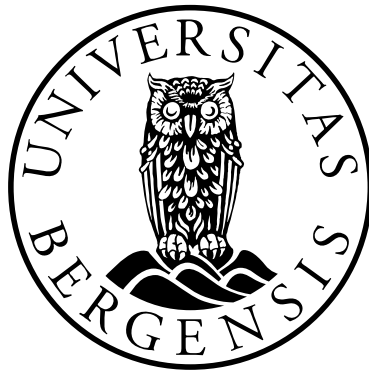


Explaining sustainable consumption

Findings from cross-sectional and intervention approaches

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Scientific environment

This research project was conducted from 2008 to 2012 at the DICE-Lab (Bergen Laboratory for the Study of Decision, Intuition, Consciousness, and Emotion), a research group at the Faculty of Psychology, Department of Psychosocial Science, University of Bergen.

The academic supervisors of the project were Dr. Gisela Böhm, professor of psychometrics and research methods at the University of Bergen, and Dr. Hans-Rüdiger Pfister, professor of psychological decision research and methods at the Leuphana University, Lüneburg (D).

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Abstract

Consumers can contribute to sustainable development if they choose environmentally friendly and fair trade products (i.e., sustainable products) in their everyday grocery shopping. On the downside, the purchasing of sustainable groceries often requires extra effort because, for example, many sustainable products are more expensive than conventional products. What is more, the beneficial effects of sustainable consumption, such as environmental preservation, materialize over time as a result of repeated purchases by many people. Because collective efforts are needed to achieve sustainability, individual consumers may be uncertain about whether their own purchase decisions make a difference. This research project addressed the question of what may motivate consumers to purchase sustainable groceries despite the uncertainties and individual drawbacks that are associated with sustainable consumption.

There were two main objectives: first, to investigate some of the individual characteristics that may distinguish frequent buyers of sustainable groceries from less frequent buyers; second, to provide insights into how consumers can be encouraged to purchase sustainable groceries. To these ends, two studies were conducted.

Study 1 was an online survey that addressed the first objective. More precisely, the purpose of the study was to investigate how well social values, time perspective, and self-efficacy predict the purchasing of sustainable groceries. In the domain of grocery purchasing, these individual characteristics had not been studied together before. As for self-efficacy, both *general* and *sustainable development self-efficacy* were explored. The former refers to people's perceived general ability to deal with stressors and to achieve desired outcomes, whereas the latter refers to the degree to which people feel able to contribute to sustainable development, a construct that had not been studied before. It was assumed that pro-social values, a long-term time perspective, and high self-efficacy characterize consumers who frequently purchase sustainable groceries. Consumers who purchase sustainable groceries less frequently, in contrast, were assumed to attach importance to pro-self values and to have a short-

term time perspective and low self-efficacy. Taking part in the study were 402 people living in the municipality of Bergen (Norway).

The findings of this study are reported in two papers: Paper 1 introduces the construct of sustainable development self-efficacy and explores its dimensionality. It also reports the relations between sustainable development self-efficacy, general self-efficacy, and the purchasing of sustainable groceries. It was found that different facets of sustainable development self-efficacy can be distinguished. Most importantly, the perceived ability to *directly* contribute to sustainable development (i.e., by one's own actions) was represented by facets which are different to those which represent the perceived ability to *indirectly* contribute to sustainable development (i.e., by encouraging other people to engage in sustainable behaviors). In sum, the perceived ability to indirectly contribute to sustainable development predicted sustainable consumption better than the perceived ability to directly contribute to sustainable development. General self-efficacy was weakly related to sustainable development self-efficacy but unrelated to the purchasing of sustainable groceries.

Paper 2 reports the relations between social values, time perspective, sustainable development self-efficacy, and the purchasing of sustainable groceries. With regard to self-efficacy, people's perceived ability to indirectly contribute to sustainable development was investigated. It was found that social values, time perspective, and self-efficacy accounted for non-overlapping parts of the variance in sustainable consumption. The relations between the focal variables were generally in the expected directions.

Study 2 was an intervention study that addressed the second objective. It investigated whether consumers can be encouraged to purchase sustainable groceries with the help of an informational intervention. The main focus of the intervention was to provide information on how individual consumers can contribute to sustainable development and how an individual's contribution to sustainable development may encourage other consumers to join in. The effects of the intervention on both sustainable

development self-efficacy and sustainable consumption (i.e., purchasing intentions and actual product purchases) were assessed. The participants were 145 people living in the municipality of Bergen, who were randomly assigned to one of two groups: an intervention group and a control group.

The results of the second study are reported in Paper 3. It was found that the intervention strengthened *intentions* to purchase domestic and seasonal products and certified ecological products. In addition, the intervention promoted the *actual purchasing* of ecological and fair trade products. Self-efficacy was, however, not affected by the intervention. Thus, the increased preferences for sustainable groceries in the intervention group cannot be explained by changes in self-efficacy.

In sum, the results of this research project show that consumers who purchase sustainable groceries on a regular basis tend to attach importance to the welfare of others, consider the long-term future consequences of their actions, and believe that they can personally contribute to sustainable development. Furthermore, consumers can be encouraged to purchase sustainable groceries by being provided with information about how individuals can directly and indirectly contribute to sustainable development. These findings inform theorists, politicians, and activists who intend to contribute to the promotion of sustainable consumption.

Abbreviations

CFC	Consideration of future consequences
DAWS	Dutch Association of Worldshops
EAICI	Environmental Action Internal Control Index
ELOC	Environmental locus of control
FIVH	Framtiden i våre hender
GSE	General self-efficacy
IPCC	Intergovernmental Panel on Climate Change
NGO	Nongovernmental organization
OECD	Organisation for Economic Co-operation and Development
PCA	Principal component analysis
PH	Purchase habit
PI	Purchasing intentions
PVQ	Portrait value questionnaire
SDSE	Sustainable development self-efficacy
SSB	Statistisk sentralbyrå (Statistics Norway)
SVO	Social value orientation
TPB	Theory of planned behavior
UN	United Nations
WCED	World Commission on Environment and Development

List of papers

Hanss, D. & Böhm, G. (2010). Can I make a difference? The role of general and domain-specific self-efficacy in sustainable consumption decisions. *Umweltpsychologie, 14*, 46-74.

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1. Introduction

Resource shortages and environmental changes which endanger humans and other species are no longer merely future scenarios or the subject of science fiction. We are now witnessing indications of the environmental risks that can be expected if wasteful lifestyles in industrialized countries remain unchanged and if the human population continues to grow at a rapid pace. Climate change, species extinction, and food shortages are prominent examples. Tragically, those who are worst affected by these risks are not necessarily the ones who are the main perpetrators (Böhm & Hanss, 2012). Take the example of climate change: per capita emissions of greenhouse gases are much higher in industrialized than in developing countries (cf. IPCC, 2007). The detrimental consequences of climate change, however, are expected to seriously affect people in developing countries, who may lack the means for adaptation. Thus, human-made environmental problems may create social and economic conflicts with disastrous consequences for current and future generations (Van Vugt, 2009). Conversely, social and economic conflicts can also lead to environmental problems. For example, poverty may prevent farmers in developing countries from adopting environmentally friendly production methods (Strong, 1997).

An early initiative to develop strategies for tackling global environmental and social problems was the UN World Commission on Environment and Development (WCED). In its outcome document (1987), the WCED proposed the concept of *sustainable development*, defined as development that “meets the needs of the present without compromising the ability of future generations to meet their own needs (p. 24).” Almost 30 years on from the founding of the WCED, the idea of orientating development strategies to the needs of current and future generations seems to be more important than ever before. Many of today’s most pressing problems, such as climate change, environmental deterioration, and turbulences on financial markets, are characterized by a focus on activities that entail short-term benefits for some but long-term risks for the collective. Furthermore, an ever-increasing gap between affluent and economically deprived people (cf. OECD, 2011) highlights the need for

a socially fair distribution of resources within and between nations. It is, therefore, not surprising that environmental preservation and combating poverty were among the challenges that the UN emphasized in connection with the Millennium Development Goals (Marrakech Process Secretariat: UNDESA and UNEP, 2010). With regard to achieving these goals, the UN stressed the importance of *sustainable consumption*, that is, consumption patterns that promote sustainable development.

Norway intends to be at the forefront of implementing sustainable development. A main pillar of Norway's sustainable development strategy is to promote sustainable consumption of goods and services, with a focus on reducing any detrimental effects on the natural environment (cf. Norwegian Ministry of Finance, 2011). The Norwegian government has therefore decided that 15% of food production and consumption in Norway should be ecological by the year 2020 (Statistics Norway, SSB, 2010). However, SSB's 2010 report on agriculture and environment documents that there is still a long way to go before this goal is achieved.

Consumers play an important role in stimulating sustainable practices in industry, agriculture, and trade. By means of their product choices, consumers can "vote" for more or less sustainable means of production, distribution, and trade, and influence which products appear on supermarket shelves (Strong, 1997; Tanner & Wölfing Kast, 2003). However, a recent report by the environmental organization Framtiden i våre hender (FIVH, 2011a) shows that Norway is among the Western European countries with the smallest market share of ecological foods. In 2008, ecological foods accounted for only 1% of total national food sales in Norway. Denmark (7%) and Sweden (4%) were among the countries with the highest market share of ecological foods. Norway has also been a difficult market for fair trade organizations, as indicated by the comparatively low per capita spending on fair trade products (Dutch Association of Worldshops, DAWS, 2008). Therefore, a crucial question is: how can consumers be encouraged to choose sustainable products, such as ecological and fair trade foods, in their everyday grocery shopping?

