an importance-score on a 25-point scale. Additionally, we asked the other half of participants to do the same, but only *after* the dependent measure was completed. This allowed us to verify the extent of the impact of the social label: Is it merely a guide for subsequent decisions, or does it provoke an internal (re-

)attribution of the TV-choice? We dropped the explicit plea condition from the design, because it did not add extra information in the first study.

Method

Participants and design

One hundred fifty-eight undergraduate students received 6 € for participation in the experimental session, which lasted about 50 minutes. The experimental design included 3 between subject variables. These were communication type (social label versus control), cognitive load (load versus no load), and reflection (reflection on TV-choice versus no reflection).

Materials and procedure

Upon arrival in the lab, in groups of five to eight, participants were requested to take a seat in front of a computer screen in a semi-closed cubicle. First, they completed the TV-choice task. Four participants (2.5 %) did not pick the TV-set which scored superior on image and sound quality and were discarded from further analysis. Then we manipulated communication type and cognitive load in an identical way as we did in Study 1. Directly after these manipulations, half of the participants were asked to indicate to which degree each of the seven attributes, on which the TV-sets were rated, had determined their TV-choice, on a 25-point scale (ranging from *not important at all* to *very important*). We reasoned that this task elicits reflection on the initial TV-choice and would allow participants, who received the label under load, to realize what the actual reason was to choose the TV-set they chose. After 15 minutes of unrelated filler tasks, participants completed the product choice task. Finally, those participants, who did not indicate the importance of the seven attributes before, did so at the very end of the procedure.

Results

Product-Choice Task

We conducted a two (communication type: label versus control) by two (cognitive load: load versus no load) by two (reflection on TV-choice versus no reflection) ANOVA. This resulted in a significant three-way interaction ($F(1, 146) = 5.16$, $p < .03$)), see Figure 5. We replicated the results of Study 1 in the no reflection condition ($F(1, 146) = 8.84$, $p < .01$), see left panel of Figure 5. Here, the social label produced more environmentally friendly choices when communicated under load ($M = 2.94$) than in the no load condition ($M = 1.86$, $F(1, 146)$

= 9.07, $p < .01$). In the control condition, we did not observe an effect of cognitive load ($F(1, 146) = 1.28$, $p = .26$). Within the load condition, those participants who were labeled made more ecological choices than those who were not ($F(1, 146) = 13.49$, $p < .01$). Within the no load condition, there was no effect of communication type, $F < 1$.

As expected, allowing participants to reflect on their TV-choice suppressed the labeling effect. Within the reflection on TV-choice condition, the main effects and the interaction between communication type and load did not reach significant (all *F*s < 1), see right panel of Figure 5.

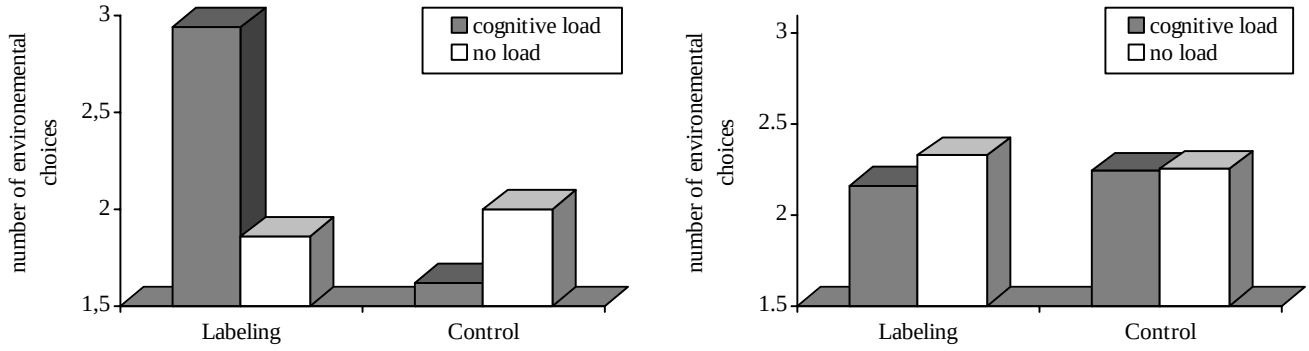

Figure 5. Number of environmental choices made. The no reflection condition replicated Study 1, left panel. Reflection suppressed the labeling effect, right panel (Study 2)

Ratings of Attribute-importance in the TV-choice

We calculated the relative importance attached to the ecology attribute, for those participants who indicated the importance of each of seven attributes at the end of the experiment. We divided the rating given to this attribute by the sum of the ratings given to the seven attributes. An increase in the importance attached to the ecology attribute, would mean that the manipulation was successful at suggesting a re-attribution of the TV-choice. We found an interaction effect ($F(1, 76) = 4.59$, $p < .04$) , see Figure 6. Within the labeling group, those who received the distracting load task rated the ecology attribute as more important for their TV-choice ($M = .15$) than those who did not ($M = .10$, $F(1, 76) = 4.41$, $p < .04$). Within the control group, there was no effect of cognitive load ($F < 1$). Under cognitive load, those who received the label rated the ecology dimension as more important than those who were not labeled ($M = .10$, $F(1, 76) = 6.39$, $p < .02$). Without load, there was no effect of communication type ($F < 1$).

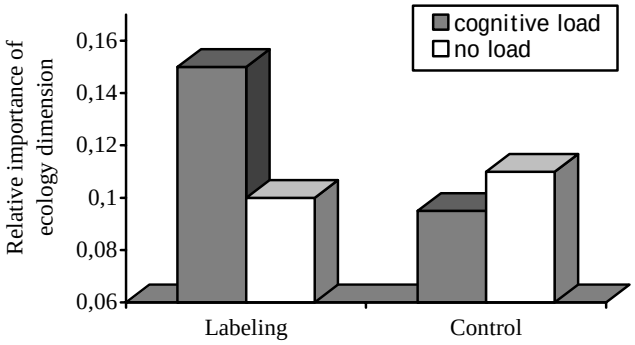

Figure 6. Importance attached to ecology-dimension, Study 2

Discussion

This study added more insight in the process of social labeling in two ways. First, we obtained support for our hypothesis that cognitive load facilitates the labeling effect because it reduces the activation of persuasion knowledge. Processing the label under load prevented the participants initially to question the truthfulness of the label. By making them reflect on their TV-choice immediately after receiving the label, however, we allowed the participants to correct for the re-attribution the label proposed. Second, the impact of the label appeared to extend beyond a mere self-perception process, to an active re-attribution of the initial TV-choice. The label influences the interpretation of previous behavior, and makes environmental values more salient (Alba et al., 1991; Snyder & Uranowitz, 1978). Several theories predict that the salience of certain values increases the probability of acting upon them (Albarracín & Wyer, 2001; Bem, 1972; Schwarz *et al.*, 1991). We have shown that it is possible to increase the salience of a certain value, in this case environmental friendliness, by suggesting to (re)attribute an externally provoked act to that motive.

Study 3

For practical purposes, it is important to know whether a social label can influence targets' behavior, even if it has been processed with full attention. We explore this possibility in this and the following study. Work on assimilation and contrast effects (Martin *et al.*, 1990; Meyers-Levy & Tybout, 1997) showed that whether possible counter-arguments regarding an issue will be retrieved later on, is determined by the availability of cognitive resources at the moment of retrieval. Findings of Schwarz and Bless (1992) and Meyers-Levy and Tybout (1997) claim that the same factors determine the effect of a contextual cue (e.g., the label), regardless of whether this influence occurs at encoding or at judgment (when retrieving the

cue). Therefore we predict that the label will be effective if participants are cognitively distracted at the moment of decision making, even if they processed the label with full attention. The persuasion knowledge that was activated at the moment of processing the label will not be recalled at the moment of using the label as a guide to make decisions. We verify this hypothesis in the present study. We replicate Study 1, changing one aspect in the design. In this study the cognitive load task is situated at the moment of making ecology-related decisions, and not at the moment of processing the social label.

Method

Participants and design

Eighty-six undergraduates participated in this study, and were paid 6 € for participation in an experimental session, which lasted about 50 minutes. We manipulated two between-subjects factors: communication-type (label versus control) and cognitive load (load versus no load).

Procedure and materials

First, participants completed the TV-choice task and were randomly assigned to one of two conditions. One group received the social label as feedback on their choice and the other group did not get any information. Six participants (7 %) did not choose the superior TV-set and were discarded from further analysis. After 15 minutes of unrelated filler tasks, participants completed the product choice task we used in Study 1 and 2. Orthogonally with the communication manipulation, we asked half of the participants to remember a six-digit number while making their product choices.

Results

An ANOVA revealed a significant interaction between communication and cognitive load ($F(1, 76) = 6.87$, $p < .01$), see figure 7. As predicted, participants in the labeling condition who made their choices under load ($M = 3.15$), chose more environmental products than those who were not cognitively distracted ($M = 1.91$, $F(1, 76) = 8.93$, $p < .01$). In the control condition we found no effect of cognitive load ($F<1$). In the load condition, labeling ($M = 3.15$) led to making more ecological choices than in the control condition ($M = 1.77$, $F(1, 76) = 9.91$, $p < .01$). In the condition without cognitive load, we did not observe a labeling-effect ($F<1$).

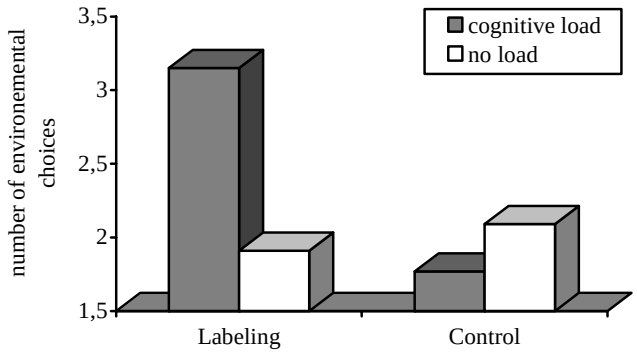

Figure 7. Product choices as a function of labeling and cognitive load conditions, Study 3

Discussion

As we predicted, distracting cognitive resources at the moment of making purchase decisions, allowed the labeling effect to emerge. This suggests that when cognitive resources are available, consumers recall the persuasion knowledge associated with the information provided by the label. Under load this recall seems to be suppressed. This finding implies that a labeling message should work, unless the consumer is fully focused on the task at hand, both while processing the label and while purchasing a product. If at any of both moments attention is distracted, persuasion knowledge is either not activated, or not recalled, and the social label will influence purchase decisions. We indicated before that most situations in our daily lives feature a large number of stimuli competing for our limited cognitive resources. Therefore we argue that cases, in which consumers are fully focused on both critical occasions in the labeling procedure, are rather exceptional.

Study 4

In this study, we tested whether the previous results would generalize to other types of cognitive distractions. Research on the relative impact of product attributes, differing in salience, on consumer decision making, has shown that both cognitive load (Shiv *et al.*, 2005) and repeated decision making (Bruyneel *et al.*, 2006) have similar effects. These situational aspects decrease the relative impact of cognitive product features (e.g., healthiness) on subsequent choices, through a process called ego-depletion (Vohs & Baumeister, 2004). This suggests that repeated choice making is an alternative procedure that reduces the availability of cognitive resources. In this study, we verified whether repeated choice making has a similar effect as cognitive load on the impact of the social label. We hypothesized that making repeated decisions would result in an effect of the labeling procedure.

Method

Participants and design

One hundred fifty-seven undergraduate students (65 men and 91 women) participated in the experimental session, which lasted about 50 minutes, in return for 6 €. We included one between subjects factor (communication type: label versus explicit plea) and one within subjects factor (three decision rounds) in the design.

Procedure and materials

Manipulation

Like in previous studies, participants started with the TV-choice task. Eight participants (5.7 %) were discarded from analysis for not choosing the superior set. After choosing their preferred TV-set, respondents were randomly assigned to one of two communication type conditions. As explained, we expected that repeated choice making would constitute a strain on participants' cognitive resources. Therefore, like in circumstances with cognitive load, we expected the impact of the social label to emerge after repeated choices. We wondered whether a similar effect would show in case of an explicit plea. After all, the flaws associated with such an approach, which we discussed in the introduction, like reactance (Brehm & Brehm, 1981), cognitive dissonance (Festinger, 1957) and thinking about costs of the promoted behavior (Warlop et al., 2003), are all the result of cognitive elaboration on the information the plea provided. Perhaps the repeated decision would decrease the salience of these ponderings. To constitute a conservative test of our hypothesis, we therefore selected the explicit plea condition as a control condition in this study.

Repeated choices public good dilemma

After fifteen minutes of unrelated filler tasks, participants completed the dependent measure. We constructed a repeated choices public good dilemma, which was framed as an ecological task. We asked participants to imagine that they were to buy 10 bags of potato chips for a party. The potato chips alternatives were either packed in conventional or in bio-degradable bags. Participants had to indicate how many items of each type they would purchase (summing to 10). Instructions on the computer screen explained that the bio-degradable bags were more expensive (1.35 € versus 1.10 €), because they had a lower market-share. An increased demand would lead to lowering of the prices for this type of packaging. A group of eight participants played the public good game. They were told that if the group as a whole would buy a sufficient number of bio-degradable bags, the price would drop in the next round of the game, in which they had to buy 10 more bags. In total,

participants played three such rounds. We did not specify the number of bio-degradable bags they collectively needed to buy to produce the price drop. Had we done so, most participants would choose the "equal cost share" strategy, stating that everyone contributes his or her fair share to obtain the public good (in this case, the price drop) (Bagnoli & McKee, 1991). After each round, all participants received bogus feedback, which indicated that the public good was not obtained.

Results

We conducted a repeated measures ANOVA with one between subjects variable (communication type: social label versus explicit plea) and the three rounds of the public good game as a within subjects variable. These rounds constitute the repeated decisions. We found significant differences between rounds ($F(2, 294) = 48.94$, $p < .01$), see Figure 8. In round 2 ($M = 6.82$) participants chose more bio-degradable bag than in round 1 ($M = 5.23$, $F(1, 147) = 40.08$, $p < .01$), and in round 3 ($M = 7.86$) more than in round 2 ($F(1, 147) = 17.47$, $p < .01$). This is evidence for the fact that participants were motivated to achieve the public good (Rondeau *et al.*, 1999). More importantly, we found a significant interaction between communication type and decision round, $F(2, 294) = 5.89$, $p < .01$. In round 1 and 2, we did not find differences between communication conditions (F's < 1). In round 3 however, participants who had received the social label, chose more bio-degradable bags ($M = 8.65$) than those in the explicit plea condition ($M = 7.06$, $F(1, 147) = 9.30$, $p < .01$). In the labeling condition, participants increased their share of bio-degradable bags ($M = 8.65$) compared to round 2 ($M = 6.90$, $F(1, 147) = 23.75$), but this was not the case for participants in the explicit plea condition ($F < 1$).