In recent years, NGOs and grassroots organizations have launched campaigns to promote sustainable products in Norway (e.g., providing information, making products more visible at the point of sale, providing tasting booths); examples are FIVH Bergen's ongoing "Bærekraftig Mat" (Norwegian for "sustainable food") campaign and the "Fairtrade-by" (Norwegian for "Fairtrade-city") campaign. Input for the design of such campaigns comes from research that investigates what structural, contextual, social, and individual factors affect consumer preferences for sustainable products. Various scientific disciplines contribute to this field, with different approaches to the topic. Within the economic literature, the question of how product prices affect demand for sustainable products has received considerable research attention, with an emphasis on how much extra consumers are willing to pay for sustainable products (e.g., Arnot, Boxall, & Cash, 2006; Bjørner, Hansen, & Russell, 2004; De Pelsmacker, Driesen, & Rayp, 2005). Within sociology, the social practices approach sheds light on how contextual factors (e.g., the provision of sustainable alternatives and dependencies between providers and users) affect the emergence of sustainable lifestyles (e.g., Spaargaren, 2003). The unit of analysis is daily routines (i.e., sets of everyday practices in domains such as food, housing, and leisure) that are shared by designated groups of actors. Within the psychological literature, the central unit of analysis is the individual consumer. The research agenda centers around the identification of individual characteristics that motivate sustainable consumption (cf. Tanner & Wölfling Kast, 2003) and on the interplay between individual characteristics and contextual factors (e.g., stimuli in the store) in motivating sustainable consumption.

This project aimed to add to the psychological literature by studying three individual characteristics that may motivate consumers to purchase sustainable groceries: values, time perspective, and self-efficacy. In brief, values refer to goals that guide people's behaviors, time perspective refers to the degree to which people consider the future consequences of their behaviors when they make decisions and whether they are more motivated by their long-term or short-term future goals, and self-efficacy can be conceived of as a person's perceived ability to achieve desired outcomes. A more comprehensive description of the three characteristics will be provided below.

Two studies were conducted. The first study investigated how well values, time perspective, and self-efficacy predict the purchasing of sustainable groceries. The second study investigated whether informing consumers about how they can contribute to sustainable development increases consumers' self-efficacy and encourages them to purchase sustainable groceries. The participants in both studies were Norwegian consumers.

At this point, the basic assumptions of this research project will be presented (Chapter 2), followed by a description of how sustainable consumption was conceptualized (Chapter 3). Chapter 4 will give an overview of the market for sustainable groceries in Norway. One of the main objectives will be to point out some of the existing barriers and individual drawbacks of purchasing sustainable groceries. In Chapter 5, two theoretical frameworks that guided this project will be introduced: (a) theories that conceive of humans as agents and assume that human decision making is conscious, intentional, and deliberate; and (b) the social dilemma approach, which takes account of the uncertainties and individual drawbacks of sustainable consumption that may discourage consumers from buying sustainable groceries. Both frameworks provide grounds to assume that values, time perspective, and self-efficacy may influence purchasing decisions between sustainable and conventional groceries. Chapter 5 will also provide a selective overview of previous research that has investigated whether values, time perspective, and self-efficacy are related to sustainable consumption. In Chapter 6, strategies to promote sustainable consumption will be discussed and the rationale for the strategy that was tested in this project (second study) will be introduced. Afterwards, the research aims of this project will be summarized (Chapter 7) and the two studies that were conducted will be described (Chapter 8). The findings of the two studies are reported in three research papers; in Chapter 9, an outline of the three papers will be given and the main findings will be presented. Chapter 10 will conclude with a discussion of the findings, including theoretical and practical implications, methodological considerations, the strengths and limitations of this project, and directions for future research.

2. Basic assumptions

A basic assumption of this research was that preferences for grocery products *originate* from reflective purchase decisions between product alternatives. In reflective purchase decisions, consumers anticipate and evaluate the outcomes of choosing one or another product and then opt for the product that best satisfies their demands. In addition, it was assumed that consumers' preferences are *relatively* stable and influenced by individual characteristics, such as consumers' values, time perspective, and self-efficacy.

The assumption that consumers' preferences for groceries are relatively stable ties in well with the idea that many consumer behaviors that are performed on a day to day basis are influenced by habits (cf., Biel, Dahlstrand, & Grankvist, 2005), including the purchasing of food products (Grunert, 2005). According to Aarts and Dijksterhuis (2000a, 2000b), a habit is a strong mental association between a goal (e.g., having coffee) and actions to achieve this goal (e.g., buying coffee in the supermarket). Such associations are likely to develop if a person repeatedly performs certain actions to achieve a goal (e.g., if a consumer repeatedly buys a particular brand of coffee). If consumers' preferences for groceries are relatively stable, that is, if consumers tend to purchase products that they have purchased and liked before, and if these products are purchased on a frequent basis, it is likely that purchase decisions become habitual over time.

Once a purchase habit is established, the activation of the goal to act (e.g., cues at the point of sale can remind a consumer of the need to buy coffee) automatically evokes the habitual purchasing behavior (e.g., purchasing a particular coffee brand). At this stage, it is unlikely that a consumer consciously and deliberately weighs different product alternatives before deciding which product to purchase. Instead, the consumer simply purchases the product that he/she has always purchased.

Because habitual purchase decisions are not deliberate, individual characteristics that may affect the evaluation of product alternatives (e.g., values, beliefs) have little

impact on what products are chosen. Individual characteristics may, however, have an impact on the *development* of habits. This is because habits can develop from frequent repetitions of initially deliberate purchase decisions that were guided by individual characteristics. Therefore, in order to better understand the origins of (un)sustainable consumption habits, it is meaningful to investigate which individual characteristics distinguish buyers from non-buyers of sustainable products.

The notion that grocery shopping is often influenced by habits has important implications for the promotion of sustainable groceries. Changing purchase habits that hinder sustainable development requires that consumers be encouraged to deliberate over their purchase decisions (cf. Biel et al., 2005). If purchase decisions are brought to a deliberate level, then the strengthening of individual characteristics that are associated with sustainable consumption (e.g., environmental values, knowledge of environmental problems, concern for other people) may lead to favorable evaluations of sustainable products and hence to choices of sustainable over conventional products. This rationale was employed in one of the studies in this research project. The study investigated whether an intervention that explained how consumers can contribute to sustainable development and that encouraged them to deliberate over this information would increase consumers' self-efficacy (i.e., the perceived ability to foster sustainable development) and, hereby, their preferences for sustainable groceries.

The perceived ability to foster sustainable development may be considered a more general individual characteristic, for example, compared to beliefs about specific sustainable groceries. Dahlstrand and Biel (1997) suggest that more general individual characteristics, such as values and other factors that encourage cooperation in social dilemmas (cf. Chapter 5.2), are important in the early phases of changing habits because they "may motivate people to reflect on their own behavior and to unfreeze an established habit (p. 599)."

3. The concept of sustainable consumption

Macnaghten, Grove-White, Jacobs, and Wynne (1995) maintain that sustainability involves moving from an unsatisfactory state in which economic goals are pursued at the expense of environmental and social goals to a more satisfactory state in which economic, environmental, and social goals are pursued equally. This moving from an unsatisfactory, unsustainable state to a more satisfactory, sustainable one is what the WCED (1987) referred to as sustainable development, that is, development directed towards achieving sustainability. From the outcome document of the WCED, it can be concluded that sustainable development comprises three interdependent dimensions: the environmental (e.g., preservation of natural resources), the social (e.g., socially fair distribution of resources, particularly with regard to bridging the divide between developed and developing countries), and the economic (e.g., a standard of living that secures human wellbeing and political stability). *Sustainable consumption*, as the term is used in this project, refers to consumption that promotes sustainable development (cf. Homburg & Matthies, 2010).

Belz and Bilharz (2005) distinguish between sustainable consumption in a *wider sense* and sustainable consumption in a *narrower sense*. In a narrower sense, sustainable consumption refers to consumption patterns that can be generalized within and between generations. In a wider sense, sustainable consumption refers to consumption activities that help reduce the ecological and social problems associated with conventional production and consumption – without necessarily being generalizable within and between generations. According to the latter definition, consumption options that help improve upon the status quo with regard to mitigating environmental and social pressures from consumption can be considered sustainable.

In this research project, Belz and Bilharz's (2005) definition of sustainable consumption in a wider sense was used, and products that are in line with this definition of sustainable consumption are hereafter referred to as *sustainable products*. This applies, for example, to ecological and fair trade groceries: ecologically produced foods help reduce the impact of agricultural production on the

natural environment (cf. Jungbluth, Tietje, & Scholz, 2000), and fair trade helps improve the working and living standards of small-scale farmers by providing a guarantee to pay above-average prices (cf. Doran, 2009; Gould, 2003). In addition to ecological production and fair trade, other attributes related to the entire lifecycle of products (e.g., emissions of substances during transportation and disposal of products) can have environmental and social impacts (cf. Jungbluth et al., 2000). Nordin and Selke (2010) argue that product packaging is related to sustainability. Tanner and Wölfing Kast's (2003) definition of "green products" comprises several product attributes with environmental and social impacts (N.B. the authors use the term green to refer to products that help promote sustainable development): domestic cultivation, organically grown, seasonal and fresh, not wrapped, and fair trade.

In order to determine the exact impact of a product in the environmental and social dimensions, lifecycle assessments are needed (Jungbluth et al., 2000; Kaiser, Doka, Hofstetter, & Ranney, 2003; Tanner & Jungbluth, 2003). Although databases with lifecycle data are accessible via the Internet (e.g., www.ecoinvent.org), services that provide lifecycle data in a format that is easy for consumers to understand and use are still rare. A notable exception is GoodGuide (www.goodguide.com), a platform that provides product evaluations in terms of the health, environment, and social aspects. Because consumer-directed offers of lifecycle data are still limited, consumers may not be aware of the environmental and social impacts of groceries.

In a recent survey, Hanss and Böhm (2012) investigated Norwegian consumers' beliefs about sustainable groceries. In one part of the study, consumers were asked to indicate which attributes they considered important for sustainable groceries. The attributes that were considered most important were low energy use and carbon dioxide emissions during production and transportation, recyclable packaging, and fair payment of producers. Of medium importance were animal protection, regional production, and the abandoning of artificial additives and of genetic manipulation. Least important were durability and good value for money. These findings were taken into account in the design of the instruments used in this project to measure sustainable consumption (cf. Chapter 8).

4. Portrait: sustainable groceries in Norway

Norway is among the Western European countries with the lowest market share of ecological foods (cf. Chapter 1). A possible reason for the low market share is the protectionist attitude of farmers and politicians (cf. Terragni & Kjærnes, 2005). In Norway, the agricultural production of many foods (e.g., meat, dairy products) is organized into cooperatives that are owned by farmers. An example is TINE BA, a cooperative of some 18,500 dairy farmers and the largest dairy processor in Norway (cf. Ims & Jakobsen, 2006). Terragni and Kjærnes (2005) argue that, because most Norwegian farmers produce conventionally, the cooperatives have little interest in promoting ecological farming. External pressure to innovate is scarce because Norway's protectionist agricultural policy (e.g., import restraints and high food taxes) makes it difficult for foreign producers to assert themselves in the market (cf. Terragni & Kjærnes, 2005). As a result, the protectionist agricultural policy also secures a high market share for domestically produced groceries.

Products from ecological and biodynamic farming are certified by the Norwegian labeling organization Debio (www.debio.no). The Debio Ø-label is used to indicate certified ecological products. Biodynamic products are indicated by the Ø-label in combination with the international Demeter label. In addition, a variety of imported ecological products with foreign eco labels (e.g., Soil Association, UK) are available in Norway.

Non-agricultural grocery products (e.g., detergents) that qualify as environmentally friendly under EU regulations or the regulations of the Nordic Ecolabelling Board are certified by the Miljømerking foundation and indicated by the EU Ecolabel (flower) and the Nordic Swan label. The Nordic Swan and the Debio Ø-label are widely known in Norway (cf. Hanss & Böhm, 2012; Miljømerking, 2010); Norwegian consumers are, however, less familiar with other labels (e.g., Demeter) that indicate environmentally friendly groceries (cf. Hanss & Böhm, 2012).

Fair trade products are imported by two Norwegian organizations and certified by the foundation Fairtrade Norge (formerly Fairtrade Max Havelaar Norge). In 2007, the market penetration of fair trade products in Norway was comparatively low, as indicated by per capita spending on fair trade products of only 3.87 Euros – compared to, for example, 7.27 Euros in Denmark, 11.57 Euros in the UK, and 21.06 Euros in Switzerland (DAWS, 2008). However, in recent years, sales of fair trade products in Norway have steadily increased, from around 18 million Euros in 2007 (DAWS, 2011) to some 46 million Euros (351 million NOK) in 2010 (i.e., per capita spending of about 71 NOK or 9 Euros in 2010, cf. Fairtrade Norge, 2010).

Product labels that solely address animal welfare are not in use in Norway (Terragni & Kjærnes, 2005). However, other labels that are used in Norway denote humane animal treatment along with other sustainable product attributes – the Debio Ø-label for products from ecological farming is an example (www.debio.no). As for cosmetics, brands guaranteeing that their products have not been tested on animals are on offer, but some of these brands are only available in specialized stores.

Research by Skarstad, Terragni, and Torjusen (2007) suggests that animal welfare is a criterion that Norwegian consumers barely take into account when purchasing groceries because they see the responsibility for animal welfare as lying with the Norwegian public authorities (rather than with individual consumers) and are satisfied with the way animal welfare issues are currently taken care of. Apparently, from the perspective of many Norwegian consumers, being of Norwegian origin suffices for a product as a guarantee that animals have been treated humanely. In addition, Skarstad et al. found that for those Norwegian consumers who were aware of and interested in products with labels guaranteeing humane treatment of animals, food safety and quality were the main concerns: meat from “happy” animals was considered safer and tastier. Terragni and Kjærnes (2005) claim that Norwegian consumers generally show high trust in their public authorities when it comes to food safety and quality.

With regard to product distribution, the Norwegian grocery market is dominated by a few retail chains, some of which run discount supermarkets that offer only the most common and frequently purchased products. In some of the largest supermarket chains, specifically the discount chains, the offer of ecological and fair trade products is severely limited (cf. Forbrukerrådet, 2010a; Terragni & Kjærnes, 2005), and so consumers who intend to purchase sustainable products may have difficulties finding these products in the stores they use. A study conducted by TNS on behalf of the Consumer Council of Norway (Forbrukerrådet, 2010a) revealed that ecological fruits and vegetables were particularly scarce in Norwegian discount stores and that discounters made little effort to promote ecological products. An alternative to the discounters are farmers' markets and smaller independent stores that offer a wide range of environmentally friendly and fair trade products. However, specialized health food stores are mostly located in larger cities. In smaller, remote communities there is often only one supermarket with a product assortment that is more limited than the product assortment in larger cities – the offer of ecological and fair trade products may be particularly limited in these stores (cf. Terragni & Kjærnes, 2005).

Ecological products may not only be scarce in some regions but also considerably more expensive than conventional product alternatives. Forbrukerrådet (2010b) compared the prices for 11 ecological food products with the prices for alternatives from conventional production in a Norwegian supermarket. Overall, the ecological foods were 45% more expensive than the conventional foods. Price differences between ecological and conventional foods are much lower in Norway's neighbor Sweden (e.g., about 10% price difference for basic foods, such as milk, cheese, or potatoes, cf. Forbrukerrådet, 2010b).

In sum, the offer of many sustainable groceries is limited in Norway, some products are available in specialized stores only, and for some sustainable groceries consumers have to pay a considerable premium compared to conventional product alternatives. If consumers want to stay informed about topics such as the meaning of product labels, environmental and social impacts of products, or which stores sell which sustainable products, they have to invest considerable effort. As a consequence, Norwegian

consumers may perceive various individual drawbacks and barriers to purchasing sustainable groceries. Reducing these drawbacks and barriers may be an effective means for promoting the purchasing of sustainable groceries in Norway.

In order to find out whether lower prices lead to higher sales of ecological products, one of the largest discount chains in Norway has recently reduced the prices for all ecological products available in its stores in Oslo by 10%, and some selected ecological products by up to 30% (FIVH, 2011b). This is an example of how retailers can promote the purchasing of sustainable groceries by reducing barriers, such as high price premiums or limited availability. However, many retailers in Norway seem to be reluctant to take action because they doubt that Norwegian consumers are interested in purchasing sustainable products (cf. Terragni & Kjærnes, 2005).

As has already been noted, consumers play an important role in stimulating the production and distribution of sustainable products. If consumer demand for sustainable groceries increases, this may motivate retailers to offer a wider variety of sustainable products and to reduce the price premium for environmentally friendly products, stimulate fair trade, and encourage farmers and manufacturers to adopt more environmentally friendly means of production. According to an interview Forbrukerrådet (2010b) conducted with the representative of a supermarket chain that operates stores in Sweden and Norway, a main reason why ecological products are cheaper in Sweden than in Norway is that consumer preferences are stronger in Sweden and the overall sales volume of ecological products is higher.

A main objective of this project was to contribute to our understanding of why consumers may decide to purchase sustainable groceries despite the structural barriers and individual drawbacks that exist. Three individual characteristics were investigated, namely values, time perspective, and self-efficacy, that may affect consumers' choices between sustainable and conventional groceries.

5. Theoretical and empirical foundations

From a theoretical perspective, this research was rooted in two frameworks: first, theories that regard humans as agents and that characterize human decision making as a conscious, intentional, deliberate, and goal directed process. Two theories were given particular consideration: Bandura's *social cognitive theory* (e.g., 1986, 2001, 2006a) and the *theory of planned behavior* (e.g., Ajzen, 1991). Second, the *social dilemma* approach to studying sustainable behaviors (e.g., Joireman et al., 2001). The social dilemma approach makes assumptions about conflicts (e.g., between individual and collective interests) that people may experience when they decide between actions that counteract and actions that foster sustainable development. Furthermore, the approach makes it possible to derive predictions about the decisions people make when they encounter such conflicts, based on their values, time perspective, and self-efficacy.

Hereinafter, the theoretical frameworks and the rationale for studying values, time perspective, and self-efficacy in connection with the purchasing of sustainable groceries will be introduced (Chapters 5.1 and 5.2). Afterwards, a selective overview of previous research on the relations between sustainable consumption and values, time perspective, and self-efficacy will be provided along with a description of gaps in the literature and how this project has sought to fill these gaps (Chapters 5.3 to 5.5).

5.1 Agentic perspective on decision making

Theories that conceive of humans as agents postulate that decision making is conscious, intentional, deliberate, and goal-directed. According to Bandura (2001), the notion that human functioning is conscious means that humans have the ability to deliberately access and process information as they choose courses of action that help achieve desired outcomes. This agentic approach to human decision making stands in contrast to approaches which argue that human behaviour is triggered and regulated automatically by external stimuli. As has already been noted, it is plausible to assume

that the purchasing of grocery products is often habitual, and that habitual purchase decisions may be automatically triggered by external stimuli, such as promotional measures in a grocery store. However, purchase habits often develop from repetitions of conscious and deliberate decisions for certain products (cf. Chapter 2). Thus, in order to understand how preferences for sustainable groceries develop, it should be helpful to take an agentic perspective on consumer decision making.

An influential theory of human agency is Bandura's (e.g., 1986, 2001, 2006a) social cognitive theory. The theory postulates that personal and environmental (i.e., physical and social) factors interact in influencing human functioning, implying that human behavior is to a certain degree self-regulated (Bandura, 1986). Bandura (2001) characterizes human agency by four core features: intentionality, forethought, self-reactiveness, and self-reflectiveness.