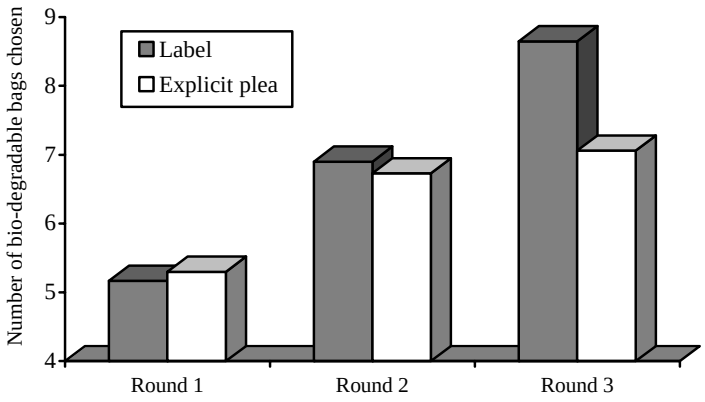

Figure 8. Number of biodegradable bags chosen in the environmental social dilemma task, Study 4

Discussion

The depleting nature of repeated choice making (Bruyneel et al., 2006) increased the impact of the social label as a guide for environmental decision making. Initially, participants chose, on average, a fifty-fifty distribution between traditional and bio-degradable bags. As this proved not to be sufficient for achieving the public good (i.e. the price drop), in round 2 the share of bio-degradable bags increased, indicating participants were motivated to achieve the public good, at a personal expense. In round three, the distribution remained constant in the explicit plea, whereas in the label condition the share of bio-degradable bags further increased. The results in this third round are comparable with those of the cognitive load conditions of the previous studies. This suggests that the suppression of the persuasion knowledge effect generalizes to other circumstances which distract cognitive resources. As conditions of cognitive load or repeated choosing are prevalent in our daily lives, this finding suggests the social labeling procedure is widely applicable.

Findings in the explicit plea group in the first and the fourth study, add to the observation made in the introduction, that providing people with 'food for thought' is not an efficient strategy, certainly in domains where the attitude towards the behavior (e.g. paying a higher price for the same functionality) is more negative than the attitude towards the overarching value (i.e. being an environmentally conscious consumer). We did not observe a 'sleeper' effect as a result of repeated decision making (Kumkale & Albarracín, 2004).

General Discussion

Our findings indicate that social labeling is a promising tool, applicable in mass-media contexts. We proposed a new procedure, in which the label directly follows recent behavioral evidence. First, targets are provoked to engage in a pro-environmental behavior. Subsequently, the label proposes the target to attribute that behavior to his or her personality and values. We tested the effect of this procedure on ecological behavior, although it should be equally applicable to other areas of social desirable behavior, like health behavior, voting and helping behavior.

Social labeling proved effective when cognitive resources were constrained, either at the time of the communication or at the time of the decision. We argued that this requirement is the rule, rather than the exception in real life, since the majority of our daily activity is part of a stream of continuous and overlapping mental activities. We further argued that the effect of cognitive distractions is due to the suppression of persuasion knowledge activation. Our findings contribute to the literature on mindlessness in consumer decision making (e.g., Cialdini, 2001; Dijksterhuis et al., 2005). For example, Fennis, Das, and Pruyn (2004) showed

that the Disrupt-Then-Reframe technique (Davis & Knowles, 1999) works because the disruption acts as a distractor. It induces mindlessness and reduces counter-argumentation. Albarracín and Kumkale (2003) showed that extraneous affect does not influence decisions when level of processing is high, because people then recognize that the affect is not relevant for the decision at hand. In line with these findings, our data showed that favoring mindless, automatic processing of a social label rendered targets more vulnerable to the persuasion attempt. The implication seems to be that unconscious processing is less critical and unable to reject information as untrue or invalid, compared to conscious processing (e.g., Gilbert et al., 1990). The unconscious seems to accept just everything. Future research on this topic is warranted.

Previous research has suggested that such subtle techniques, requiring minimal conscious thought, may be more effective on the longer term effect than campaigns provoking people to explicitly contemplate consequences of behavioral alternatives by providing arguments (Albarracín & Wyer, 2001). Albarracin & McNatt (2005) studied the effects of past behavior on attitudes towards university policies. Participants were led to believe that they had unconsciously supported or opposed a social policy. This feedback had direct effects on attitudes about the policy and expected outcomes of the policy. Self-perception effects lasted longer than more specific elaborations about the outcomes of the policy.

We included an explicit plea condition in Study 1 and 4, to compare the effect of our labeling procedure with the practice of providing argument-based messages. In neither case these explicit messages resulted in an increase of pro-environmental decision-making. In the introduction we discussed several mechanisms, which might be responsible for the lack of a direct influence of such messages on behavior, like psychological reactance (Brehm & Brehm, 1981; Reich & Robertson, 1979), fear control (Witte & Allen, 2000), communicating a descriptive norm meta-message (Cialdini, 2003), solving cognitive dissonance by altering values rather than behavior (Albarracín & McNatt, 2005), and the fact that making people think about public benefits will be likely to make them consider the private costs of the same behavior as well (Warlop et al., 2003, p. 205). We obviously do not dispute the value of educational campaigning. Lack of knowledge is an important predictor of non-compliance to social desirable behavior in many domains. We do suggest, however, that this approach needs to be complemented with an additional effort to render the promoted pro-social (e.g., pro-environmental) values salient at the moment of decision making. Construal level theory (Trope & Liberman, 2000) states that at the moment of decision making, salient motives like self-perception tend to have a strong impact on behavior. Persuasion tools like social labeling seem to be the appropriate complement to education based campaigns. They render pro-social values salient in the context of decision making. Additionally, they approach the consumer in a positive way, describing him or her in a social desirable fashion. People are more likely to

comply with a request when addressed positively. Negatively framed messages which emphasize problematic behavior tend to elicit feelings of guilt, reactance, or resentment (Reich and Robertson, 1979), which reduce the likelihood of compliance.

Social labeling is related to techniques using descriptive social norms as a persuasion technique (Cialdini, 2003; Cialdini et al., 1990). However, rather than invoking social norms, social labeling suggests the existence of *personal norms or values* to engage in a certain pro-social behavior. Our data showed that describing a target as having certain values increases the chance of them acting upon those values later on. Study 2 suggested that social labeling even results in consumers changing their interpretation of previous behavior in line with the value suggested by the label. Especially in situations where the social descriptive norm is *not to engage* in a certain social desirable behavior, a persuasion tool suggesting such personal norms could be a useful alternative.

Future work should look into the effect of the relative desirability of the personality trait or values that the label communicates. People are motivated to elevate their self-conceptions and to protect their self-concepts from negative information (Sedikides & Strube, 1997). Therefore they may be more willing to act upon the communication of a desirable social label, compared to an undesirable one. Therefore, people for whom "being environmentally friendly" sounds positive should be persuaded more than those for whom it sounds negative. Other values a social marketing campaign may wish to activate through a labeling procedure (e.g., eating healthy, engaging in physical activity, buying products from the fair trade circuit) may be perceived as positive or negative by different segments of consumers. Perhaps people do accept labels which elevate their self-concept, also in the case that cognitive resources are abundant. On the other hand, it is possible that labels which are evaluated negatively are rejected, even under cognitive load conditions. It is important to extend our understanding of social labeling effects as it is an easily applicable tool to market social desirable or pro-social behavior.

Manuscript III

Positive Cueing: Promoting Sustainable Consumer Behavior by Cueing Common Environmental Behaviors as Environmental

Abstract

In the present article we test a social marketing tool, to induce pro-environmental consumer behavior. The tool intends to do so by changing a target's self-perception from someone who usually does not engage in pro-environmental behavior to someone who usually engages in pro-environmental behavior. It is based on the assumption that people may fail to view themselves as environmentally conscious because they consider the common ecological behaviors they display as non-diagnostic for the self-perception at hand (Study 1). Cueing commonly performed ecological behaviors (positive cueing) may render these behaviors more diagnostic (Study 2). As a result, people cued with commonly performed ecological behaviors view themselves more environmentally conscious than people who are not cued or who are cued with non-commonly performed ecological behaviors (Study 3). In addition, positive cueing leads to an increase in pro-environmental choices and behavior (Study 4). Implications for effective social marketing campaigns are discussed.

The call for social marketing research to address sustainable consumption issues has been put forward repeatedly since the early 70's (Andreasen, 1995; Crane & Desmond, 2002; Kotler & Zaltman, 1971). In this paper we describe and test a social marketing tool for the promotion of environmental - and, by extension, sustainable - behavior.

The promotion of sustainable consumption behavior has shown to be an arduous task. Despite an increased interest of the general public in sustainable development (European Commission, 2005; DEFRA, 2002), many individuals do not translate this increased interest in altered consumption decisions (Grunert, 1993; Pieters et al., 1998). An often cited reason for this phenomenon is that people associate sustainable behaviors with behavioral costs like money, time, effort, and inconvenience (Follows & Jobber, 2000; Pieters, 1989; Pieters et al., 1998; Thøgersen, 1994a). This suggests that people's attitudes towards specific *ecological behaviors* have an important impact on their decisions, over and above their attitudes towards *the environment* (Ajzen, 1996; McCarthy & Shrum, 1994; Thøgersen & Grunert-Beckmann, 1997). The social marketing tool we present in this paper, *positive cueing*, aims at promoting pro-environmental behavior by improving those specific attitudes.

The Role of the Perception of Previous Behavior in the Formation of Attitudes

Changing people's attitudes towards ecological behavior requires an understanding of how people construct such attitudes. In the current research we focus on self-perception as a route to persuasion. Self-perception theory (Bem, 1972) suggests that people derive their attitudes from their own previous behavior. People readily use their previous behavior as a heuristic basis for later decisions (Taylor, 1975). If one engaged in a given behavior in the past, that person infers that he or she must like that behavior and the object toward the behavior was directed (Albarracín & Wyer, 2000). Relevant for the present research, people may derive their attitudes towards ecological behaviors from the perception of their past (lack of) pro-environmental conduct (Salancik & Conway, 1975).

Two heuristics are likely to be applied when creating a perception of previous pro-environmental behavior. First, the availability heuristic (Tversky & Kahneman, 1973) uses the experienced ease of retrieval (Schwarz et al., 1991) as a source of information. More specifically, the easier it is to come up with a few examples of own past environmental behavior, the more pro-environmental the derived self-perception will be. Second, the representativeness heuristic (Kahneman & Tversky, 1972) relies on a judgment of the similarity of a recalled event with an internalized representation or prototype for that event. This means that if a certain recalled behavior is judged to be more typical for the category of ecological behavior (e.g. going to work by bike versus putting off the lights in unused rooms), the more pro-environmental the inferred self-perception and attitude.

Based on the conceptual model of Raghubir and Menon (2005), we hypothesize that applying the representativeness heuristic in the context of environmental behaviors leads to *underestimating* the extent to which past behavior was pro-environmental. The main reason is that many commonly displayed environmental behaviors are somewhat ambiguous with respect to their ecological nature. Larger ambiguity renders a behavior less diagnostic to infer an attitude from. Raghubir and Menon (2005) identify several reasons why a certain behavior might be considered ambiguous as to how diagnostic it is to infer attitudes from, or how typical it is of a certain category (Sperling & Dosher, 1986). Two of those reasons particularly apply to the representativeness of ecological behaviors: frequency of occurrence and causal clarity. Frequency of occurrence refers to the consensus construct in Kelley's attribution theory (1973). A behavior that has a higher frequency of occurrence in the population (e.g., avoiding to litter) may appear to be more normal and therefore less diagnostic with regard to a disposition like ecological concern. Causal clarity refers to the number of reasons a behavior can be attributed to (Morris & Larrick, 1995). Switching off lights in a room that is not used, for example, is an environmentally friendly behavior but it is more readily attributed to a concern to keep the electricity bill low. Causally unclear acts are more ambiguous because they can be attributed to more than one reason; therefore they will be dismissed as non-diagnostic. For these two reasons, a large number of ecological behaviors may be judged non-representative for the category of ecological acts and non-diagnostic to infer attitudes from. Because these behaviors are not perceived as diagnostic, they may be disregarded when people construct a self-perception of environmental consciousness on the basis of past pro-environmental behavior. As a result, people will fail to infer a self-perception as someone who usually engages in pro-environmental behavior.

Cueing Common Ecological Behaviors

We hypothesize that cueing commonly performed ecological behaviors *as environmental* (i.e., positive cueing) increases the perception of engaging in pro-environmental behavior in the past. By emphasizing those environmental behaviors one previously performed, that person will infer he or she must have pro-environmental attitudes and will derive a self-perception as someone who usually behaves ecological. Positive cueing may increase the extent to which previous behavior is perceived as pro-environmental through two routes. The first route involves accessibility: if one is cued with 'cycling to work' one retrieves instances of 'cycling to work' more easily than if one is not cued. Importantly, this straightforward accessibility effect will only be effective if the retrieved behaviors are judged to be diagnostic for the inference of pro-environmental attitudes (e.g., when there are perceived as being pro-environmental in nature).

A second route through which people may come to view themselves a environmentally conscious involves diagnosticity.: From a logic of conversation-perspective (Grice, 1975; Schwarz, 1994), cueing these behaviors *as environmental* may render them more relevant to derive attitudes from, than if they were not cued. It implies that the messenger, who communicates the cues (e.g., the government acting as a social marketer), does consider these behaviors as relevant to derive attitudes from. As a result, emphasizing the ecological nature of common environmental behaviors may motivate targets to reinterpret them as diagnostic to infer environmental attitudes from. This increased diagnosticity of behaviors one engages in will result in an increased self-perception as an environmentally friendly person. For an overview of our conjectures, see Figure 9.

Using common environmental behaviors as cues has a two-fold advantage. First, by using behaviors in which most people engage, the technique can be used to address a large target audience with an identical message. The large majority of this audience will recognize that, indeed, they do engage in the mentioned behaviors. Second, since common behaviors in particular are spontaneously considered as non-diagnostic, they are affected most by a message which increases their diagnosticity by emphasizing the ecological nature of these behaviors.

The Current Studies

We tested our conjectures in four studies. In Study 1, we verified our assumption that a given environmental behavior tends to be regarded as less diagnostic for the actor's green attitudes, when that behavior is performed by a larger number of people (i.e. when there is high consensus or high frequency of occurrence), or when the behavior can be attributed to alternative causes (high causal unclarity). In Study 2, we tested whether positive cueing leads to an increased perceived diagnosticity of these acts (arrow 1 in Figure 9). In Study 3, we tested the effect of the same manipulation on participants' self-perception and attitudes (arrow 2 in Figure 9). In the final study, we put our proposed technique to the real test and observed its potential for actually influencing people's environmental choices (arrow 3 in Figure 9).