As Bandura (2001) puts it, "to be an agent is to *intentionally* make things happen by one's actions" (p. 2), where intention refers to "a representation of a future course of action to be performed" (p. 6). In other words, an intention is a commitment to carry out a specific behaviour in the future, with the aim of producing certain desired outcomes. Bandura (2001) also takes account of activities that involve multiple agents and notes that a major difficulty in such joint activities lies in bringing together agents with different self-interests and in establishing a commitment to common goals and intentions to pursue the goals together. Sustainable consumption is a case in point, because it requires the collaboration of many agents with different roles and interests (e.g., consumers, politicians, industry decision makers, cf. Thøgersen, 2005) to make a significant contribution to sustainable development.

Forethought means that people define the goals that they want to achieve in the future, think about what consequences future activities may have, and engage in activities that are likely to bring about desired outcomes (cf. Bandura, 2001). Thus, by taking a future time perspective, "people motivate themselves and guide their actions anticipatorily" (Bandura, 1986, p. 19). Strathman and colleagues (e.g., Lindsay & Strathman, 1997; Strathman, Gleicher, Boninger, & Edwards, 1994)

assume that people differ in the degree to which they take the future consequences of their behaviors into account. The authors use the term *consideration of future consequences* (CFC) to describe individual differences in time perspective: Individuals who score high on CFC tend to take the long-term future consequences of their actions into account and their actions are more likely to be motivated by their long-term future goals. Individuals who score low on CFC focus more on the short-term future consequences of their actions and tend to be motivated by their immediate needs and goals. CFC was found to predict sustainable behavior, such as the choice of environmentally friendly means of transportation (Joireman, Van Lange, & Van Vugt, 2004). Thus, there is reason to assume that CFC is related to the purchasing of sustainable groceries. The assumed relation between CFC and sustainable consumption will be described in further detail below (Chapters 5.2 and 5.4).

Self-reactiveness refers to the abilities of humans to translate action plans into actual and appropriate courses of action and to self-regulate their actions (Bandura, 1986, 2001). An important aspect of self-regulating one's actions is to compare them to the personal goals and standards that are rooted in one's value system (Bandura, 2001). If an action contradicts a person's values, the person may adjust their plans for subsequent actions in such a way as to better meet their values. Thus, values may be an important standard for choosing between possible courses of actions, such as in purchasing decisions between conventional and sustainable groceries. This idea will be taken up again below (Chapters 5.2 and 5.3).

Self-reflectiveness means that humans are able to monitor, evaluate, and deliberately alter their own thinking. Furthermore, by analyzing and combining their experiences with what they know about the world, people learn about themselves, for example, what they are capable of doing and achieving (cf. Bandura, 1986). According to Bandura (1997, 2001), people's beliefs in their capability to execute the behaviors that are required to produce desired outcomes are the foundation of human agency. "Unless people believe they can produce desired effects by their actions, they have little incentive to act, or to persevere in the face of difficulties. Whatever other factors serve as guides and motivators, they are rooted in the core belief that one has the

power to effect changes by one's actions (Bandura, 2006a, p. 170).” Bandura (1977) refers to these beliefs as perceived *self-efficacy*.

Self-efficacy is also ascribed a pivotal role in recent variants of the theory of planned behavior, TPB (e.g., Fishbein, 2000; Fishbein & Capella, 2006). In their revised and extended version of the TPB (*An integrative model*), Fishbein and Capella (2006) suggest that self-efficacy determines behavior intentions, together with norms (e.g., the degree of belief that significant others expect one to display the behavior and willingness to comply with these expectations), and attitudes toward performing the behavior (stemming from evaluations of the expected outcomes of the behavior). Further, the model assumes that intentions are the main determinant of actual behavior. Whether behavior intentions result in actual behavior is assumed to depend on people's abilities and skills that are required to execute the behavior, and on environmental factors (e.g., external barriers to executing the behavior).

Self-efficacy may be particularly important for motivating behavior in those cases where people encounter difficulties with performing the target behavior or with bringing about the desired outcomes. With regard to sustainable consumption, a major difficulty is the fact that the joint efforts of many people are required to make a significant difference (cf. Thøgersen, 2005); the behavior of an individual consumer can contribute only marginally to sustainable development. A person's perceived ability to foster sustainable development may thus partly depend on whether the person believes that his or her actions to foster sustainable development will encourage other people to join in.

As far as the author is aware, this research project was the first attempt to investigate self-efficacy with regard to sustainable development. Therefore, a novel term was introduced to refer to this construct: sustainable development self-efficacy (short: SDSE). In order to account for direct and socially mediated impacts on sustainable development, this research distinguished between self-efficacy concerning one's *direct* contribution to sustainable development (i.e., through one's own actions) and

self-efficacy concerning one's *indirect* contribution to sustainable development (i.e., through encouraging others to promote sustainable development).

Bandura (2006b) suggests that self-efficacy is a domain-specific construct, which means that a person may have high self-efficacy in one domain (e.g., being a good parent) but low self-efficacy in another domain (e.g., contributing to sustainable development). Other researchers conceptualize self-efficacy as a person's generalized beliefs in being able to deal with challenging encounters. For example, Schwarzer and colleagues (e.g., Schwarzer, Mueller, & Greenglass, 1999; Schwarzer & Hallum, 2008) use the term *general self-efficacy* (GSE) to describe a person's perceived ability to cope with challenges across different domains.

This research investigated to what degree both general (i.e., GSE) and domain-specific (i.e., SDSE) self-efficacy predict the purchasing of sustainable groceries. Moreover, the relationship between GSE and SDSE was investigated. It is plausible to assume that GSE constitutes a source of SDSE. If a person feels capable of bringing about desired outcomes in life in general, it is likely that this person also has a basic trust in his or her ability to foster sustainable development. However, GSE may also depend on domain-specific self-efficacy. Feeling confident about bringing about desired outcomes in various domains may be a prerequisite for developing a general confidence about being efficacious. The assumed relation between self-efficacy and sustainable consumption will be described in further detail below (Chapters 5.2 and 5.5).

5.2 Social dilemma approach to studying sustainable behaviors

A major challenge in promoting sustainable consumption is that the purchasing of sustainable products often entails disadvantages for the individual consumer. For example, sustainable groceries are usually more expensive than conventional product alternatives and many sustainable groceries are only available in specialized stores – thus, consumers who intend to purchase sustainable products may have to do their

shopping at several stores instead of at one supermarket. Also, staying updated on which attributes are indicative of sustainable groceries and which stores offer sustainable groceries can be time-consuming. Because of these disadvantages, consumers may experience conflicts between individual interests (e.g., saving money and time) and collective interests (e.g., protecting nature) when they choose between conventional and sustainable groceries.

The social dilemma approach to studying sustainable behaviors takes account of conflicts between individual and collective interests that people may experience when they choose between courses of action that foster or hinder sustainable development. If a decision situation represents a social dilemma, information about people's individual characteristics (e.g., values) can be used to predict how people will evaluate the different consequences of the behavior alternatives, such as individual versus collective benefits, and which courses of action people will choose.

What are the decision features that characterize a social dilemma? The term social dilemma refers to a situation of social interdependence in which a group of people share a common output (e.g., a common resource, such as clean air in a community) and in which individual and collective interests are in conflict. Each of the people involved has to choose between a course of action that maximizes individual interests (e.g., using as many units of the common resource as possible) and a course of action that contributes to the interests of the collective (e.g., using as many units of the common resource as will ensure that others will have their share too) (cf. Komorita & Parks, 1994). For example, decisions between commuting to work alone in one's own car and using public transportation can be regarded as a social dilemma (Joireman, Van Lange, Kuhlman, Van Vugt, & Shelley, 1997; Joireman et al., 2004). Commuting by car is the option that maximizes individual interests (e.g., using the car may be more comfortable than taking public transportation), and commuting by public transportation is the option that contributes to collective interests (e.g., if many people take the bus instead of their own car, the community benefits from better air quality). The dilemma partly arises from the fact that consumers may be tempted to

choose the option that maximizes individual interests, whereas all would be better off if everybody chose the option that contributes to collective interests.

Many social dilemmas involve social conflicts (individual vs. collective interests) as well as temporal conflicts (short-term vs. long-term interests) (Hendrickx, Poortinga, & van der Kooij, 2001; Messick & McClelland, 1983; Joireman et al., 2004; Van Lange & Joireman, 2008). For example, a person may experience social and temporal conflicts, if individual and collective consequences occur at different points in time. Purchasing decisions between conventional and sustainable groceries are a good example: the individual consequences (e.g., monetary expenditure) are mostly immediate, while the societal consequences (e.g., changes in the natural environment), manifest themselves over time. Some consequences may even extend to future generations. Sustainable consumption can, therefore, be regarded as an intergenerational dilemma, that is, “decisions that entail a tradeoff between one’s own self-interest in the present and the interests of other people in the future (Wade-Benzoni & Plunkett Tost, 2009, p. 165).”

The notion that many social dilemmas involve social and temporal conflicts has inspired researchers to investigate whether social values and time perspective explain how people reach decisions when faced with social dilemmas (e.g., Joireman, Lasane, Bennett, Richards, & Solaimani, 2001).

In this project, the term *social values* is used as an umbrella term for pro-social and pro-self values. Pro-social values refer to the importance that a person attaches to enhancing the wellbeing of the collective (i.e., achieving the best outcome for the self and others). Pro-self values, in contrast, refer to the importance that a person attaches to pursuing his or her own interests irrespective of others and to having advantages over others. In the social dilemma literature, social values have traditionally been operationalized by the *social value orientation* (SVO) proposed by McClintock and colleagues (e.g., Messick & McClintock, 1968; McClintock, 1978; McClintock & Allison, 1989), where SVO refers to people’s preferences for combinations of outcomes for themselves and others in situations of interdependence. McClintock and

Allison (1989) distinguish between three social value orientations: individualistic (i.e., striving for the highest outcome for oneself), competitive (i.e., striving for outcomes that maximize one's relative advantage over others), and cooperative (i.e., striving for the highest joint outcome). A common finding in this line of research is that people with a cooperative orientation are more likely to pursue collective interests in social dilemmas than people with an individualistic or a competitive orientation. In a meta-analysis of 82 studies that investigated the relation between SVO and cooperation in social dilemmas, Balliet, Parks, and Joireman (2009) found a small- to medium-effect size for SVO, and that people with a pro-social (i.e., cooperative) orientation were in general more likely to contribute to collective interests than people with a pro-self (i.e., individualistic or competitive) orientation.

Another line of research investigated whether the *basic human values* proposed by Schwartz (e.g., 1994, 2006) predict collectively beneficial behavior in social dilemmas (e.g., Milfont & Gouveia, 2006; Sagiv, Sverdlik, & Schwarz, 2011). According to Schwartz (2006), values refer to goals that guide people's actions, where goals refer to what people consider important in their lives. Schwartz (2006) distinguishes between 10 basic human values that can be described by a circular model in which adjacent values represent similar motivating goals, while values that are positioned opposite to one another around the circle represent conflicting motivating goals. Two orthogonal dimensions summarize the 10 values: *conservation versus openness to change* and *self-enhancement versus self-transcendence*.

The self-enhancement (i.e., power and achievement) and self-transcendence (i.e., universalism and benevolence) values distinguish between attaching importance to personal interests and relative advantage over others (self-enhancement) and attaching importance to the interests and welfare of the self and others (self-transcendence). Thus, the self-enhancement values can be thought of as the pro-self values, and the self-transcendence values can be thought of as the pro-social values of Schwartz's classification (cf. Figure 1). Both self-enhancement (negative relation) and self-transcendence values (positive relation) were found to predict collectively beneficial behavior in social dilemmas (e.g., Sagiv et al., 2011, Study 1).

This was the first project to investigate how well the two classifications of social values, McClintock and colleagues' SVO and Schwartz's self-enhancement and self-transcendence values, predict the purchasing of sustainable groceries.

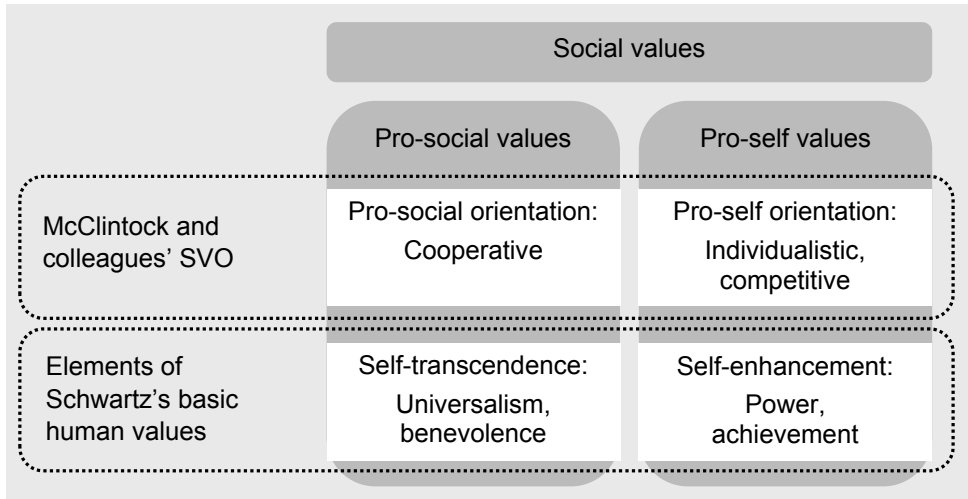


Figure 1: Classifications of social values investigated in this project.

As for the relation between time perspective and decisions in social dilemmas, research has shown that individuals who score high on CFC (i.e., people who consider the long-term future consequences of their behavior) are more likely to opt for collectively beneficial options than individuals who score low on CFC (for a review on how CFC relates to behavior in applied social dilemma settings see Joireman, Strathman, & Balliet, 2006). For example, Kortenkamp and Moore (2006) found that people who scored high on CFC and environmentalism (i.e., a combined measure of pro-environmental attitudes, awareness of environmental consequences, and pro-environmental intentions) were more willing to pursue collective interests in environmental social dilemma tasks than people with low CFC and low environmentalism scores.

Time perspective should be particularly important in explaining behavior in social dilemmas that involve short-term and long-term future consequences. This is often the case in purchase decisions between conventional and sustainable groceries, where some consequences are immediate (e.g., monetary expenditure) and other

consequences occur over time (e.g., changes in the natural environment). It was one of the aims of this research project to investigate whether CFC contributes to explaining the purchasing of sustainable groceries, in addition to social values. To the author's knowledge, this research question has not been addressed before.

So far, it has been argued that sustainable consumption can be regarded as a social dilemma because of conflicts between short-term individual interests and long-term collective interests that consumers may experience when they are choosing between conventional and sustainable products. Klandermans (1992) mentions another feature of social dilemmas, namely uncertainty that collective benefits can be achieved. According to Klandermans, this uncertainty can stem from expectations about (a) the efficacy of one's own behavior (i.e., can I make a difference?), (b) the behavior of others (i.e., will others cooperate?), and (c) the efficacy of collective action (i.e., can the problem be solved, if enough people contribute?).

It follows from the above that a person with low self-efficacy, compared to a person with high self-efficacy, should be less certain that social dilemmas can be solved and therefore be less likely to pursue collective interests. Research lends support for the relation between self-efficacy and collectively beneficial behavior (see Kerr, 1992 and Van Lange, Liebrand, Messick, & Wilke, 1992 for an overview of early studies on this topic). For example, studies by Kerr (1989) and De Cremer and Van Vugt (1998) indicate that self-efficacy is positively associated with cooperation in social dilemmas. Kerr (1992) manipulated self-efficacy in an experiment and showed that higher self-efficacy was associated with increased cooperation in a social dilemma task (i.e., investments in a public good). Self-efficacy has also been shown to predict collectively desirable actions in "real life" social dilemmas. For example, Gupta and Ogden (2009) found that self-efficacy discriminated between buyers and non-buyers of sustainable products (in this case, energy-saving light bulbs). A selective overview of research that has investigated the relation between self-efficacy and sustainable consumption will be provided in Chapter 5.5.

Kerr (1989) also found that self-efficacy declined with increases in group sizes: when more people were involved in public good social dilemmas, they believed to a lesser degree that they are able to contribute to the public good. Van Lange et al. argue that, because of the inverse relationship between perceived efficacy and group size, perceived efficacy is “likely to defer cooperation in large-scale social dilemmas (1992, p. 19).” Thus, increasing people’s perceived ability to make a difference may be particularly crucial to encouraging collectively beneficial behavior in social dilemmas that involve large groups of people (cf. Thompson & Stoutemyer, 1991), such as in sustainable consumption. Although an individual’s direct influence on outcomes in large-scale social dilemmas may be limited, he or she may be able to make an important difference by setting a good example that motivates other people to cooperate.

Van Lange et al. (1992) provide an overview of social dilemma studies suggesting that if people expect others to cooperate, they are more likely to cooperate themselves. An experiment by Ngan and Au (2008) showed that people were more likely to contribute in a public good social dilemma if they knew how many other people contributed, compared to a control condition in which no information about others’ behavior was available. Similarly, studies found that people are more likely to cooperate in everyday social dilemmas if they trust others (i.e., believing in the honesty and cooperative intentions of others). For example, people with a pro-social value orientation were found to have a stronger preference for environmentally friendly transportation if they trusted others, as opposed to pro-socials, who distrusted others (e.g., Joireman et al., 1997; Van Lange, Van Vugt, Meertens, & Ruiter, 1998).

People’s expectations that others will cooperate may stem not only from trust in others but also from confidence in being able to actively encourage cooperation. According to McClintock (1978), a person’s behavior can be conceived of as a strategic attempt to influence other people’s behavior in a way that helps people pursue their desired outcomes. Perhaps, those who pursue collective interests in a social dilemma do so because they believe that their behavior will motivate others to do the same (cf. Ngan & Au, 2008). De Cremer and Van Vugt (1998) use the term

reciprocal trust to refer to the degree to which people believe that their own cooperation will encourage others to join in. Reciprocal trust predicted cooperation in a social dilemma task, in addition to people's perceived ability (i.e., self-efficacy) to directly affect collective outcomes.

In this research project, it was assumed that the perceived ability to encourage others is an element of sustainable development self-efficacy. It was investigated how well self-efficacy with regard to *directly* (i.e., by one's own behaviors) and *indirectly* (i.e., by encouraging others) contributing to sustainable development predicts the purchasing of sustainable groceries.

Figure 2 sums up the relations between individual characteristics and the purchasing of sustainable groceries that were investigated in this project. The following chapters provide an overview of previous research that investigated how social values, time perspective, and self-efficacy are related to sustainable consumption. Furthermore, the contributions of the present research project to each line of research are pointed out in more detail.

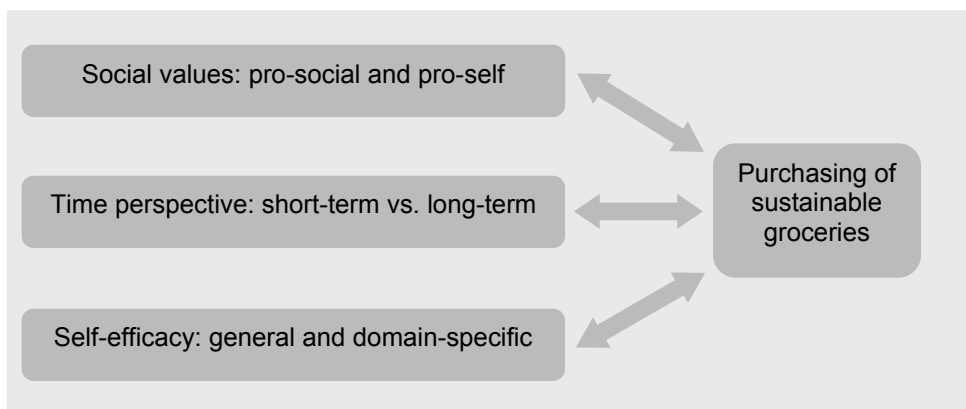


Figure 2: Relations between individual characteristics and sustainable consumption investigated in this project.