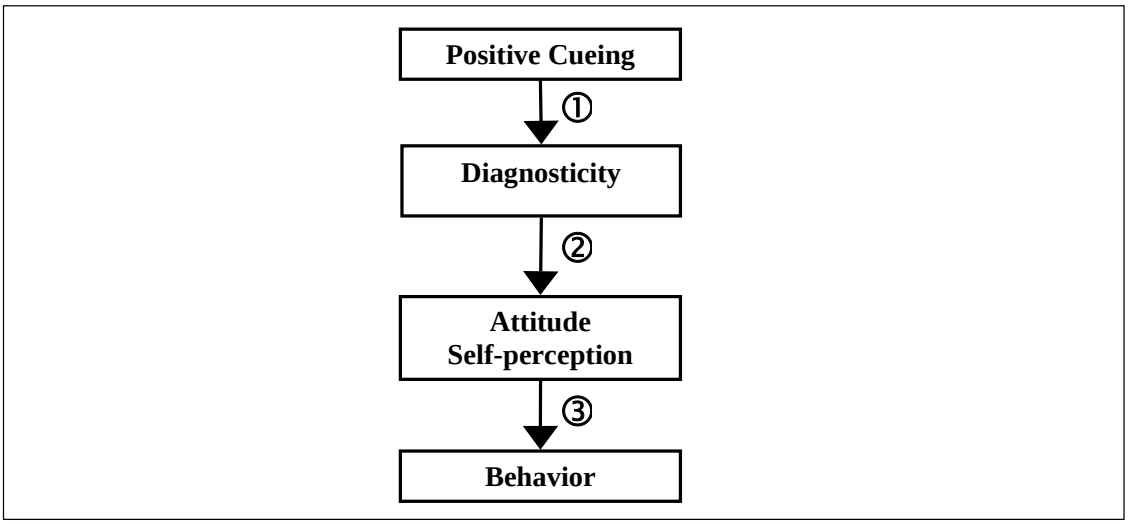

Figure 9. The Positive Cueing effect on diagnosticity, self-perception, and behavior

Study 1

We argue that people engage in several ecological behaviors that they do not spontaneously label as ecological. When using the representativeness heuristic, people tend to consider some behaviors non-diagnostic for making an inference about their green attitudes. We propose two reasons for the tendency to disregard some common ecological behaviors, when deriving someone's position on the environmental consciousness trait. First, these behaviors may have a low causal clarity, because they might be attributed to other reasons than to the goal to behave environmentally. Second, they might be the type of behaviors most people engage in (high consensus or high frequency of occurrence), and therefore are not considered to be informative for inferring green attitudes. In this first study we want to verify our assumption that the perceived diagnosticity of any given environmental behavior for deriving one's own or someone else's green attitudes is smaller if a behavior has a high frequency of occurrence or a low causal clarity.

Method

Participants and procedure

Thirty-two students participated in this study in exchange for partial course credit. Upon arrival in the lab, they were seated individually in front of a computer screen. Everyone was asked to rate forty environmentally-friendly behaviors, using a 100-point visual analog scale.

Materials

Sixteen of these 40 behaviors were selected from a pretest (*N* = 42) in which we asked participants to list as many as possible environmental behaviors in which they usually engage. We selected the eight most often mentioned examples. These were 'selectively disposing of household garbage', 'using the bike instead of the car when possible', 'avoid littering', 'turn off electrical appliances (to save energy)', 'using both sides of scratch paper', 'disposing cans and milk cartons in a separate garbage bag', 'leaving a clean spot after a picnic' and 'buying a less polluting product if there is a choice in the shop'. These eight behaviors constituted the high frequency set of behaviors. A low frequency set was constructed to contain eight *environmental behaviors which people usually do not perform*. These were selected from a second task in the same pretest, in which we asked to list as many as possible environmental behaviors in which participants usually do *not* engage. Most often mentioned behaviors were 'using saving lamps in my house', 'using public transportation instead of my own car', 'reduce shower time', 'buy glass instead of plastic bottles', 'being a member of environmental organizations', 'actively looking for the most environmentally friendly products', 'using a reusable shopping bag' and 'buying bio-products'. We added 24 other behaviors from the pretest as fillers to arrive at a list of 40 statements.

Design

Participants were randomly assigned to one of three groups. Each group rated the 40 behaviors on a different dimension. A first group rated the 'degree to which [each behavior] is informative about someone's environmental consciousness' (*Diagnosticity*), with 'not at all' and 'perfectly' being the extremes of the scale. A second group rated 'the percentage of people usually performing [each behavior]' (*Frequency of Occurrence*), the scale ranging from 0% to 100%. A third group rated 'the degree to which people may have other than ecological reasons to perform [each behavior]' (*Causal Unclarity*), on a scale ranging from 'none at all' to 'many'.

The Cronbach alphas, representing inter-judge reliability scores, were .66, .88, and .86 for the three groups, respectively (see Holbrook & Lehmann, 1980). For every group, we calculated the mean of the ratings given by the participants. This way we obtained a score for all forty behaviors on each of the three dimensions: Diagnosticity, Frequency of Occurrence and Causal Unclarity. By using separate sets of judges, we rule out alternative explanations for possible correlations based on shared method variance (MacKenzie *et al.*, 1986). We then analyzed these data using the 40 behaviors as the rows in the data matrix (the units of observation), the three dimensions as columns, and the sample-average response of subjects as cell entries (subjects are considered as replicates, see Holbrook & Batra, 1987; Vanden

Abeele & MacLachlan, 1994).

Results

Consistent with our assumptions, the judgments of Causal Unclarity and Frequency of Occurrence correlate negatively with the Diagnosticity of the behaviors ($r(40) = -.43$, $p < .01$ and $r(40) = -.45$, $p < .01$ respectively). Causal Unclarity and Frequency of Occurrence were not significantly correlated, $r(40) = .03$, $p = .86$. In addition, regressing Causal Unclarity and Frequency of Occurrence onto Diagnosticity showed that both Causal Unclarity and Frequency of Occurrence contributed independently to the prediction of Diagnosticity ($t(37) = -3.20$; $p < .01$ and $t(37) = -3.41$; $p < .01$, respectively, $R^2 = .38$).

We conducted additional analyses on the ratings for the high and low frequency set of behaviors. As expected, an ANOVA showed that the high frequency set ($M = 50.60$, $SD = 11.64$) was judged to contain more frequently performed behaviors (higher Frequency of Occurrence) than the low frequency set ($M = 29.54$, $SD = 11.75$, $F(1, 14) = 12.91$, $p < .01$). Not surprisingly, considering the reported correlations, the high frequency set ($M = 60.89$, $SD = 3.64$) was considered less diagnostic to infer environmental attitudes from, compared to the low frequency set ($M = 70.79$, $SD = 9.04$, $F(1, 14) = 8.60$, $p < .01$). Both sets did not differ on Causal Unclarity, $F < 1$. The high and the low frequency sets will be used in the following studies.

Discussion

This first study confirms our assumption that certain ecological behaviors are deemed less relevant to infer (some)one's green attitudes from. An instance is judged to be less diagnostic when it is considered to be normative (i.e., when many people display that behavior) or when alternative reasons exist to attribute the behavior to. Because commonly performed behaviors tend to be considered non-diagnostic, people may disregard them when inferring their attitudes form their past ecological behavior.

Study 2

In this study we test whether cueing common environmental behaviors increases their diagnosticity, see arrow 1 in Figure 9. The results of Study 1 and the Frequency of Occurrence factor in the framework of Raghubir and Menon (2005) suggest that uncommon environmental behaviors are generally considered more diagnostic than common ones. Conversational logic, however, suggests that positive cueing may increase environmental behaviors' diagnosticity to derive environmental attitudes from: Cueing these behaviors *as environmental* implies that

the entity, which communicates the cues, does consider the cued behaviors as relevant (i.e., diagnostic). As a result, emphasizing the ecological nature of common environmental behaviors by positive cueing may motivate targets to reinterpret them as diagnostic to infer environmental attitudes from.

Possibly, this positive cueing effect is limited to the behaviors that initially are not considered very diagnostic. This implies that positive cueing would affect the diagnosticity of common environmental behaviors more than the diagnosticity of uncommon environmental behaviors. In addition, positive cueing may affect not only the diagnosticity of the cued common environmental behaviors but also of non-cued common environmental behaviors.

Method

Participants and design

Eighty undergraduate students took part in exchange for partial course credit. They came to the lab in groups of five to eight and were seated individually in front of a computer screen in semi-closed cubicles. Participants were randomly assigned to one of three conditions: the High Frequency, the Low Frequency, or the Control condition.

Materials

We constructed three sets of behaviors. In the method section of Study 1, we clarified the content of the high frequency set, containing common behaviors, and the low frequency set, containing uncommon behaviors. We altered one of the items in the low Frequency set: 'Using public transportation instead of my own car' became 'I *always* use public transportation' to further decrease the frequency and, hence, increase the diagnosticity of this item. A control set contained eight behaviors which were not related to ecology (e.g., 'reading a newspaper every day', 'often eating French fries'). A pretest showed that the high and low frequent sets do not differ with respect to the average *environmental friendliness* of the behaviors (N = 19, $t(18) = -0.30$, $p = .77$). Study 1 showed that both sets do not differ in causal unclarity.

Our dependent measure consisted of 20 behaviors which were to be rated on their diagnosticity to infer someone's environmental friendliness from. Those 20 items were of three types. First, the list included the eight uncommon environmental behaviors that were used as cues in the Low Frequency condition. Second, it included the eight common behaviors used as cues in the High Frequency condition. Third, we included four new common environmental behaviors, to find out whether the effect of the manipulation would generalize to common behaviors which were not used as cues themselves.

Procedure

Participants in the High Frequency, the Low Frequency and the Control condition were presented the high frequency, the low Frequency or the control set of behaviors, respectively. We instructed them to indicate whether or not they usually display each of the eight environmental behaviors included in their list, on a seven point scale (ranging from I *do not agree at all* to *I fully agree*). In the control condition, we deleted the word 'environmental' from the instructions.

In the second phase of the experiment, after 10 minutes of unrelated filler tasks, participants completed the dependent measure. We asked them to indicate to which extent observing each of the 20 behaviors in others allows an inference of a person's 'environmental consciousnesses' on a 100-point visual analog scale anchored at *not at all* and *perfectly*.

Results

Manipulation check

As intended, participants in the High Frequency condition indicated they engaged more in the behaviors included (M = 6.12, SD = .50) than participants in the Low Frequency condition (M = 3.66, SD = .85; $F(1, 51) = 170.18$, $p < .01$).

Diagnosticity

We averaged the diagnosticity-ratings for each of the three types of behaviors. Cronbach alpha's for the common, uncommon, and new common behaviors were .84, .66 and .64, respectively. We then conducted a repeated measures ANOVA with cueing condition (High Frequency, Low Frequency, or Control) as a between subjects and type of behavior (common, uncommon, and new common) as within subjects factor. As predicted, the analysis revealed a significant interaction effect, $F(4, 154) = 6.64$, $p < .01$, see Figure 10.

In the Control condition, uncommon behaviors (M = 77.62, SD = 9.50) were indeed judged as more diagnostic than common (M = 71.89, SD = 12,39, $F(1, 77) = 12,74$, $p < .01$) and new common behaviors (M = 68.51, SD = 14.07, $F(1, 77) = 28.12$, $p < .01$). New common behaviors were considered less diagnostic than the common behaviors ($F(1, 77) = 4.59$, $p < .04$). The latter difference is small compared to that between the uncommon and both types of common behaviors and may be due to sampling effects.

In the Low Frequency condition, uncommon behaviors (M = 78.71) were judged to be more diagnostic than common (M = 71.25, $F(1, 77) = 19.21$, $p < .01$) and new common behaviors (M = 69.52, $F(1, 77) = 25.41$, $p < .01$). The difference between the common and the new common behaviors did not reach significance ($F(1, 77) = 1.06$, $p = .31$.

In the High Frequency condition, we expected that positive cueing would increase the diagnosticity of common and possibly of new common behaviors. In line with this prediction we did not observe any differences in the High Frequency condition between the uncommon behaviors (M = 76.29) and common (M = 77.82, $F(1, 77) < 1$) and new common ones (M = 76.38, $F(1, 77) < 1$). In fact, we observed an increase of the diagnosticity of common behaviors in the High Frequency group compared with the Low Frequency ($F(1, 77) = 4.38$, $p < .04$) and the Control condition ($F(1, 77) = 3.80$, $p < .05$). Additionally, we found that new common behaviors were judged as more diagnostic in the High Frequency condition, compared to the Low Frequency ($F(1, 77) = 4.33$, $p < .04$) and the Control condition ($F(1, 77) = 6.07$, $p < .02$).

The diagnosticity of uncommon behaviors was not affected by the manipulation. We found no significant differences between the Control condition and the High and Low Frequency conditions (Fs < 1).

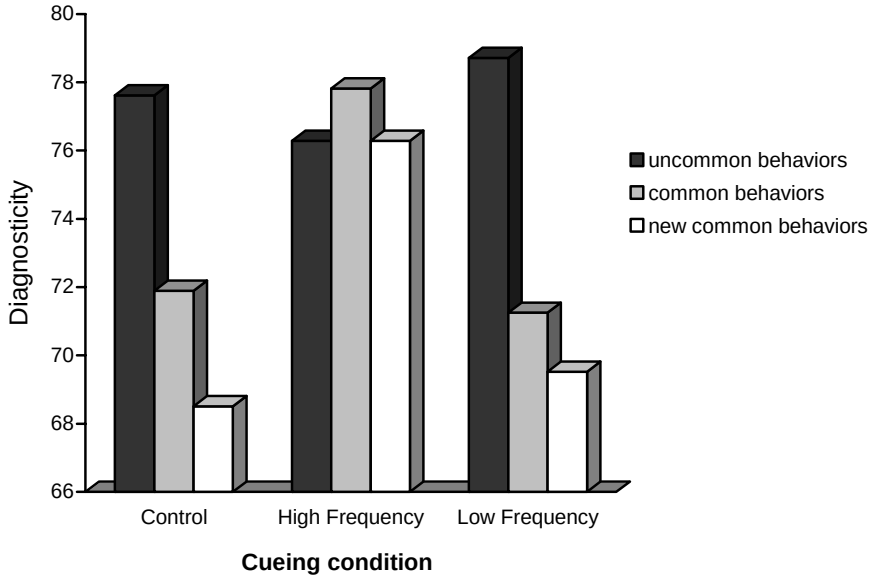

Figure 10. Mean diagnosticity ratings of different types of environmental behaviors in the High Frequency, Low Frequency and Control condition.