5.3 Social values and sustainable consumption

In connection with sustainable consumption, previous research has predominantly investigated one of two classifications of social values: the SVO proposed by McClintock and colleagues (e.g., McClintock, 1978; McClintock & Allison, 1989) or the self-enhancement and self-transcendence values of Schwartz's classification of basic human values (e.g., Schwartz, 1994, 2006).

Concerning the social values of Schwartz's value classification, a common finding is that self-enhancement values are negatively related to sustainable consumption, and self-transcendence values are positively related to sustainable consumption (e.g., Pepper, Jackson, & Uzzell, 2009; Schultz & Zelezny, 1998). In a recent study, Ma and Lee (2011) showed that universalism and benevolence (i.e., self-transcendence) values predicted intentions to purchase fair trade non-food products (positive relation).

In terms of the relative predictive power of self-enhancement and self-transcendence values, a number of studies indicate that self-transcendence values, particularly universalism, are better predictors of sustainable consumption. For example, Stern, Dietz, and Guagnano (1998) found that, of the Schwartz values, only self-transcendence values predicted the purchasing of environmentally friendly products.

The two types of self-transcendence values, universalism and benevolence, differ in that the former represent an orientation toward the welfare of all people and of nature, whereas the latter represent an orientation toward the welfare of people in one's in-group. Several studies have shown that universalism values are particularly important in predicting sustainable consumption. For example, in Pepper et al.'s (2009) study, universalism values were the most important predictor of socially responsible purchasing (e.g., purchasing bananas or coffee with a fair trade label) among the Schwartz values. Similarly, Doran (2009) found that universalism values were the best predictor among the Schwartz values of purchasing fair trade products. Accordingly, the present research assumed that universalism values would be the best

predictor of purchasing sustainable groceries among the self-enhancement and self-transcendence values.

Another line of research investigated the relation between SVO and sustainable consumption. A common approach in this research has been to combine the individualistic and competitive orientations to a *pro-self* orientation and to contrast this pro-self orientation with a *pro-social* (i.e., cooperative) orientation. The main reason for this procedure is that the distinction in individualistic and competitive orientation is of little interest in explaining decisions between conventional and sustainable consumption options. Individualists and competitors share the intention of maximizing their own outcomes (Brucks & Van Lange, 2007) and thus tend to choose courses of action that enhance their personal interests at the cost of the collective. Accordingly, people with a pro-social orientation have been found to have stronger preferences for sustainable consumption options (e.g., commuting by public transportation instead of by private car) than people with a pro-self orientation (e.g., Van Vugt, Meertens, & Van Lange, 1995; Van Vugt, Van Lange, & Meertens, 1996). Joireman, Lasane, et al. (2001) showed that pro-socials had stronger pro-environmental intentions (e.g., willingness to boycott products from companies that are known for polluting the environment) than pro-selfs. In line with these findings, the present research assumed that a pro-social orientation would be positively associated with the purchasing of sustainable groceries.

So far, the two classifications of social values have mostly been investigated separately, and therefore little is known about their relative contribution in explaining collectively beneficial behavior. In addition, little is known about the relation between SVO and the self-enhancement and self-transcendence values (cf. Joireman, Lasane, et al., 2001). Among the few studies that investigated the two value classifications together are the studies by Gärling (1999), and Joireman and Duell (2005). The latter study found that pro-socials attached greater importance to self-transcendence values, and pro-selfs attached greater importance to self-enhancement values; collectively beneficial behavior was not investigated. Gärling's (1999) study investigated the relation between SVO and the two self-transcendence values:

universalism and benevolence. The results showed that, for pro-socials, universalism values were more important than for pro-selfs. However, no differences were found for benevolence values. Gärling's study also compared SVO and the self-transcendence values with regard to how well they predict collectively beneficial behavior in a social dilemma (i.e., not withdrawing money from a common pool so as to increase the chance of a monetary bonus for all). SVO and universalism values were significant predictors; SVO accounted for slightly more variance than universalism values.

Gärling (1999) used an abstract social dilemma task that was stripped of any concrete reference to an everyday social dilemma. Can his findings be generalized to apply to everyday decisions that represent a social dilemma? This research was the first to investigate the two classifications of social values in connection with the purchasing of sustainable groceries. In addition, as part of investigating how well SVO and the self-enhancement and self-transcendence values predict the purchasing of sustainable groceries, the relation between the two value classifications was explored. It was assumed that the self-enhancement and self-transcendence values correspond to the SVO distinction between pro-self and pro-social orientations.

5.4 Time perspective and sustainable consumption

In Chapter 5.2, it was argued that the purchasing of sustainable groceries has short-term disadvantages for the individual consumer but long-term benefits for the collective. The CFC construct proposed by Strathman and colleagues (e.g., Strathman et al., 1994) makes it possible to distinguish between people who focus on the short-term (i.e., low CFC) and people who focus on the long-term (i.e., high CFC) future consequences of their actions. Consumers who score high on CFC should see sustainable products in a more favorable light than consumers who score low on CFC. As a consequence, those scoring high on CFC should be more likely to purchase sustainable products than those scoring low on CFC.

In connection with the purchasing of sustainable groceries, this assumption has not been investigated before. However, research in different domains indicates that it is meaningful to assume a positive relation between CFC and sustainable consumption. In the transportation domain, it was found that individuals who score high on CFC are more likely to choose sustainable transportation modes (e.g., taking the bus instead of the private car when commuting) than those who score low on CFC (e.g., Joireman et al., 2004). Khachatryan, Joireman, and Casavant (2011) showed that consumers scoring high on CFC had stronger preferences for biofuels than consumers scoring low on CFC. In a meta-analysis of 19 studies, Milfont, Wilson, and Diniz (2012) found a medium correlation between future time perspective and environmental engagement. Their analysis included studies that used the CFC as well as other measures of time perspective, such as the Zimbardo time perspective inventory (e.g., Zimbardo & Boyd, 1999).

In this research project, it was assumed that CFC contributes to predicting the purchasing of sustainable groceries, in addition to social values, and that consumers who score high on CFC are more likely to purchase sustainable groceries than consumers who score low on CFC.

Previous research on environmentally sustainable behaviors investigated values and time perspective mostly as independent constructs (cf. Milfont & Gouveia, 2006). Only a few studies investigated values and time perspective together, for example, Joireman, Posey, Truelove, and Parks (2009), in connection with “harvesting” behavior in a water resource dilemma, and Joireman et al. (2001), in connection with commuters’ support for public transportation. To the author’s knowledge, this research was the first one to study social values and time perspective together in connection with the purchasing of sustainable groceries.

5.5 Self-efficacy and sustainable consumption

The benefits of sustainable consumption for society arise from the joint efforts of many people. Naturally, individual consumers may believe that there is little they can

personally do to contribute directly (i.e., through their own actions) to sustainable development – particularly if they regard sustainable development as a global issue rather than an issue at national or community level. If people lack confidence that they can make a difference, they may have little motivation to act (cf. Bandura, 2006a). Thus, the degree to which people believe that they can contribute to sustainable development (i.e., sustainable development self-efficacy, SDSE) should be an important determinant of decisions to purchase sustainable groceries.

A considerable literature investigated self-efficacy and related constructs in connection with environmental outcomes. For example, Kellstedt, Zahran, and Vedlitz (2008) studied self-efficacy with regard to influencing climate change and found that people with higher self-efficacy showed greater concern for the long-term future consequences of climate change. Another line of research investigated the relation between environmentally friendly behaviors and *locus of control*, a construct similar to self-efficacy. Rotter (1966) distinguishes between an internal locus of control (i.e., a tendency to believe that the events or outcomes of situations are a result of one's own actions) and an external locus of control (i.e., a tendency to believe that the events or outcomes of situations depend on external forces and are therefore independent of one's own actions). These two orientations were found to distinguish between people who frequently (characterized by internal locus of control) and those who rarely (external locus of control) engage in environmentally friendly behaviors. For example, Tucker (1978) showed that high environmental responsibility was associated with internal control. Tucker used the term *environmental responsibility* to refer to various environmental attitudes and behaviors, including the purchasing of environmentally friendly detergents. Schwepker and Cornwell (1991) found that people with an internal locus of control had stronger intentions to choose products with environmentally friendly packaging than those with an external locus of control.

Smith-Sebasto (1992) developed an instrument to measure locus of control in the domain of environmental preservation: the *Environmental Action Internal Control Index* (EAICI). People with an internal locus of control as measured by the EAIC, in

contrast to those with an external locus of control, have been found to be more likely to engage in environmentally friendly behaviors (e.g., Smith-Sebasto & Fortner, 1994; Smith-Sebasto & D'Costa, 1995), including purchase decisions (e.g., Allen & Ferrand, 1999). Cleveland, Kalamas, and Laroche (2005) used a different, self-developed instrument to measure environmental locus of control (ELOC), and found that ELOC predicted a number of environmentally friendly behaviors, including the purchasing of environmentally friendly groceries.

Other authors investigated *perceived consumer effectiveness* (short: PCE) in connection with environmental behaviors (e.g., Ellen, Wiener, & Cobb-Walgren, 1991; Kinnear, Taylor, & Ahmed, 1974). PCE refers to consumers' perceived efficacy with regard to environmental preservation, that is, the question of whether consumers believe that they can personally help preserve the natural environment. PCE has been shown to be positively associated with the purchasing of various kinds of sustainable products, such as biodegradable products (Berger & Corbin, 1992), organic, fair trade, and locally produced food (Gilg, Barr, & Ford, 2005), environmentally friendly detergents and paper products made from recycled paper (Kim & Choi, 2005; Laskova, 2007; Roberts, 1996; Straughan & Roberts, 1999), beverages sold in returnable bottles (Webster, 1975), organic meat (Verhoef, 2005), and sustainable dairy products (Vermeir & Verbeke, 2006). Roberts and colleagues (Roberts, 1996; Straughan & Roberts, 1999) also found that people who scored high on PCE were more likely to avoid products with excessive packaging than people who scored low on PCE. Thøgersen (2000) showed that PCE was indirectly related to paying attention to eco labels (mediated by a belief in buying as a strategy to preserve the natural environment and trust in eco labels).