Discussion

Common environmental behaviors are judged to be less diagnostic to derive environmental attitudes from than uncommon ones (Study 1). However, as Study 2 suggests, cueing these behaviors *as* environmental increases their diagnosticity. Importantly, this positive cueing effect generalizes to new common behaviors: we also observed an increased diagnosticity of common behaviors, which were not used as cues themselves, as the result of cueing with other common behaviors. Note that uncommon environmental behaviors, which are considered diagnostic before cueing, did not increase in diagnosticity after cueing with either common or uncommon behaviors. This indicates that cueing people with common environmental behaviors may affect their environmental self-perception more than cueing with uncommon environmental behaviors.

Study 3

In the current study, we examined participants' attitudes toward environmental behavior, their moral obligation to protect the environment, and their self-perceived environmental consciousness following no cueing (control condition), cueing with common environmental behaviors (High Frequency condition) or cueing with uncommon environmental behaviors (Low Frequency condition). Considering that, by definition, people engage in common environmental behaviors, we expect that an increased diagnosticity of these behaviors should result in more environmentally friendly attitudes and self-perceptions and an increased moral obligation to protect the environment. Therefore, we expect more environmentally friendly attitudes, moral obligations and self-perceptions in the High frequency condition than in either the Low frequency or the Control condition. We did not expect any differences between the Low frequency and the Control condition.

Although we did not expect any differences between the Control condition and the Low frequency condition, we decided to retain the Low Frequent condition for two reasons. First, as a second control condition it excludes alternative explanations in terms of priming environmental behavior, since the *environmental friendliness* of the high and low frequency set was identical. Second, it is a way of simulating the traditional social marketing approach. Social marketing campaigns often emphasize these uncommon behaviors, in which people should but do not engage. Those campaigns might, temporarily, motivate targets to make pro-environmental decisions. However, we predict that such an approach is not likely to influence targets' self-perceptions.

Method

Participants and procedure

One hundred and sixty undergraduate students took part in exchange for partial course credit. They came to the lab in groups of five to eight and were seated individually in front of a computer screen in semi-closed cubicles. Participants were randomly assigned to one of three conditions: the High Frequency, the Low Frequency, or the Control condition. These groups were presented with the high frequency, low frequency, and control set of behaviors, respectively. We instructed them to indicate whether or not they usually display each of the eight (environmental) behaviors included in their list, on a seven point scale (ranging from *I do not agree at all* to *I fully agree*). In the second phase of the experiment, after 20 minutes of filler tasks, we administered a questionnaire which measured environmental attitude, self-perception as a green consumer and sense of moral obligation to protect the environment.

Materials

We used the same positive cueing manipulation of Study 2. The dependent measure was a 3-item scale which probed participants' attitudes towards ecological behaviors. The attitude items were embedded in a longer questionnaire, to conceal the true purpose of the task. Additionally, we measured participant's self-perception as an ecological consumer (2 items). One additional item measured the degree to which participants feel morally obliged to protect the environment (see table 1).

Results

Manipulation check

As intended, participants in the High Frequency condition indicated they engaged more in the behaviors included (M = 5.53, SD = .79) than participants in the Low Frequency condition (M = 3.05, SD = .97, $F(1, 103) = 204.88$, $p < .01$).

Attitudes towards ecological behaviors

The three attitude-items loaded on one factor which explained 75.69 % of the variance (α = .84). The ANOVA on the mean of these items revealed that the cueing manipulation significantly affected participant's attitudes towards ecological behaviors, $F(2, 157) = 7.47$, $p < .01$. Simple contrasts revealed that the attitudes in the High Frequency condition (M = 5.21, SD = .92) were more favorable than in the Control group (M = 4.59, SD = .87; $F(1,$

157) = 14.41, $p < .01$), and than in the Low Frequency group ($M = 4.79$, $SD = .82$; $F(1, 157) = 6.52$, $p < .01$). The latter two conditions did not differ significantly ($F(1, 157) = 1.50$, $p = .22$).

Self-perception and moral obligation

The two items probing self perception as a 'green consumer' loaded on one factor which explained 77.51% of the variance and they constituted a reliable scale ($\alpha = .71$). The ANOVA on the mean scores showed that our manipulation influenced the self-perception of participants, $F(2, 157) = 9.97$, $p < .01$. Simple contrasts revealed that participants in the High Frequency condition perceived themselves as more ecological ($M = 4.51$, $SD = .92$) than participants in the Control group ($M = 3.88$, $SD = 1.10$; $F(1, 157) = 9.80$, $p < .01$) and in the Low Frequency group ($M = 3.63$, $SD = 1.07$; $F(1, 157) = 18.80$, $p < .01$). Participants in the Low Frequency condition did not perceive themselves significantly different from those of the Control group ($F(1, 157) = 1.57$, $p = .21$).

Table 1. Means and Standard Deviations of the Items of the Attitude, Self-perception and Moral obligation Scale in Study 3

	High Frequency		Low Frequency		Control	
	Mean	SD	Mean	SD	Mean	SD
How do you feel about environmental behaviors? (1= very negative, 7= very positive)	5.19	1.01	4.92	.81	4.78	.94
How do you feel about performing environmental behaviors? (1= very negative, 7= very positive)	5.35	1.05	5.00	1.04	4.62	1.05
How important is it that you perform environmental behaviors? (1= not important at all, 7 = very important)	5.08	.93	4.43	.91	4.36	1.04
I think I behave environmental. (1 = totally don't agree, 7= totally agree)	5.06	.85	3.60	1.18	4.31	1.12
When I buy a product, I take ecological considerations into account. (1 = totally don't agree, 7= totally agree)	3.96	1.25	3.66	1.18	3.46	1.36
I feel morally obliged to protect the environment (1 = totally don't agree, 7= totally agree)	5.29	1.18	4.66	1.21	4.89	.98

The ANOVA on the item measuring participants' feeling of moral obligation to protect the environment, also revealed a significant effect of our manipulation ($F(2, 157) = 4.20$, $p < .02$). The High Frequency group scored marginally higher ($M = 5.29$, $SD = .16$) than the Control group ($M = 4.89$, $SD = .15$, $F(1, 157) = 3.35$, $p < .07$) and higher than the Low Frequency group ($M = 4.66$, $SD = .15$, $F(1, 157) = 8.21$, $p < .01$). Again, the Low Frequency group did not significantly differ from the Control group ($F(1, 157) = 1.14$, $p = .29$).

A Sobel test (Baron & Kenny, 1986) indicated that the attitude towards environmental behaviors mediated the effect of our manipulation on participant's self-perception (Z = -3.06, p < .01) and moral obligation (Z = -3.32, p < .01). In both cases the bootstrapped estimate of the indirect effect was significant with 99% confidence (Preacher & Hayes, 2004)[4]. The effect of the manipulation on the mediator, environmental attitude, was significant, as shown above. The direct effects of environmental attitude on self-perception (t(159) = -3.71, p < .01) and on moral obligation (t(159) = 7.27, p < .01) were significant. The direct effects of the manipulation on self-perception (t(159) = -1.61, p = .11) and on moral obligation (t(159) = .11, p = .92) disappeared after adding attitude as a mediator.

Discussion

The current study demonstrates that positive cueing renders people's attitudes towards ecological behaviors more favorable, makes them perceive themselves as more environmentally friendly and increases their sense of moral obligation to act environmentally friendly. The effects of positive cueing on self-perception and on moral obligation are mediated by the positive cueing effect on the attitudes towards ecological behaviors.

In the current study, we did not observe any significant differences between the control condition and the Low frequency condition. This was to be expected, as Study 2 showed that cueing Low Frequent behaviors did not influence the diagnosticity of common or uncommon environmental behaviors. One might expect that an approach which emphasizes previous failures to behave environmentally friendly (the Low Frequency condition) might induce hypocrisy (Aronson *et al.*, 1991). Induced hypocrisy might be effective at improving environmental attitudes. In our experiment, we did not observe any beneficial induced hypocrisy effects. It should be noted, however, that we did not include a phase in our experiment which elicits a (public) commitment to one's attitudes, as is usually done in induced hypocrisy studies. Without that step, emphasizing people's flaws seems not to be an efficient method to improve attitudes. On the other hand, we also did not observe backfire effects in the Low Frequency condition. So, making it salient to people that they usually do not engage in environmental behaviors, as is done in the Low frequency condition, did not adversely affect their attitudes towards ecological behaviors, self-perceptions and their sense of moral obligation to act environmentally friendly.

[4] A reversed model shows that self-perception partially mediates the relation between our manipulation and attitude. The indirect effect is significant (Z = -2.59, p < .01) but the effect of the manipulation on attitude remains significant after controlling for self-perception (t = -2.67, p < .01). As the model in which attitude mediates the effect of manipulation on self-perception shows complete mediation, it is preferable.

Study 4

Assuming that a more favorable attitude towards ecological behavior should result in more environmentally friendly behavior (Ajzen, 1996; Gill *et al.*, 1986; Minton & Rose, 1997), we tested the potential of cueing common environmental behaviors for beneficially influencing actual ecological behavior.

To examine the effect of cueing on actual behavior, participants were presented with a product choice task in a simulated shop and another, consequential product choice. In both instances, one choice alternative was a more ecologically sound, but more expensive alternative of the other. In addition, we observed how efficiently participants used available scratch paper in a task where they were asked to make notes.

Several steps were taken to avoid demand effects or hypothesis guessing (cf. Sawyer, 1975). First, we did not measure people's attitudes towards ecological behavior. Second, we included unrelated filler tasks. Third, the note task rendered a very subtle measure, unlikely to be sensitive to demand effects, as the environmental aspect of the task was not evident. Fourth, we made the product choices as consequential as possible. The notepad choice was an actual choice between an ecological and a more attractive non-ecological notepad. In the simulated shop task, participants were told that they would have to buy one randomly determined product chosen by them.

Considering the results of Study 2 and 3, we expected a higher number of pro-environmental choices in the High Frequency condition compared to the Low Frequency and Control condition. As we did not observe any differences between the latter two conditions in the previous experiments, we neither expected differences between these conditions in the current experiment.

Method

Participants and procedure

Sixty-six undergraduates were paid 6 € for participation in this study. They came to the lab in groups of five to eight. At the beginning of the session, before introducing our manipulation, we asked them to complete an environmental concern questionnaire. We used 13 of the 16 items of the environmental concern scale of Minton and Rose (1997), dropping three repetitive items, to keep the questionnaire as short as possible. Then participants were subjected to a cueing manipulation, which was identical with the one in the previous studies and resulted in a High Frequency, a Low Frequency, and a Control group.

Dependent variables

The remaining part of the session consisted of several tasks, measuring ecological behavior. After completing a filler task, participants were presented with a *product choice task.* They received ten product pairs: five filler pairs and five critical pairs. In each critical pair, one product was a more environmentally friendly but more expensive alternative of the other. We asked the participants to indicate which product they would pick if they were to purchase them now. To increase ecological validity, we informed participants that at the end of the session, they actually had to purchase the product of their choice from a randomly chosen product category. They would have to use part of their participation fee to do so.

The critical product categories were cookies (differing in the amount of plastic used for wrapping), kitchen paper, deodorants, (energy-efficient) lamps, and detergents, see Appendix. For eight product categories, the more expensive product cost 1.05 € whereas the less expensive product cost 0.95 €. For the lamps, the prices were 1.50 € and 1.30 €, respectively, and for detergents, they were 1.40 € and 1.30 €, respectively. These prices were pre-tested in a different sample of the same student population (N = 34) by informing participants about the shop value of a certain object and asking them which (higher) price they would be willing to pay for a more ecological variant of that product. We used the median price mentioned for the ecological products in the choice task.

After the choice task, we measured unobtrusively how efficiently respondents used *scratch paper*. We asked participants to write down a short summary of each of eleven elaborated product claims shown on the screen, under the pretext of investigating which pieces of information are judged as essential by consumers. We actually examined how economically participants used the available paper, counting the number of sheets used and measuring the percentage of the surface actually used to write on.

The final measure was an actual product choice (*notepad choice)*. After working 10 more minutes on filler tasks, participants learned that the experimental session was finished; they were asked to proceed to the exit of the lab, where the experimenter would pay them for their cooperation. The experimenter thanked them individually for their participation and paid the promised 6 €, casually mentioning the fact that, since summer holidays were coming up, some leftover material from previous experiments was to be given away. They could take a notepad from a nearby table. The notepads were piled up in two stacks. One stack contained notepads made from brownish, recycled paper; these notepads had a large "recycled" logo on the cover. The other stack contained notepads made from white, regular paper. The shop value of these notepads is 1.39 € and 1.30 €, respectively. The experimenter inconspicuously

observed which notepad the participant chose.

Results

Manipulation check

Like in our previous studies, we compared the indicated frequencies with which the two experimental groups perform their set of activities as a manipulation check (we failed to record this frequency for 4 participants, because of a computer malfunction). Participants in the High Frequency condition indicated they engaged more in the behaviors included (M = 5.96, SD = .77) than participants in the Low Frequency condition (M = 3.34, SD = .87, $F(1, 39) = 104.61$; $p < .01$).

Product choice task

We performed an ANCOVA on the number of ecological choices made in the product choice task, using environmental concern as a covariate. The scree plot resulting from the factor analysis on these 13 environmental concern items suggested a uni-dimensional solution. One factor explained 48.47% of the total variance (Cronbach's α = .90).

The analysis revealed a significant effect of the manipulation on the number of ecological products chosen ($F(2, 62) = 8.22$; $p < .01$). Simple contrasts show that, on average, the High Frequency group chose more ecological products (M = 3.12, SD = .79) than the Control group (M = 2.34, SD = 1.14, $F(1, 62) = 7.07$; $p < .01$) and than the Low Frequency group (M = 1.96, SD = 1.13, $F(1, 62) = 15.89$; $p < .01$). The Low Frequency and the Control group did not significantly differ ($F(1, 62) = 1.69$; $p = .20$). The covariate, ecological concern, had a significant, positive relation with number of ecological products chosen ($F(1, 62) = 7.28$; $p < .01$), indicating that our dependent measure is indeed sensitive to the willingness to make the environmentally friendly choices.

Notepad choice task

Participants assumed the experiment was over when they were offered to take a notepad home. Two participants turned down the offer so we ended up with 64 observations. A chi-square test revealed a significant effect of cueing ($\chi^2(2, N = 64) = 14.59$; $p < .01$). The ecological notepad was chosen more often in the High Frequency condition (81%) than in the Control group (52%), $\chi^2(1, n = 42) = 3.86$, $p < .05$, and than in the Low Frequency condition (23%), $\chi^2(1, n = 43) = 14.58$, $p < .01$. Moreover, choosing the ecological notepad was also significantly more likely in the Control condition than in the Low Frequency condition, $\chi^2(1, n = 43) = 4.04$, $p < .04$.