PCE is conceptually similar to self-efficacy with regard to the environmental dimension of sustainable development. Sustainable development goes beyond environmental preservation in that it also comprises social fairness and economic welfare (cf. Chapter 3). In a recent study, Hanss and Böhm (2012) found that environmental preservation, social fairness, and economic welfare were elements of Norwegian consumers' understanding of sustainability. Whether consumers believe

that they can personally contribute to environmental preservation has already been investigated (cf. the studies on PCE mentioned above). However, little is known about how consumers perceive their ability to foster social fairness and economic welfare and whether self-efficacy with regard to these dimensions of sustainable development is associated with sustainable consumption.

This research project attempted to fill these gaps by exploring consumers' self-efficacy concerning environmental preservation, social fairness, and economic welfare (i.e., SDSE). More specifically, consumers' perceived direct impact (i.e., through their own actions) and indirect impact (i.e., through encouraging others to contribute) on the three dimensions of sustainable development were investigated. As has already been noted in Chapter 5.5, consumers' belief in their ability to encourage others to foster sustainable development may be an important element of SDSE. But, how exactly may one exert indirect, social influence on sustainable development?

Kerr (1989) suggests that, in social dilemmas, cooperation by others may increase one's expectations of collective success and therefore increase the likelihood of one cooperating. In the domain of sustainable consumption it was shown that if people believe that others buy sustainable (e.g., eco-labeled) products, they are more likely to buy these products themselves (Von Borgstede, Dahlstrand, & Biel, 1999; Dahlstrand & Biel, 1997). Gupta and Ogden (2009) found that expectations of cooperation by others interacted with self-efficacy in predicting purchases of energy-saving products. If people had low self-efficacy, the degree to which they believed that others cooperate was decisive in predicting whether they purchased energy-saving products or not.

It seems plausible that if people *know* that others contribute to sustainable development (i.e., if the information is based on one's own observations of other people's behavior rather than on mere beliefs or trust in others), they may be even more inclined to do the same. In everyday life, we experience situations in which the consumption choices of other people are visible to us, particularly if sustainable products are indicated by eco or fair trade labels. Examples of such situations are:

lunch breaks with colleagues, a family celebration, or when we are invited to a friend's house for dinner. If we take notice of other people's purchases of sustainable groceries, we may become more optimistic about the prospects of attaining sustainable development, and this optimism may motivate us to contribute our share by purchasing sustainable groceries ourselves.

Moreover, we may adopt behaviors from others because the behavior of others suggests a social norm (cf. Neighbors, Larimer, & Lewis, 2004; Van Lange et al., 1992). Goldstein, Cialdini, and Griskevicius (2008) report empirical evidence for the influence of social norms on collectively beneficial, environmentally friendly behavior (in this case, the reusing of towels by hotel guests). Appeals to encourage towel reuse that included descriptive social norms (i.e., the majority of hotel guests reuse their towels) were more effective than appeals that used the predominant strategy of informing hotel guests that they can help preserve the environment by reusing towels. Interestingly, appeals that included provincial norms (i.e., the majority of guests *in this room* have reused their towels) were more effective than appeals that included more global norms (i.e., the majority of guests *in this hotel* reuse their towels).

In sum, two possible explanations were presented for how one's sustainable behaviors may encourage other people to cooperate: (1) others may become more optimistic about the likelihood of attaining sustainable development; and (2) others infer social norms from one's sustainable behaviors and comply with these norms. In this project, it was assumed that people differ with regard to how strongly they believe that their own sustainable behaviors will encourage others to also foster sustainable development. This socially mediated form of influencing sustainable development has not been studied before as part of self-efficacy.

Four main questions with regard to SDSE and its relation with sustainable consumption were addressed: (1) Can different facets of SDSE be distinguished, and, more specifically, are direct and indirect self-efficacy represented in different facets of SDSE? (2) To what degree do consumers believe that they can personally

contribute to sustainable development, that is, to environmental preservation, social fairness, and economic welfare? (3) Does SDSE predict the purchasing of sustainable groceries, and, if applicable, what is the contribution of the different SDSE facets? (4) Can SDSE be increased by means of an informational intervention strategy, and does increased SDSE motivate consumers to purchase sustainable groceries?

It should be noted at this point that self-efficacy, as the construct was investigated here in connection with sustainable development, was conceived of slightly differently than in Bandura's work. Bandura (1977) distinguishes between outcome expectations and efficacy expectations – the first refer to the belief that a certain behavior will lead to specific outcomes, and the second refer to the belief that one is able to perform the behavior to bring about the outcomes. Thus, according to Bandura, outcome expectations are concerned with causality assumptions and the effectiveness of behaviors in bringing about desired outcomes, whereas efficacy expectations are concerned with behavior control. SDSE, as the concept was measured in this project, focuses more on the perceived ability to contribute to sustainable development than on the perceived ability to perform the behaviors that help promote sustainable development (e.g., the purchasing of sustainable groceries).

Other authors who investigated self-efficacy in connection with social dilemmas have chosen a similar approach (e.g., De Cremer & Van Vugt, 1998; Kerr, 1989, 1992; Van Lange et al., 1992). For example, Van Lange et al. (1992) refer to perceived efficacy as “the extent to which one believes that his or her own contributions help achieve the collective goals (p. 18).” Kerr (1992) refers to self-efficacy of cooperation for achieving a public good as “the judgment that one's cooperative behavior will affect the chances of the group achieving a valued public good (p. 60).”

In addition to domain-specific SDSE, this project investigated whether general self-efficacy (i.e., GSE, cf. Chapter 5.1) predicts sustainable consumption. GSE has been studied in connection with health risk behaviors, such as alcohol consumption (Oei, Hasking, & Phillips, 2007) or medication adherence among HIV patients (Luszczynska, Sarkar, & Knoll 2007). A number of studies in this line of research

showed that GSE is positively associated with risk-mitigating behaviors. Because consumers may take uncertain negative outcomes (e.g., environmental damage associated with conventional production) into account when they are deciding between conventional and sustainable products, these decisions can be considered risk decisions. Thus, it is meaningful to assume a relation between GSE and sustainable consumption.

To the author's knowledge, this was the first research project to investigate whether GSE predicts the purchasing of sustainable groceries. In terms of the relative contribution of GSE and SDSE in explaining sustainable consumption, it was assumed that the domain-specific measure of self-efficacy (i.e., SDSE) is a better predictor of sustainable purchases than GSE (cf. Leganger, Kraft, & Røysamb, 2000). This assumption is in line with research on the attitude-behavior discrepancy, which has shown that the relation between attitudes and behavior is stronger, if both are measured on a similar level of generality (cf. Böhner & Wänke, 2002).

Another reason for including GSE was the assumption (cf. Chapter 5.1) that general self-efficacy may serve as a source of domain-specific self-efficacy and vice versa (Leganger et al., 2000). Research on the concept of locus of control provides some support for the assumed relation between general and domain-specific self-efficacy: Smith-Sebasto and Fortner (1994) found that the domain-specific EAICI was positively correlated, albeit weakly, to more general measures of locus of control. This research project was the first one to explore the relation between GSE and domain-specific SDSE.

6. Promoting sustainable consumption

The previous chapters provided a selective review of existing research on the relations between sustainable consumption and social values, time perspective, and self-efficacy. Most of this research has been cross-sectional. Cross-sectional studies can shed light on which variables are associated with sustainable consumption. An implicit assumption is that the correlational relations found in cross-sectional studies hint at possible determinants of sustainable consumption. It follows that if one manages to strengthen variables that are positively associated – or weaken those variables that are negatively associated – with the target behaviors, one may increase the likelihood that people will engage in the behaviors. Whether this assumption holds or not can be tested by means of intervention studies.

Many of the recent intervention studies in the domain of sustainable consumption have targeted household energy consumption (for an overview see Abrahamse, Steg, Vlek, & Rothengatter, 2005) or choice of transportation (e.g., Matthies, Klöckner, & Preißner, 2006). Only a few published intervention studies have targeted the purchasing of sustainable consumer goods (cf. Lehman & Geller, 2004), such as environmentally friendly groceries. Notable exceptions are studies by Bamberg (2002), Biel et al. (2005), De Young et al. (1993), and Geller, Farris, and Post (1973).

Bamberg (2002) found that the purchasing of organic food can be promoted by means of asking people to form implementation intentions combined with giving people monetary incentives. Biel et al. (2005) found that consumers became more likely to choose eco-labeled products in a computer-simulated grocery store after environmental values had been made salient. De Young et al. (1993) and Geller et al. (1973) showed that the purchasing of sustainable products (e.g., products with less harmful chemicals or products with less or recyclable packaging) can be promoted by means of verbal persuasion. In both studies, consumers were provided with environmental and economic arguments for purchasing behaviors that help preserve the natural environment. For example, in Geller et al.'s study, consumers were handed a pamphlet informing them that one can fight pollution and save money by

choosing beverages sold in returnable bottles. In addition to that, information was provided about how the targeted behavior contributes to environmental preservation.

It was one of the aims of this research project to test an intervention that informed consumers about how they can contribute to sustainable development by purchasing sustainable instead of conventional groceries. The underlying assumption for the intervention was that the information provided should increase consumers' SDSE and hence motivate them to purchase sustainable groceries.

At this point, a framework for the intervention study of this project will be drawn. First, the opportunities and challenges that one should take into account when designing, conducting, and evaluating interventions to promote sustainable consumption will be presented. An emphasis will be placed on the potential of informational strategies for promoting sustainable consumption (Chapter 6.1). Second, an overview of possible strategies to increase self-efficacy will be provided (Chapter 6.2).