Use of scratch paper

Participants were free to use as many sheets of paper as needed to summarize eleven elaborated product claims presented on the computer screen. The sheets were 9.7 cm by 10 cm. As a measure of paper usage efficiency, we used scanner software to determine which percentage of the total surface of used sheets was actually written on. We squared this number to approximate a normal distribution. Higher numbers correspond with more efficient, and therefore more ecological, paper usage[5]. The ANCOVA, controlling for the number of words participants wrote, and for environmental concern, revealed a significant effect of cueing, $F(2, 59) = 3.74$, $p < .03$. The High Frequency group ($M = .30$, $SD = .26$) used the paper more efficiently than the Control group ($M = .13$, $SD = .10$; $F(1,59) = 7.28$, $p < .01$). The difference between the High- and the Low Frequency group ($M = .20$, $SD = .22$) was marginally significant, $F(1, 59) = 2.96$, $p < .09$, but we did not find a significant difference between the Low Frequency group and the Control group ($F(1, 59) = 1.13$; $p = .29$).

Additionally, we measured the size of participants' handwriting. In order to do so we chose three words that met two criteria. First, they should have been written down by (almost) all participants - because participants wrote down summaries, not everybody used the same words - and second, they should appear more or less in the middle or at the end of the sequence of claims, since the size of the handwriting was often very variable within each participant for the first claims. We found two words that were written down by everyone and one word that was written down by all but one participant. The selected words were 'glycerine', 'omega3' and 'celoxydatie' (Dutch for 'cell oxidation'). We measured the length of these words in centimeters for each participant. To control for objective word length, we standardized these scores and then calculated the average length of these three standardized scores. We found a significant effect ($F(2, 59) = 3.36$, $p < .04$) showing that participants in the High Frequency condition wrote smaller ($M = -.40$, $SD = .66$) than participants in the Control group ($M = .16$, $SD = .93$; $F(1, 59) = 5.63$, $p < .02$) and the Low Frequency group ($M = .10$, $SD = .59$; $F(1, 59) = 4.47$, $p < .04$). There was no significant difference between the Low Frequency group and the Control group, $F(1,59) < 1$.

Discussion

Positive cueing successfully increased the level of participant's environmental behavior. Participants in the High Frequency condition indicated a larger preference for buying a more expensive, but environmentally friendly variant of a common product in the simulated shop

[5] The data of three participants were excluded from this analysis, for not following the instructions. They indicated whether they thought the statement was true or false, rather than writing down a summary.

environment, and more often chose the less attractive but recycled notepad, which they could take home with them.

Since the environmental dimension of the choice tasks was very obvious – making a choice between a product and its environmental alternative – we also included a task for which the environmental dimension was not obvious at all: making notes on scratch paper. Even for that task, we found that cueing common environmental behaviors resulted in more efficient and therefore more environmentally friendly use of scratch paper compared to no cueing or cueing uncommon environmental behaviors. Participants even went as far as 'spontaneously' decreasing the size of their handwriting to make more efficient use of the provided paper. This suggests that the manipulation not merely primes the concept of ecology, which would influence subsequent choices with a clearly ecology-related dimension. Instead, those who are cued with commonly performed environmental behaviors seemed to look actively for ways in which they could adjust their behavior in order to minimize their environmental impact. Again, emphasizing the green behaviors that people generally do not engage in, a technique used by traditional social marketing campaigns (cf. the induced hypocrisy effect), did not result in more environmental choices. To the contrary, in the notepad choice task it actually led to less environmental choices than in the Control condition. This is a result in line with the findings of Menon, Block, and Ramanathan (2002). They found that cueing uncommon behaviors that may lead to contracting hepatitis C led people to worry less about contracting this disease than a Control group. It could be that in our other measures, we observed a floor effect, because of which scores in the Low Frequency condition were not significantly lower than in the Control condition. We must be careful, however, when interpreting this result. Of a total of six measures, the notepad choice task was the only one in which we observed a difference between the Low Frequency and the Control condition. Therefore this result can not be considered to be as reliable as the beneficial effect of cueing common environmental behaviors, which was replicated six out of six times. Additionally, in the Menon et al. (2002) studies, results regarding a backfire effect of cueing uncommon behaviors were mixed as well. For example, they did not find a difference between the control and the uncommon behaviors condition on the estimated risk of contracting hepatitis C. Further research on this possible backfire effect is warranted.

We included some features to the design of this study to reduce the likelihood of a demand effect driving our results. For example, we added an environmental consciousness measure, which was administered right before our cueing manipulation. Doing so, we rule out an alternative explanation regarding environmental priming: all participants were primed with references to environmental behaviors. In fact, the High and Low Frequency condition did not differ at all regarding environmental references. Also, following guidelines of Sawyer (1975), we included multiple dependent measures in our study. Since both choice tasks were to some

extent consequential and the note task hardly could be recognized as an environmental task and came with a distracting cover story (writing down summaries of product statements), it is unlikely that the observed behavioral effects are due to a demand effect.

General Discussion

The current paper presents and tests a social marketing tool, positive cueing, which applies the idea that in some situations, attitudes are derived from prior behavior (Bem, 1972) or rather, the perception of that behavior (Salancik & Conway, 1975). This perception is based on the use of the accessibility and the representativeness heuristic (Kahneman & Tversky, 1972; Tversky & Kahneman, 1973). By emphasizing previous pro-environmental behavior, positive cueing results in increased pro-environmental decision making. We propose that this tool is equally applicable in other areas, like the promotion of healthy eating, physical exercise or driving safely.

Study 1 supports the assumption that not all ecological behaviors are considered equally diagnostic to infer attitudes from. It suggests that people may refrain from drawing inferences from behaviors that are easily explainable by other factors including its mere commonness (Raghubir & Menon, 2005). Study 2 showed that cueing such behaviors *as* environmental renders them more diagnostic and relevant than when they are not cued. The results of Study 3 show that positive cueing renders people's attitudes towards environmentally friendly behaviors more favorable. It favors perceiving one-self as an environmental person and increases the feeling of moral obligation to do an effort for the environment. In addition, Study 4 demonstrated that it is effective in promoting pro-environmental decision making.

These results allow us to propose some guidelines for designing effective social marketing campaigns, in all areas of sustainable behavior (and beyond). Traditional social marketing campaigns often emphasize how poorly the target audience is doing with regard to a certain topic. These types of campaigns sometimes induce aversive feelings towards the request, and elicit feelings of guilt, reactance and resentment (Reich & Robertson, 1979), as people do not like being told what to do. Implicitly, traditional campaigns also tell the audience that they are just doing what every next person does (i.e. failing to make environmental choices), which has been shown to reinforce their (undesirable) behavior (Cialdini, 2003). Saying that "a problematic behavior needs urgent attention because it is very prevalent" implies that it *is* prevalent. Research on descriptive norms (Cialdini et al., 1990) suggests that simply *doing what everyone else is doing* is often preferred over *doing the right thing.* Therefore such a message, ironically, might be interpreted as a justification to keep on engaging in the undesirable behavior. Our findings confirm that this may result in an

ineffective social marketing effort. The Low Frequency condition simulated the type of campaign communication which emphasizes how little a target person is (and implicitly, how little most people are) doing for the environment. For all but one of our measures, the Low Frequency group did not differ from the Control group. And in the single case it did differ, it resulted in less environmentally-friendly behavior. We therefore propose an alternative approach, which emphasizes that people have, in fact, already adopted several changes for the better. Our data suggest that drawing attention to the ecological behavior people already engage in, improves their attitudes towards ecological behaviors. This makes them more sensitive to persuasive requests proposing to adopt additional pro-environmental behaviors. This idea is reminiscent to the use of descriptive social norms as a persuasion technique (Cialdini, 2003; Cialdini et al., 1990). However, rather than invoking social norms, the social marketing tool we presented in this paper draws on suggesting the existence of *personal norms or values* to engage in pro-environmental behavior. Our data showed that suggesting that one has engaged in a certain behavior in the past will make it more likely that the target person repeats that type of behavior later on. Especially in situations where the social descriptive norm is *not to engage* in a certain social desirable behavior, our alternative might be a useful addition to the arsenal of the social marketer.

Second, traditional campaigns usually call upon people's sense of morality when asking them to do the 'right thing'. Because of the behavioral costs related to sustainable behaviors (Follows & Jobber, 2000; Pieters, 1989; Pieters et al., 1998; Thøgersen, 1994a), these requests are only effective in the short term, until the costs regain salience. The technique we presented in this paper influences consumers' self-perception. People are led to see themselves as "someone who is willing to do an effort for the environment", or any other promoted cause, and act upon that self-perception (Osbaldiston & Sheldon, 2003). Someone who perceives himself as an environmentally friendly consumer is internally motivated to act upon this perception. It is a well-documented fact that internal motivation results in increased performance and persistence of a behavior (Ryan & Deci, 2000; Sheldon & Elliot, 1999). Therefore we expect a persuasion method based on a self-perception change to have a longer term effect (Albarracín & Wyer, 2001).

The technique we presented in this paper is related to a class of persuasion methods, which use consistency and self-perception as drivers for the effect. Compared to foot-in-the-door related strategies (Cialdini, 2001; Freedman & Fraser, 1966), the self-prophecy phenomenon (Spangenberg & Greenwald, 1999), the labeling technique (Burger & Caldwell, 2003; Kraut, 1973; R. L. Miller et al., 1975), and induced hypocrisy (Aronson et al., 1991), the advantage of the cueing technique is that it involves a less intrusive procedure. Unlike the mentioned strategies, the cueing technique does not require a first request (foot-in-the-door), an enquiry into future intentions (self-prophecy), the provocation of a certain behavior

(labeling) or a communication emphasizing people's personal norms and reminding them of past failure to comply with these norms (induced hypocrisy). It merely consists of cueing instances of past engaging in the target behavior. Therefore the technique may be more appropriate for application in mass communication campaigns.

GENERAL CONCLUSION

In this dissertation, we attempted to make a case for a complementary persuasion approach for the social marketing practice. This field faces the challenging task of convincing individuals to forgo their immediate self-interest and pursue the wellbeing of others, whether it be their close acquaintances or society at large. Previous research suggests that there is a need to rethink the traditional style of social marketing actions, as they have shown to very successful at changing attitudes, values and behavioral intentions, but were largely unsuccessful at producing long-term behavior change (McKenzie-Mohr, 2000). We propose to abandon the traditional assumption that it is always necessary to make people think about the consequences of behavioral alternatives (Andreasen, 1995) in order to motivate them to behave pro-socially. Encouraging people to think, using campaigns based on education and the communication of arguments, may fail to produce behavior change. We have documented on several psychological phenomena, which may account for this observation. Fairly recent insights in social psychology and consumer behavior suggest that people are not the rational and reasoned decision makers there are assumed to be by the traditional social marketing approach. In fact, many choices in daily life are executed as part of a continuous stream of behaviors which are executed fairly automatically, based on heuristics and minimal informational input (Alba et al., 1991; Warlop et al., 2003). This view on decision making suggests that in some cases more subtle techniques, which influence automatic judgments and decision making, could be more successful at achieving the desired behavior change (Albarracín & Wyer, 2001). We tested these ideas in the context of environmentally friendly behavior, but we are confident that our findings can be generalized to other fields of socially desirable behavior, like healthy behavior, driving safely, and helping behavior.

Several researchers have identified the choice to behave pro-environmentally as a social dilemma (e.g., Cialdini et al., 1990; van Vugt et al., 1996; Wiener & Doescher, 1991). Choosing to conserve the environment is considered to be a cooperative behavior because it serves the interest of society in the long term. On the other hand, behavioral costs associated with this type of actions, like money, time, effort, and inconvenience tempt individuals to make selfish choices (Follows & Jobber, 2000; Pieters, 1989; Pieters et al., 1998; Thøgersen, 1994a). In this dissertation, we followed this tradition of using the social dilemma as a model for the conflict that an individual experiences between a social desirable behavioral alternative, which benefits the group, and an egoistic alternative, which benefits the self.

I will now summarize the findings of the three manuscripts included in this dissertation.

Decision making in social dilemmas

In a first manuscript, we confirmed the hypothesis that decision making in a social dilemma is the result of a two-step process. In a first phase, decisions are based on an automatic and intuitive system. Some people have an intuitive preference for cooperation, whereas others intuitively choose to defect (i.e., to pursue one's immediate self-interest). We identified SVO as a concept that grasps these different automatic tendencies. Subsequently, if people are sufficiently motivated, and have the cognitive resources to do so, people analyze the decision situation more systematically. The result of such an elaborated reasoning process is a general tendency to pursue the immediate self-interest. These findings suggest that self-interest is a very salient category, which weighs heavily on a deliberate thinking process.

Additionally, we showed that intuitive decisions can be influenced. We identified *perceived interpersonal closeness* as a process involved in automatic decisions in an interdependence situation. Increasing (decreasing) perceived interpersonal closeness leads to more (less) cooperative choices when decisions are made intuitively, whereas perceived closeness does not have any effect on behavior if choices are preceded by a more elaborate thinking process.

These findings have some implications for the complementary persuasion approach for social marketing actions we are looking for. First, they provide a rationale for the observation that encouraging people to think about the consequences of behavioral alternative, is usually not successful at achieving long-term behavior change. Encouraging one to think about the benefits of a certain behavior, is likely to make them think about the costs of this behavior as well (Warlop et al., 2003). As private costs and benefits are more salient than public costs and benefits (Rothschild, 1979), such a deliberation process is likely to result in the individual choosing the selfish option (i.e., the non-socially desirable behavior). A first criterion the complementary persuasion approach should meet then, is that it should prevent people from thinking too much about their decisions. Second, we showed that if we can activate a certain value at the moment of decision making, it is likely to influence judgments. This implies that a second criterion the complementary persuasion approach should comply with, is that it should activate those values and self-perceptions which are likely to induce the desired behavior. We have argued before that the traditional social marketing approach, based on education and providing arguments, has been very successful at fostering pro-environmental attitudes, values, and behavioral intentions. We propose that in order to translate these into pro-environmental behaviors, they should be activated at the moment of decision making.

In manuscript II and III, we presented and tested two tools which meet both criteria: social labeling and positive cueing. Both tools build on the idea that activating a target

person's self-perception as "the kind of person who usually behaves pro-environmentally" provokes behavior that is consistent with this (changed) self-perception.

Whatever people say I am, that's what I am

Previous research has shown that people's (perception of their) previous behavior guides future decision making (Albarracín & Wyer, 2000; Taylor, 1975). Also, people seem to rely partly on external information, given by third parties, to develop a perception of their own personality (Bem, 1972; Strenta & DeJong, 1981). The social labeling technique builds on both ideas and consists of providing a target person with a statement about his or her personality or values (i.e., the social label). A heuristic decision process that relies on such an activated self-perception should provoke behavior that is consistent with the social label. In Manuscript II we proposed and tested a new procedure, which enables using the social labeling technique. In a first step of the procedure, an external motivation (e.g., a price promotion) provokes a target person to make an environmentally friendly (purchase) decision. In a second step the social label, which describes the target as an environmentally friendly person, is communicated. The social label suggests an alternative attribution of the provoked choice. It invites the target to attribute the pro-environmental choice he or she just made, to his or her pro-environmental values rather than to economic rationality (which was the actual motivation for the purchase). When this re-attribution is successful, the changed self-perception is likely to produce more environmentally friendly behavior subsequently.

Our findings indicated that describing participants as "very concerned with the environment, and ecologically conscious", following an incidental pro-environmental decision, indeed produced an increase in environmentally friendly purchase decisions. Interestingly, this was only the case when participants were distracted while processing the information given by the labeling communication. We attributed this finding to the fact that the mis-attribution triggered by the label might activate persuasion knowledge (Friestad & Wright, 1994). Because in real life, most consumer choice situations are characterized by the presence of distracting cues, we can conclude that in common, cognitively demanding situations the social labeling procedure will work.

Even when the label was processed with full attention, however, it showed to have an effect on behavior after a delay. This 'sleeper effect' supports our hypothesis that the labeling communication might activate persuasion knowledge. After some time has passed, however, the context in which the label was communicated and the fact that its content was rejected loses its salience. The content of the label does linger, and does influence subsequent decision making.

Cueing Common Environmental Behaviors as Environmental

In a third manuscript, we presented and test the positive cueing technique. Analogous to social labeling, it attempts to promote pro-environmental decision making by activating individual's self-perceptions as being a person who is concerned with environmental issues. People tend to use (perceptions of) previous behavior as a heuristic in current decision making. Previous research suggests, however, that individuals *underestimate* the level of their previous pro-environmental conduct (Raghubir & Menon, 2005). The main reason is that many commonly displayed environmental behaviors are somewhat ambiguous with respect to their ecological nature. Common behaviors, like switching off light in unused rooms, for example, tend to be attributed to a concern to reduce one's electricity bill or to mere habit rather than to one's personal ecological concerns. Therefore these behaviors are not considered diagnostic about one's environmental concern.

Four studies showed that cueing such commonly performed environmental behaviors *as environmental* results in increased pro-environmental decision making. We also revealed the process responsible for this effect. Positive cueing increases the perceived diagnosticity of common environmental behaviors with respect to one's environmental attitudes. Subsequently, the manipulation renders people's attitudes towards ecological behaviors more favorable and makes them perceive themselves more as concerned with the environment. Using this self-perception that one is "the kind of person that usually makes pro-environmental decisions" as a decision heuristic showed to account for the success of the positive cueing manipulation.

In contrast with social labeling, positive cueing was successful, even when the cues were processed with full attention. We assume this is the case because positive cueing is leads the target person in a smoother way towards the idea that he or she must be very concerned with the environment, compared to social labeling. A social label suggests a person to re-attribute his or her behavior, which may elicit resistance to accept the content of the label if one is fully aware of the actual reason for engaging in that particular behavior. Positive cueing encourages the target to draw his or her own conclusions, by simply offering examples of engaging in pro-environmental behavior in the past. The individual is less likely to try to resist drawing the suggested conclusion, because the suggestion is presented in a more subtle way. Social labeling, on the other hand, offers the advantage of having much control over which attribution the target finally makes. Cueing certain behaviors might result in a target person drawing other conclusions than the one that was intended to be induced.

The complementary persuasion approach in relation with traditional social marketing methods

As the word "complementary" indicates, we do not suggest that our more subtle manipulations are meant to entirely replace traditional social marketing methods. The traditional social marketing approach assumes that people base their decision on an elaborated reasoning process. The resulting preference for argument-based and educational campaigning styles, has been successful at fostering pro-environmental attitudes, values, and behavioral intentions. This will always be an essential first step towards long-term behavior change: people should be concerned about the problem at hand and they should also be informed about what should be done to solve the problem. At the same time, this kind of approach has been largely unsuccessful at changing actual behavior (McKenzie-Mohr, 2000). This suggests the need for a complementary approach, which can help people to translate the concern, attitudes, and intentions, fostered by argument-based communications, into actual behavior change.

We have argued that, contrary to these traditional assumptions, much of our behavior is actually the result of heuristic processing, based on minimal informational input. Therefore these pro-environmental attitudes, values, and behavioral intentions will only drive behavior if they have been sufficiently internalized and if they are sufficiently salient (i.e., more salient than immediate self-interested motives) at the moment of decision making. We suggest that tools which activate this pro-environmental cognitive content at the moment of decision making, while avoiding that the target contemplates the decision too much, should be good persuasion mechanisms. After all, we showed that contemplation is likely to result in the decision to pursue one's immediate self-interest in social dilemmas. Making the pro-environmental cognitive content more salient will increase its weight in the heuristic decision process whether or not to behave ecologically.

Limitations and future research

Traditional economic theory assumes that when people make decisions, they engage in a kind of cost-benefit analysis of behavioral alternatives, and choose that course of action which yields them optimal personal utility. A major theme in this dissertation is the idea that, in contrast with this view, many of our decisions are made in a rather intuitive and automatic manner. Dual-process models of cognition (e.g., Bruner, 1986; Chaiken & Trope, 1999; e.g., Epstein, 1994; Wilson, 2002) have dealt with describing the characteristics of both systems of decision making. It is important to get insight in the exact process by which both systems work. That should allow us to develop persuasion strategies, which are fine-tuned to the specific (combination of) decision system in use. In Manuscript II and III, we showed that

manipulating a target's self-perception with regard to environmental consciousness successfully increased environmentally friendly decision making. The type of decision tasks used as dependent variables in the studies included were of a low-involvement nature. It is a matter for future research to find out whether similar persuasion strategies would work in situations in which people are more involved with the judgment at hand, like the decision which new car or refrigerator to buy. Previous research suggests that might be the case. Bower (1981), for example, indicates that intuitive reactions influence which information is retrieved and how it is weighed in a more reasoned and elaborated decision process. On the other hand, perhaps a more reasoned decision process is insensitive to the subtle activation of this kind of cues and builds on a completely different set of information.

As we indicated in the general discussion of Manuscript I, future research should also deal with investigating the outcomes associated with the use of each (combination) of both decision systems in social dilemma situations. In DGs, the automatic system anchors on implicit preferences for distributions of outcomes, measured by the ring measure of social values, whereas self-interested motivations dominate the reasoning process. In resource games, the dual process seems to work differently (Roch et al., 2000): The automatic system anchors decisions on an "equal-division" heuristic, whereas the reasoning system adjusts these choices in a self-serving direction. A third dual process determines the satisfaction felt in a situation of advantageous inequity (van den Bos et al., 2006). In these studies, participants were presented with either a equal distribution of money between themselves and another person, or with an unequal distribution, in which case they received more than the other person. In a situation of advantageous inequity, the automatic system showed to be essentially self-interested, resulting in judgments of high satisfaction. The reasoned system, on the other hand, takes fairness considerations into account, resulting in reporting lower satisfaction. In a study which is not included in this dissertation, we tried to replicate our DG findings in an applied setting, in which not money, but individual effort was the traded good. We asked participants to indicate how much time they were willing to devote to write letters in support of a charity organization. The results in this experiment revealed yet another way in which the automatic and the reasoned system respond to a dilemma situation. Compared to the judgments made by the automatic system, decisions made by the reasoned system were polarized according to participants' SVO, showing that pro-socials were willing to spend more time and effort to benefit a charity organization, compared to pro-selfs. It remains a question for future research whether these different findings can be integrated into a single model of automatic versus reasoned decision making in interdependence situations, or whether both systems may play a fundamentally different role in different situations of interdependence.

A matter of large practical importance, is the question whether subtle persuasion tools, like labeling and positive cueing are able to result in long term effects on behavior. In the studies reported in Manuscript II and III, the delay between our manipulation and the behavioral measures typically fluctuated between 10 and 30 minutes. Most models of persuasion (e.g., the Elaboration Likelihood Model) posit that, in order to achieve long-term effects on behavior, it is necessary to provoke some cognitive elaboration on the content of the message in order to change believes and evaluations regarding that topic. Techniques like labeling and positive cueing typically do *not* provoke such cognitive elaboration. In fact, they seem to work better if these cues are not attended actively (see Manuscript II), at least in the short term. Future research should point out whether such subtle manipulations of one's self-perception has lasting effects on behavior. Some research (e.g., Albarracín & Wyer, 2001) suggests this might be the case. These authors showed that people tend to rationalize their attitudes and behaviors by forming consistent beliefs. Therefore, by using tools like social labeling or positive cueing, which manipulate such attitudes by influencing the way one perceives his or her previous behavior, strong beliefs could develop. People may rationalize this perception by inferring that "they must be very concerned with the environment". The influence of such beliefs could be more long lasting than the influence of communication arguments. This implies that even in the longer term, such subtle cues may have a superior effect on behavior, compared with the exclusive use of argument-based, educational messages.

APPENDIX

Product attribute specifications of the product choice task, manuscript III, Study 4

Product		Choice A	Choice B
Cookies	**Price**	1.05 €	.95 €
	Packaging	25 units in 1 plastic wrapping	Each unit wrapped individually
Kitchen paper	**Price**	1.05 €	.95 €
	Paper	100 % recycled	Non recycled
Deodorant	**Price**	.95 €	1.05 €
	Content	Containing propellants	Environmentally friendly vaporizer
Light bulbs	**Price**	1.30 €	1.50 €
	Type	Regular	Saving light bulbs
Detergent	**Price**	1.30 €	1.40 €
	Type	Regular	Ecological packaging and content

REFERENCES

Ajzen, I. (1996). The directive influence of attitudes on behavior. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action* (pp. 385-403). New York: The Guilford Press.

Alba, J. W., Hutchinson, J. W., & Lynch, J. G. (1991). Memory and decision making. In T. S. Robertson & H. H. Kassarjian (Eds.), *Handbook of consumer behavior* (pp. 1-49). Englewood Cliffs, NJ: Prentice-Hall.

Albarracín, D., & Kumkale, G. T. (2003). Affect as information in persuasion: A model of affect identification and discounting. *Journal of Personality and Social Psychology, 84*(3), 453-469.

Albarracín, D., & McNatt, P. S. (2005). Maintenance and decay of past behavior influences: Anchoring attitudes on beliefs following inconsistent actions. *Personality and Social Psychology Bulletin, 31*(6), 719-733.

Albarracín, D., & Wyer, R. S. (2000). The cognitive impact of past behavior: Influences on beliefs, attitudes, and future behavioral decisions. *Journal of Personality and Social Psychology, 79*(1), 5-22.

Albarracín, D., & Wyer, R. S., Jr. (2001). Elaborative and nonelaborative processing of a behavior-related communication. *Personality and Social Psychology Bulletin, 27*(6), 691-705.

Allen, C. T. (1982). Self-perception based strategies for stimulating energy conservation. *The Journal of Consumer Research, 8*(4), 381-390.

Allison, S. T., & Messick, D. M. (1990). Social decision heuristics in the use of shared resources. *Journal of Behavioral Decision Making, 3*(3), 195-204.

Andreasen, A. R. (1995). *Marketing social change*. San Francisco: Jossey-Bass.

Andreoni, J. (1990). Impure altruism and donations to public goods: A theory of warm-glow giving. *The Economic Journal, 100*(401), 464-477.

Aron, A., Aron, E. N., & Smollan, D. (1992). Inclusion of other in the self scale and the structure of interpersonal closeness. *Journal of Personality and Social Psychology, 63*(4), 596-612.

Aron, A., Aron, E. N., Tudor, M., & Nelson, G. (1991). Close relationships as including other in the self. *Journal of Personality and Social Psychology, 60*(2), 241-253.

Aron, A., & Fraley, B. (1999). Relationship closeness as including other in the self: Cognitive underpinnings and measures. *Social Cognition, 17*(2), 140-161.

Aronson, E., Fried, C., & Stone, J. (1991). Overcoming denial and increasing the intention to use condoms through the induction of hypocrisy. *American Journal of Public Health, 81*(December), 1636-1638.

Babcock, L., Loewenstein, G., Issacharoff, S., & Camerer, C. (1995). Biased judgments of fairness in bargaining. *American Economic Review, 85*(5), 1337-1343.

Bagnoli, M., & McKee, M. (1991). Voluntary contribution games: Efficient private provision of public goods. *Economic Inquiry, 29*(2), 351-366.

Bargh, J. A., & Thein, R. D. (1985). Individual construct accessibility, person memory, and the recall-judgment link: The case of information overload. *Journal of Personality and Social Psychology, 49*(5), 1129-1146.

Bargh, J. A., Wyer, R. S., Jr., & Srull, T. K. (1994). The four horsemen of automaticity: Awareness, intention, efficiency, and control in social cognition. In *Handbook of social cognition, vol. 1: Basic processes; vol. 2: Applications (2nd ed.).* (pp. 1). Hillsdale, NJ, England: Lawrence Erlbaum Associates.

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*(6), 1173-1182.

Baron, R. S., Baron, P. H., & Miller, N. (1973). The relation between distraction and persuasion. *Psychological Bulletin, 80*(4), 310-323.

Batson, C. D., Dyck, J. L., Brandt, J. R., Batson, J. G., Powell, A. L., McMaster, M. R., et al. (1988). Five studies testing two new egoistic alternatives to the empathy-altruism hypothesis. *Journal of Personality and Social Psychology, 55*(1), 52-77.

Bem, D. J. (1972). Self-perception theory. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 6, pp. 1-62). New York: Academic Press.

Bither, S. W. (1972). Effects of distraction and commitment on the persuasiveness of television advertising. *Journal of Marketing Research, 9*(1), 1-5.

Bolton, G. E., Katok, E., & Zwick, R. (1998). Dictator game giving: Rules of fairness versus acts of kindness. *International Journal of Game Theory, 27*(2), 269 - 299.

Bosmans, A., & Warlop, L. (2005). How vulnerable are consumers to persuasion attempts? In G. Menon & A. R. Rao (Eds.), *Advances in consumer research* (Vol. 32, pp. 506). Duluth, MN: Association for Consumer Research.

Bower, G. H. (1981). Mood and memory. *American Psychologist, 36*(2), 129-148.

Brehm, S. S., & Brehm, J. W. (1981). *Psychological reactance - a theory of freedom and control*. New York: Academic Press.

Bruner, J. (1986). *Actual minds, possible worlds*. Cambridge, MA, US: Harvard University Press.

Bruyneel, S., Dewitte, S., Vohs, K. D., & Warlop, L. (2006). Repeated choosing increases susceptibility to affective product features. *International Journal of Research in Marketing, 23*(2), 215-225.

Burger, J. M. (1999). The foot-in-the-door compliance procedure: A multiple-process analysis and review. *Personality and Social Psychology Review, 3*(4), 303-325.

Burger, J. M., & Caldwell, D. F. (2003). The effects of monetary incentives and labeling on the foot-in-the-door effect: Evidence for a self-perception process. *Basic and applied social psychology, 25*(3), 235-241.

Burger, J. M., Messian, N., Patel, S., del Prado, A., & Anderson, C. (2004). What a coincidence! The effects of incidental similarity on compliance. *Personality and Social Psychology Bulletin, 30*(1), 35-43.

Camerer, C. F. (2003). *Behavioral game theory: Experiments in strategic interaction*. Princeton (N.J.): Princeton university press.

Cameron, J., & Pierce, W. D. (1994). Reinforcement, reward, and intrinsic motivation: A meta-analysis. *Review of Educational Research, 64*(3), 363-423.

Campbell, M. C., & Kirmani, A. (2000). Consumers' use of persuasion knowledge: The effects of accessibility and cognitive capacity on perceptions of an influence agent. *Journal of Consumer Research., 27*(1), 69-83.

Chaiken, S. (1987). *The heuristic model of persuasion.* Paper presented at the Social influence: The Ontario symposium.

Chaiken, S., Liberman, A., & Eagly, A. H. (1989). Heuristic and systematic information processing within and beyond the persuasion context. In J. S. Uleman & J. A. Bargh (Eds.), *Unintended thought.* New York, NY: Guilford Press.

Chaiken, S., & Trope, Y. (1999). *Dual-process theories in social psychology*. New York, NY, US: Guilford Press.

Charness, G., & Rabin, M. (2001). Understanding social preference with simple tests. *The Quarterly Journal of Economics, 117*(3), 817-869.

Chen, S., & Chaiken, S. (1999). The heuristic-systematic model in its broader context. In S. Chaiken & Y. Trope (Eds.), *Dual-process theories in social psychology*. New York: Guilford Press.

Cialdini, R. B. (2001). *Influence: Science and practice*. Boston (Mass.): Allyn and Bacon.

Cialdini, R. B. (2003). Crafting normative messages to protect the environment. *Current directions in psychological science, 12*(4), 105-109.

Cialdini, R. B., Brown, S. L., Lewis, B. P., Luce, C., & Neuberg, S. L. (1997). Reinterpreting the empathy-altruism relationship: When one into one equals oneness. *Journal of Personality and Social Psychology, 73*(3), 481-494.

Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (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*(6), 1015-1026.

Crane, A., & Desmond, J. (2002). Societal marketing and morality. *European Journal of Marketing, 36*(june), 548-569.

Crano, W. D., & Sivacek, J. (1982). Social reinforcement, self-attribution, and the foot-in-the-door phenomenon. *Social Cognition, 1*(2), 110-125.

Cunningham, M. R. (1986). Levites and brother's keepers: A sociobiological perspective on prosocial behavior. *Humboldt Journal of Social Relations, 13*, 35-67.

Daly, H. E. (1996). *Beyond growth: The economics of sustainable development*. Boston, MA: Beacon Press U.S.A.

Davis, B. P., & Knowles, E. S. (1999). A disrupt-then-reframe technique of social influence. *Journal of Personality and Social Psychology, 76*(2), 192-199.

Dawes, R. M. (1980). Social dilemmas. *Annual review of psychology, 31*, 169-193.

De Cremer, D., & Stouten, J. (2003). When do people find cooperation most justified? The effect of trust and self-other merging in social dilemmas. *Social Justice Research, 16*(1), 41-52.

De Cremer, D., & Van Vugt, M. (1999). Social identification effects in social dilemmas: A transformation of motives. *European Journal of Social Psychology, 29*(7), 871-893.

De Dreu, C. K. W., & Boles, T. L. (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*(3), 253.

Deci, E. L., & Ryan, R. M. (1991). A motivational approach to self: Integration in personality. In R. Dienstbier (Ed.), *Nebraska symposium on motivation* (Vol. 38, pp. 237-288). Lincoln: University of Nebraska Press.

Dijksterhuis, A., Smith, P., Van Baaren, R., & Wigboldus, D. (2005). The unconscious consumer: Effects of environment on consumer behavior. *Journal of Consumer Psychology, 15*(3), 193-202.

Dolinski, D., Ciszek, M., Godlewski, K., & Zawadzki, M. (2002). Fear-then-relief, mindlessness, and cognitive deficits. *European Journal of Social Psychology, 32*(4), 435-447.

EC. (2005). *Special eurobarometer: The attitudes of european citizens towards the environment*. Brussels: European Commission: Directorate General Press and Communication.

Eckel, C. C., & Grossman, P. J. (1996). Altruism in anonymous dictator games. *Games and Economic Behavior, 16*(2), 181-191.

Epstein, S. (1994). Integration of the cognitive and the psychodynamic unconscious. *American Psychologist, 49*(8), 709-724.

Etzioni, A. (1990). *The moral dimension: Toward a new economics*. New York (N.Y.): Free Press.

Fehr, E., & Fischbacher, U. (2003). The nature of human altruism. *Nature, 425*(6960), 785-791.

Fehr, E., & Gächter, S. (2000). Cooperation and punishment in public goods experiments. *American Economic Review, 90*(4), 980-994.

Fennis, B. M., Das, E. H. H. J., & Pruyn, A. T. H. (2004). "if you can't dazzle them with brilliance, baffle them with nonsense": Extending the impact of the disrupt-then-reframe technique of social influence. *Journal of Consumer Psychology, 14*(3), 280-290.

Ferreira, M. B., Garcia-Marques, L., Sherman, S. J., & Sherman, J. W. (2006). Automatic and controlled components of judgment and decision making. *Journal of Personality and Social Psychology, 91*(5), 797-813.

Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford, CA: Stanford University Press.

Festinger, L., & Maccoby, N. (1964). On resistance to persuasive communications. *Journal of Abnormal & Social Psychology, 68*(4), 359-366.

Follows, S. B., & Jobber, D. (2000). Environmentally responsible purchase behaviour: A test of a consumer model. *European Journal of Marketing, 34*(5/6), 723 - 746.

Frank, R. H., Gilovich, T., & Regan, D. T. (1993). Does studying economics inhibit cooperation? *The Journal of Economic Perspectives, 7*(2), 159-171.

Freedman, J. L., & Fraser, S. C. (1966). Compliance without pressure: The foot-in-the-door technique. *Journal of Personality and Social Psychology, 4*(August), 195-202.

Frey, B. S., & Meier, S. (2004). Social comparisons and pro-social behavior: Testing "conditional cooperation" in a field experiment. *American Economic Review, 94*(5), 1717-1722.

Frey, B. S., & Oberholzer-Gee, F. (1997). The cost of price incentives: An empirical analysis of motivation crowding-out. *American Economic Review, 87*(4), 746-755.

Friestad, M., & Wright, P. (1994). The persuasion knowledge model: How people cope with persuasion attempts. *The Journal of Consumer Research, 21*(1), 1-31.

Gärling, T., Fujii, S., Gärling, A., & Jakobsson, C. (2003). Moderating effects of social value orientation on determinants of proenvironmental behavior intention. *Journal of Environmental Psychology, 23*(1), 1.

Gilbert, D. T., Krull, D. S., & Malone, P. S. (1990). Unbelieving the unbelievable: Some problems in the rejection of false information. *Journal of Personality and Social Psychology, 59*(4), 601-613.

Gilbert, D. T., & Osborne, R. E. (1989). Thinking backward: Some curable and incurable consequences of cognitive busyness. *Journal of Personality and Social Psychology, 57*(6), 940-949.

Gilbert, D. T., Pelham, B. W., & Krull, D. S. (1988). On cognitive busyness: When person perceivers meet persons perceived. *Journal of Personality and Social Psychology, 54*(5), 733-740.

Gill, J. D., Crosby, L. A., & Taylor, J. R. (1986). Ecological concern, attitudes, and social norms in voting behavior. *Public Opinion Quarterly, 50*(4), 537-554.

Gorassini, D. R., & Olson, J. M. (1995). Does self-perception change explain the foot-in-the-door effect? *Journal of Personality and Social Psychology, 69*(1), 91-105.

Grice, H. P. (1975). Logic and conversation. In P. Cole & J. L. Morgan (Eds.), *Syntax and semantics* (Vol. 3). New York: Academic Press.

Grunert, S. C. (1993). Everybody seems to be concerned about the environment; but is this concern reflected in (danish) consumers' food choice? In F. Van Raaij & G. J. Bamossy (Eds.), *European advances in consumer research* (Vol. 1). Provo, UT: Association for Consumer Research.

Guggenheim, D. (2006). *An inconvenient truth*. USA: Paramount Pictures.

Haidt, J. (2001). The emotional dog and its rational tail: A social intuitionist approach to moral judgment. *Psychological Review, 108*(4), 814-834.

Hardin, G. (1968). The tragedy of the commons. *Science, 162*(3859), 1243-1248.

Harris, R. J., & Joyce, M. A. (1980). What's fair? It depends on how you phrase the question. *Journal of Personality and Social Psychology, 38*(1), 165-179.

Henrich, J., Boyd, R., Bowles, S., Camerer, C., Fehr, E., Gintis, H., et al. (1991). In search of homo economicus: Behavioral experiments in 15 small-scale societies. *American Economics Review, 91*(2), 73-78.

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*(1), 49-70.

Hoffman, E., McCabe, K. A., Shachat, K., & Smith, V. L. (2000). Preferences, property rights, and anonymity in bargaining games. In V. L. Smith (Ed.), *Bargaining and market behavior: Essays in experimental economics*. New York (NY): Cambridge University Press.

Hoffman, E., & Spitzer, M. L. (1985). Entitlements, rights, and fairness: An experimental examination of subjects' concepts of distributive justice. *The Journal of Legal Studies, 14*(2), 259-297.

Holbrook, M. B., & Batra, R. (1987). Assessing the role of emotions as mediators of consumer responses to advertising. *Journal of Consumer Research, 14*(3), 404.

Holbrook, M. B., & Lehmann, D. R. (1980). Form versus content in predicting starch scores. *Journal of Advertising Research, 20*(4), 53.

Holland, R. W., Roeder, U.-R., van Baaren, R. B., Brandt, A. C., & Hannover, B. (2004). Don't stand so close to me the effects of self-construal on interpersonal closeness. *Psychological Science, 15*(4), 237-242.

Hornik, J. (1988). Cognitive thoughts mediating compliance in multiple request situations. *Journal of Economic Psychology, 9*(1), 69-79.

Joireman, J. A., Lasane, T. P., Bennett, J., Richards, D., & Solaimani, S. (2001). Integrating social value orientation and the consideration of future consequences within the extended norm activation model of proenvironmental behaviour. *British Journal of Social Psychology, 40*(1), 133-155.

Jones, B., & Rachlin, H. (2006). Social discounting. *Psychological Science, 17*(4), 283-286.

Kagel, J. H., Kim, C., & Moser, D. (1996). Fairness in ultimatum games with asymmetric information and asymmetric payoffs. *Games and Economic Behavior, 13*(1), 100.

Kahan, D. M. (1997). Social influence, social meaning, and deterrence. *Virginia Law Review, 83*, 349-395.

Kahneman, D., Knetsch, J. L., & Thaler, R. (1986). Fairness as a constraint on profit seeking: Entitlements in the market. *American Economic Review, 76*(4), 728-741.

Kahneman, D., & Tversky, A. (1972). Subjective probability: A judgment of representativeness. *Cognitive Psychology, 3*(3), 430-454.

Kelley, H. H. (1973). The processes of causal attribution. *American Psychologist, 28*(2), 107-128.

Kollmuss, A., & Agyeman, J. (2002). Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental Education Research, 8*(3), 239-260.

Kolm, S.-C. (2000). A historical introduction to normative economics. *Social Choice and Welfare, 17*(4), 707-738.

Kotler, P., & Zaltman, G. (1971). Social marketing: An approach to planned social change. *Journal of Marketing, 35*(3), 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*(3), 576-582.

Kraut, R. E. (1973). Effects of social labeling on giving to charity. *Journal of experimental social psychology, 9*(6), 551-562.

Krebs, D. L. (1991). Altruism and egoism: A false dichotomy? *Psychological Inquiry, 2*(2), 137-139.

Kumkale, G. T., & Albarracín, D. (2004). The sleeper effect in persuasion: A meta-analytic review. *Psychological Bulletin, 130*(1), 143-172.

Kunda, Z. (1990). The case for motivated reasoning. *Psychological Bulletin, 108*(3), 480-498.

Langer, E. J. (1992). Matters of mind: Mindfulness/mindlessness in perspective. *Consciousness and Cognition, 1*(4), 289-305.

Ledyard, J. P. (1995). Public goods: A survey of experimental research. In A. Roth & J. Kagel (Eds.), *Handbook of experimental economics*. Princeton: University Press.

Lerner, M. J. (1977). The justice motive: Some hypotheses as to its origins and forms. *Journal of Personality, 45*(1), 1-52.

Lewis, M. A., & Neighbors, C. (2006). Who is the typical college student? Implications for personalized normative feedback interventions. *Addictive Behaviors, 31*(11), 2120.

Liberman, N., & Trope, Y. (1998). The role of feasibility and desirability considerations in near and distant future decisions: A test of temporal construal theory. *Journal of Personality and Social Psychology, 75*(1), 5-18.

Liebrand, W. B. G. (1984). The effect of social motives, communication and group size on behaviour in a n-person mult-stage mixed motive game. *European Journal of Personality, 14*, 139-364.

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*(3), 217-230.

Luce, R. D., & Raiffa, H. (1957). *Games and decisions: Introduction and critical survey*. New York: John Wiley and Sons.

MacKenzie, S. B., Lutz, R. J., & Belch, G. E. (1986). The role of attitude toward the ad as a mediator of advertising effectiveness: A test of competing explanations. *Journal of Marketing Research, 23*(2), 130.

Mainieri, T., Barnett, E. G., Valdero, T., Unipan, J. B., & Oskamp, S. (1997). Green buying: The influence of environmental concern on consumer behavior. *Journal of Social Psychology, 137*(2).

Mansbridge, J. J. (1990). *Beyond self-interest*. Chicago: The University of Chicago Press.

Martin, L. L., Seta, J. J., & Crelia, R. A. (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*(1), 27-37.

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, 30*(May), 53-62.

McClintock, C. G. (1972). Social motivation - a set of propositions. *Behavioral Science, 17*(5), 438-454.

McClintock, C. G., & Allison, S. T. (1989). Social value orientation and helping behavior. *Journal of Applied Social Psychology, 19*(4), 353-362.

McKenzie-Mohr, D. (2000). Promoting sustainable behavior: An introduction to community-based social marketing. *Journal of Social Issues, 56*(3), 543-554.

Menon, G., Block, L. G., & Ramanathan, S. (2002). We're at as much risk as we are led to believe: Effects of message cues on judgments of health risk. *Journal of Consumer Research, 28*(4), 533-549.

Messick, D. M. (1993). Equality as a decision heuristic. In B. A. Mellers & J. Baron (Eds.), *Psychological perspectives on justice: Theory and applications*. Cambridge: University Press.

Messick, D. M., & McClintock, C. G. (1968). Motivational bases of choice in experimental games. *Journal of experimental social psychology, 4*(1), 1-25.

Meyers-Levy, J., & Tybout, A. M. (1997). Context effects at encoding and judgment in consumption settings: The role of cognitive resources. *Journal of Consumer Research, 24*(1), 1-14.

Miller, D. T. (1999). The norm of self-interest. *American Psychologist, 54*(12), 1053-1060.

Miller, R. L., Brickman, P., & Bolen, D. (1975). Attribution versus persuasion as a means for modifying behavior. *Journal of Personality and Social Psychology, 31*(March), 430-441.

Minton, A. P., & Rose, R. L. (1997). The effects of environmental concern on environmentally friendly consumer behavior: An exploratory study - dimensions of environmental concern. *Journal of Business Research, 40*(September), 37-48.

Moore, D. A., & Loewenstein, G. (2004). Self-interest, automaticity, and the psychology of conflict of interest. *Social Justice Research, 17*(2), 189-202.

Morris, M. W., & Larrick, R. P. (1995). When one cause casts doubt on another: A normative analysis of discounting in causal attribution. *Psychological Review, 102*(2), 331.

Most, S. B., Simons, D. J., Scholl, B. J., Jimenez, R., Clifford, E., & Chabris, C. F. (2001). How not to be seen: The contribution of similarity and selective ignoring to sustained inattentional blindness. *Psychological Science, 12*(1), 9-17.

Nauta, A., De Dreu, C. K. W., & van der Vaart, T. (2002). Social value orientation, organizational goal concerns and interdepartmental problem-solving behavior. *Journal of Organizational Behavior, 23*(2), 199 - 213.

Orbell, J. M., & Dawes, R. M. (1991). A "cognitive miser" theory of cooperators' advantage. *American Political Science Review, 85*(2), 515-528.

Osbaldiston, R., & Sheldon, K. M. (2003). Promoting internalized motivation for environmentally responsible behavior: A prospective study of environmental goals. *Journal of Environmental Psychology, 23*(December), 349-357.

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

Ouellette, J. A., & Wood, W. (1998). Habit and intention in everyday life: The multiple processes by which past behavior predicts future behavior. *Psychological Bulletin, 124*(1), 54-74.

Petty, R. E., & Cacioppo, J. T. (1986). The elaboration likelihood model of persuasion. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 19, pp. 123-205). New York: Academic Press.

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

Pieters, R. G., Bijmolt, T., van Raaij, F., & de Kruijk, M. (1998). Consumers' attributions of pro-environmental behavior, motivation, and ability to self and others. *Journal of Public Policy and Marketing, 17*(2), 215-225.

Preacher, K. J., & Hayes, A. F. (2004). Spss and sas procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers, 36*(4), 717-731.

Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2005). Suggested procedures for addressing moderated mediation hypotheses, *Working Papers*: University of North Carolina Chapel Hill.

Rachlin, H., & Raineri, A. (1992). Irrationality, impulsiveness, and selfishness as discount reversal effects. In G. Loewenstein & J. Elster (Eds.), *Choice over time*. New York, NY, US: Russell Sage Foundation.

Raghubir, P., & Menon, G. (2005). Depressed or just blue? The persuasive effects of a self-diagnosis inventory. *Journal of Applied Social Psychology, 35*(12), 2535-2559.

Reich, J. W., & Robertson, J. L. (1979). Reactance and norm appeal in anti-littering messages. *Journal of Applied Social Psychology, 9*(1), 91-101.

Roch, S. G., Lane, J. A. S., Samuelson, C. D., Allison, S. T., & Dent, J. L. (2000). Cognitive load and the equality heuristic: A two-stage model of resource overconsumption in small groups. *Organizational Behavior and Human Decision Processes, 83*(2), 185.

Rondeau, D., D. Schulze, W., & Poe, G. L. (1999). Voluntary revelation of the demand for public goods using a provision point mechanism. *Journal of Public Economics, 72*(3), 455-470.

Rosenblatt, P. C. (1966). Persuasion as a function of varying amounts of distraction. *Psychonomic Science, 5*(2), 85-86.

Roth, A. E., Prasnikar, V., Okuno-Fujiwara, M., & Zamir, S. (1981). Bargaining and market behavior in jerusalem, ljubljana, pittsburgh, and tokyo: An experimental study. *American Economic Review, 81*(5), 1068-1095.

Rothschild, M. L. (1979). Marketing communications in nonbusiness situations or why it's so hard to sell brotherhood like soap. *Journal of Marketing, 43*(2), 11-20.

Ruffle, B. J. (1998). More is better, but fair is fair: Tipping in dictator and ultimatum games. *Games and Economic Behavior, 23*, 247-265.

Rushton, J. P., Russell, R. J. H., & Wells, P. A. (1984). Genetic similarity theory: Beyond kin selection. *Behavior Genetics, 14*(3), 179-193.

Rutte, C. G., Wilke, H. A. M., & Messick, D. M. (1987). Scarcity or abundance caused by people or the environment as determinants of behavior in the resource dilemma. *Journal of Experimental Social Psychology, 23*(3), 208.

Ryan, R. M., & Deci, E. L. (2000). Facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(January), 68-78.

Salancik, G. R., & Conway, M. (1975). Attitude inferences from salient and relevant cognitive content about behavior. *Journal of Personality and Social Psychology, 32*(November), 829-840.

Sawyer, A. G. (1975). Demand artifacts in laboratory experiments in consumer research. *Journal of Consumer Research, 1*(4), 20.

Schotter, A., Weiss, A., & Zapater, I. (1996). Fairness and survival in ultimatum and dictatorship games. *Journal of Economic Behavior & Organization, 31*(1), 37.

Schwartz, B. (1986). *The battle for human nature*. New York: Norton.

Schwarz, N. (1994). Judgment in a social context: Biases, shortcomings, and the logic of conversation. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 26, pp. 123-162). San Diego, CA: Academic Press.

Schwarz, N., & Bless, H. (1992). Constructing reality and its alternatives: An inclusion/exclusion model of assimilation and contrast effects in social judgment. In L. L. Martin & A. Tesser (Eds.), *The construction of social judgments.* (pp. 217-245). Hillsdale, NJ, England: Lawrence Erlbaum Associates.

Schwarz, N., Strack, F., Bless, H., Klumpp, G., Rittenauer-Schatka, H., & Simons, A. (1991). Ease of retrieval as information: Another look at the availability heuristic. *Journal of Personality and Social Psychology, 61*(2), 195-202.

Scott, C. A. (1977). Modifying socially-conscious behavior: The foot-in-the-door technique. *The Journal of Consumer Research, 4*(3), 156-164.

Scott, C. A., & Yalch, R. F. (1980). Consumer response to initial product trial: A bayesian analysis. *The Journal of Consumer Research, 7*(June), 32-41.

Sedikides, C., & Strube, M. J. (1997). Self-evaluation: To thine own self be good, to thine own self be sure, to thine own self be true, and to thine own self be better. *Advances in Experimental Social Psychology, 29*, 209-269.

Sheldon, K. M., Arndt, J., & Houser-Marko, L. (2003). In search of the organismic valuing process: The human tendency to move towards beneficial goal choices. *Journal of Personality, 71*(5), 835-869.

Sheldon, K. M., & Elliot, A. J. (1999). Goal striving, need satisfaction, and longitudinal well-being: The self-concordance model. *Journal of Personality and Social Psychology, 76*(March), 482-497.

Shiv, B., & Fedorikhin, A. (1999). Heart and mind in conflict: The interplay of affect and cognition in consumer decision making. *Journal of Consumer Research, 26*(3), 278-292.

Shiv, B., Fedorikhin, A., & Nowlis, S. B. (2005). Interplay of the heart and the mind in decision-making. In R. S. & D. G. Mick (Eds.), *Inside consumption: Perspectives on consumer motives, goals and desires*. London: Routledge.

Smeesters, D., Warlop, L., Van Avermaet, E., Corneille, O., & Yzerbyt, V. (2003). Do not prime hawks with doves: The interplay of construct activation and consistency of social value orientation on cooperative behavior. *Journal of Personality and Social Psychology, 84*(5), 972-987.

Snyder, M., & Uranowitz, S. W. (1978). Reconstructing the past: Some cognitive consequences of person perception. *Journal of Personality and Social Psychology, 36*(9), 941-950.

Sober, E., & Wilson, D. S. (1998). *Unto others: The evolution and psychology of unselfish behavior*. Cambridge, MA: Harvard University Press.

Spangenberg, E. R., & Greenwald, A. G. (1999). Social influence by requesting self-prophecy. *Journal of Consumer Psychology, 8*(1), 61-89.

Spellman, B. A., & Holyoak, K. J. (1992). If saddam is hitler then who is george bush? Analogical mapping between systems of social roles. *Journal of Personality and Social Psychology, 62*(6), 913-933.

Spencer, S. J., Zanna, M. P., & Fong, G. T. (2005). Establishing a causal chain: Why experiments are often more effective than mediational analyses in examining psychological processes. *Journal of Personality and Social Psychology, 89*(6), 845-851.

Sperling, G., & Dosher, B. A. (1986). Strategy and optimization in human information processing. In K. R. Boff, L. Kaufman & J. P. Thomas (Eds.), *Handbook of perception and human performance* (Vol. 1). New York: Wiley.

Stimpson, D. V., & Waranusuntikule, S. (1987). Mediating effects of material payment, social reinforcement, and familiarity on foot-in-the-door phenomena in thailand. *Journal of Psychology, 121*(5), 515-521.

Strenta, A., & DeJong, W. (1981). The effect of a prosocial label on helping behavior. *Social Psychology Quarterly, 44*(2), 142-147.

Taylor, S. E. (1975). On inferring one's attitudes from one's behavior: Some delimiting conditions. *Journal of Personality and Social Psychology, 31*(1), 126-131.

Thøgersen, J. (1994a). A model of recycling behaviour, with evidence from danish source separation programmes. *International Journal of Research in Marketing, 11*(march), 145-163.

Thøgersen, J. (1994b). Monetary incentives and environmental concern. Effects of a differentiated garbage fee. *Journal of Consumer Policy, 17*(4), 407-442.

Thøgersen, J., & Grunert-Beckmann, S. C. (1997). Values and attitude formation towards emerging attitude objects: From recycling to general, waste minimizing behavior. *Advances in Consumer Research, 24*(1), 182-189.

Thompson, L., & Loewenstein, G. (1992). Egocentric interpretations of fairness and interpersonal conflict. *Organizational Behavior and Human Decision Processes, 51*(2), 176-197.

Trope, Y., & Liberman, N. (2000). Temporal construal and time-dependent changes in preference. *Journal of Personality and Social Psychology, 79*(6), 876-889.

Turillo, C. J., Folger, R., Lavelle, J. J., Umphress, E. E., & Gee, J. O. (2002). Is virtue its own reward? Self-sacrificial decisions for the sake of fairness. *Organizational Behavior and Human Decision Processes, 89*(1), 839-865.

Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology, 5*, 207-232.

Tybout, A. M., & Yalch, R. F. (1980). The effect of experience: A matter of salience? *Journal of Consumer Research, 6*(March), 406-413.

Vaidyanathan, R., & Praveen, A. (2005). Using commitments to drive consistency: Enhancing the effectiveness of cause-related marketing communications. *Journal of Marketing Communications, 11*(4), 231 - 246.

van den Bos, K., Peters, S. L., Bobocel, D. R., & Ybema, J. F. (2006). On preferences and doing the right thing: Satisfaction with advantageous inequity when cognitive processing is limited. *Journal of Experimental Social Psychology, 42*(3), 273-289.

Van Lange, P. A. M. (1999). The pursuit of joint outcomes and equality in outcomes: An integrative model of social value orientation. *Journal of Personality and Social Psychology, 77*(2), 337-349.

Van Lange, P. A. M., Agnew, C. R., Harinck, F., & Steemers, G. E. M. (1997a). From game theory to real life: How social value orientation affects willingness to sacrifice in ongoing close relationships. *Journal of Personality and Social Psychology, 73*(6), 1330-1344.

Van Lange, P. A. M., De Bruin, E. M. N., Otten, W., & Joireman, J. A. (1997b). Development of prosocial, individualistic, and competitive orientations: Theory and preliminary evidence. *Journal of Personality and Social Psychology, 73*(4), 733-746.

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. *European Journal of Personality, 3*(3), 209-225.

Van Lange, P. A. M., & Liebrand, W. B. G. (1991). Social value orientation and intelligence: A test of the goal prescribes rationality principle. *European journal of social psychology, 21*(4), 273-292.

Van Lange, P. A. M., Van Vugt, M., Meertens, R. M., & Ruiter, R. A. C. (1998). A social dilemma analysis of commuting preferences: The roles of social value orientation and trust. *Journal of Applied Social Psychology, 28*(9), 796-820.

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. *Journal of Applied Social Psychology, 25*(3), 258-278.

van Vugt, M., van Lange, P. A. M., & Meertens, R. M. (1996). Commuting by car or public transportation? A social dilemma analysis of travel mode judgements. *European Journal of Social Psychology, 26*(3), 373-395.

Vanden Abeele, P., & MacLachlan, D. L. (1994). Process tracing of emotional responses to tv ads: Revisiting the warmth monitor. *Journal of Consumer Research, 20*(4), 586.

Verplanken, B., & Holland, R. W. (2002). Motivated decision making: Effects of activation and self-centrality of values on choices and behavior. *Journal of Personality and Social Psychology, 82*(3), 434-447.

Vohs, K. D., & Baumeister, R. F. (2004). Ego-depletion, self-control, and choice. In J. Greenburg, S. L. Koole & T. Pyszczynski (Eds.), *Handbook of experimental existential psychology*. New York: Guilford Press.

Wallach, M. A., & Wallach, L. (1983). *Psychology's sanction for selfishness: The error of egoism in theory and therapy*. San Francisco: W.H. Freeman & Company.

Warlop, L., Smeesters, D., & Vanden Abeele, P. (2003). On selling brotherhood like soap. Influencing everyday disposal decisions. In S. Ratneshwar, D. G. Mick & C. Huffman (Eds.), *The why of consumption: Contemporary perspectives on consumer motives, goals and desires*. London: Routledge.

Wells, R. E., & Iyengar, S. S. (2005). Positive illusions of preference consistency: When remaining eluded by one's preferences yields greater subjective well-being and decision outcomes. *Organizational behavior and human decision processes, 98*(1), 66-87.

Wiener, J. L., & Doescher, T. A. (1991). A framework for promoting cooperation. *Journal of Marketing, 55*(2), 38-47.

Wilson, T. D. (2002). *Strangers to ourselves: Discovering the adaptive unconscious*. Cambridge, MA, US: Belknap Press/Harvard University Press.

Witte, K., & Allen, M. (2000). A meta-analysis of fear appeals: Implications for effective public health campaigns. *Health Education & Behavior, 27*(5), 591-615.