6.1 Opportunities and challenges

Sustainable consumption can be conceptualized as a large-scale social dilemma in which individual consumers may benefit from purchasing conventional instead of sustainable products and feel a lack of efficacy with regard to attaining the collective benefits of sustainable development (cf. Chapter 5.2). A major challenge of promoting sustainable consumption is to resolve this social dilemma.

A plethora of strategies to resolve social dilemmas has been proposed, such as changing the incentive structure of collectively beneficial versus detrimental actions and increasing trust in the cooperation of others (for an overview see Van Vugt, 2009; Wiener & Doescher, 1991; and for an emphasis on policy-making see Van Lange & Joireman, 2008). In an effort to categorize the different strategies, Joireman et al. (2001) distinguish between structural and individual solutions. Structural solutions are strategies that aim to alter decision making authorities (e.g., electing political leaders) or the incentive structure of behavior options (e.g., subsidies to

make sustainable products cheaper and therefore more attractive for consumers). Individual solutions are strategies that aim to motivate individuals to opt for collectively beneficial behaviors without (necessarily) changing the decision structure (e.g., providing information to direct individuals' attention toward the detrimental long-term consequences of conventional consumption or to increase trust in others).

Steg and Vlek (2009) provide a guideline for interventions to promote environmental behavior. The authors do not frame decisions between environmentally friendly and harmful behaviors as social dilemmas; however, their distinction in structural and informational intervention strategies resembles Joireman et al.'s (2001) distinction in structural and individual solutions. As for informational strategies, Steg and Vlek further specify that these strategies focus on motivational factors that are associated with the target behavior, such as knowledge, attitudes, and moral concerns.

Steg and Vlek (2009) assume that structural strategies will often be more effective than informational strategies. In the case of sustainable consumption, subsidies to reduce the purchase price of sustainable product alternatives may stimulate demand for the products, and therefore increase their availability in supermarkets (cf. Thøgersen, 2005). Thus, by diminishing cost barriers to purchasing sustainable products, one may initiate the reduction of other structural barriers, such as limited availability.

Because community resources (e.g., tax revenues) are usually used for structural strategies, initiatives to implement structural strategies require acceptance and support by the public (cf. Wiener & Doescher, 1991), at least in democratic societies. This means that informational strategies that increase public support can be an important supplement to structural strategies. Moreover, informational strategies that address consumers in an attempt to motivate the purchasing of sustainable groceries can initiate structural change, in the sense that an increasing demand for sustainable products may result in increased availability and possibly lower purchase prices (e.g., if higher quantities allow for more cost-effective production).

Informational strategies have proven effective in promoting sustainable consumption. For example, the introduction of eco labels that inform consumers about which products are environmentally friendly has proven effective in increasing the purchasing of ecological products (e.g., Bjørner, et al., 2004). The studies by De Young et al. (1993) and Geller et al. (1973) mentioned above used informational strategies (e.g., environmental arguments) to promote the purchasing of sustainable groceries. Thøgersen (2005) emphasizes the importance of educational measures in empowering consumers to make informed choices: “Appropriate knowledge is a prerequisite for environmentally conscious action. [...] For instance, buying environmentally friendly products requires that the consumer is able to distinguish them from the less environmentally friendly (p. 152).”

Various studies provide empirical support for the notion that educational measures can help promote sustainable consumption. For example, Abrahamse et al. (2005) provide an overview of studies that used educational measures (e.g., workshops, mass media campaigns) to encourage households to reduce energy consumption. Staats, Van Leeuwen, and Wit (2000) found that office workers consumed less energy after they had been provided with information about how to save energy in individual offices (both separately and in addition to providing feedback about office energy savings). Abrahamse, Steg, Vlek, and Rothengatter (2007) showed that an intervention that combined tailored information (i.e., information that is targeted to the specific needs and interests of the target group) with other strategies (i.e., goal-setting and tailored feedback) was effective in reducing household energy consumption.

Thompson and Stoutemyer (1991) evaluated the effects of different informational interventions on household water consumption. One intervention (which the authors called *commons education*) used educational messages that focused on the long-term consequences of water use and on the ability of individual residents to make a difference (i.e., efficacy of personal action to save water). In addition, this intervention described water use as a social dilemma. Another intervention (referred to by the authors as *economic interest education*) provided information on the

individual economic benefits of saving water. As it turned out, households in lower-middle class residential areas that participated in the commons education intervention saved more water than those who participated in the economic interest education intervention and those who were part of control groups. Interestingly, the interventions had no effect on the water savings of households in upper-middle class residential areas. Thompson and Stoutemyer (1991) concluded from their findings that interventions that provide information on long-term consequences and personal efficacy to make a difference can encourage collectively beneficial behavior in social dilemmas.

Similarly, Wiener and Doescher (1991) argue that collectively beneficial behavior in social dilemmas can be promoted by convincing individuals that their contribution is important in achieving collective benefits. Klandermans (1992) suggests that people's expectations about the efficacy of their own behavior and about the behavior of others (i.e., whether others will contribute) affect people's expectations that a social dilemma can be solved and hence their decisions on whether or not to contribute. He argues that campaigns that convince people that each individual can make a difference and that others will contribute their share should be effective in encouraging collectively beneficial behavior.

The intervention used in this project was an informational strategy that aimed to encourage consumers to purchase sustainable groceries by explaining how each consumer can directly and indirectly contribute to sustainable development. The intervention shared common elements with the intervention used in Thompson and Stoutemyer's (1991) study. A detailed description of the intervention used in this project is given in Chapter 8.2.3.

Thompson and Stoutemyer's (1991) study showed that educational messages that focus on long-term consequences and personal efficacy can promote sustainable water consumption. Why the intervention was effective, however, remains unclear, because changes in determinants of water consumption (e.g., consumers' time perspective or self-efficacy) were not examined. Similarly, the studies by De Young

et al. (1993) and Geller et al. (1973) mentioned above showed that providing arguments for sustainable consumption persuaded consumers to buy sustainable products; however, the studies did not examine the effects of the interventions on individual characteristics that may determine consumers' purchase decisions.

Abrahamse and colleagues argue that examining effects on behavior determinants is crucial to understanding how exactly an intervention affects behavior and to detecting possibilities of improving the intervention (Abrahamse et al., 2005, 2007). It was, therefore, one of the aims of this project to evaluate the effects of the informational intervention on the purchasing of sustainable groceries and on SDSE (i.e., the assumed determinant of sustainable purchases). Whether SDSE can be affected by means of informational strategies had not been investigated before. In a review of intervention studies targeting energy consumption, Abrahamse et al. (2005) noticed that many studies had not measured actual behavior but used self-report measures of behavior instead. In the intervention study of this project, the effects on self-reported purchasing intentions and actual product purchases were examined.

The following chapter provides an overview of strategies that may enable increase self-efficacy. Furthermore, the chapter presents a conceptual rationale for the strategy to increase SDSE that was applied in this project.

6.2 Strategies to increase self-efficacy

Bandura (1977) assumes that verbal persuasion is one possible source of self-efficacy. Verbal persuasion here refers to providing arguments that increase people's confidence in being able to execute the targeted behavior and bring about desired outcomes. In this research, it was investigated whether SDSE can be increased by providing information about how individual consumers can contribute to sustainable development. That efficacy beliefs can be increased by persuasive information was shown in domains other than sustainable development, for example, in the domain of anti-discrimination (Stewart, Latu, Branscombe, & Denney, 2010).

Ellen et al. (1991) discuss the potential of *sick baby* appeals versus *well baby* appeals for increasing consumers' perceived ability to help protect the natural environment (i.e., PCE). The term *sick baby* refers to appeals that try to convince consumers that the issues at hand are important and severe. The underlying assumption is that people concentrate their efforts on those issues that they believe are important and severe (cf. Obermiller, 1995). A potential problem with sick baby appeals is that an emphasis on the severity of the issues can make consumers feel overwhelmed and incapable of making a difference. In other words, sick baby appeals may "enhance concern at the expense of perceived effectiveness (Ellen et al., 1991, p. 112)." Well baby appeals, in contrast, try to convince consumers that the issues can be solved and that they can personally make a difference. Thus, the core message to consumers is "the baby is sick, but you can make it well (Obermiller, 1995, p. 55)." Empirical support for the assumed effects of the appeals comes from Obermiller (1995, Study 1), who found that well baby appeals to save water and energy resulted in higher PCE than sick baby appeals. Sick baby appeals, by contrast, resulted in higher concern for water and energy conservation than well baby appeals.

According to Ellen et al. (1991), communication strategies that combine well baby appeals with information about which behaviors make a difference should be particularly effective in promoting environmentally friendly behaviors. Data by Obermiller (1995, Study 2) suggest that the effectiveness of sick baby versus well baby appeals in motivating environmentally friendly behavior depends on how salient the environmental issue in question is. In connection with the more salient issue (i.e., recycling) the well baby appeal was rated more effective, whereas the sick baby appeal was rated more effective in connection with the less salient issue (i.e., solid waste reduction). With regard to action-specific information, Obermiller suggests providing information about which behaviors are effective in solving the issues at hand, irrespective of whether sick or well baby appeals are used. Thøgersen (2005) discusses the use of action-specific information in connection with consumer empowerment for sustainable lifestyles. One way in which Thøgersen uses the term *empowerment* is to refer to a person's feeling that he/she can make a difference, which resembles the conceptualization of self-efficacy in this project. With regard to

empowering consumers, Thøgersen recommends, for example, educating consumers about sustainability issues that relate to their lifestyles and to suggest behaviors that help solve the issues and that can be mastered.

Why it makes sense to include action-specific information in interventions to increase self-efficacy can be inferred from Bandura's comments on verbal persuasion. Bandura (1977, p. 198) argues that if one raises expectations of personal competence by means of verbal persuasion, without creating the conditions that help people to master the target behavior, people may experience a failure that lowers their self-efficacy and the credibility of the persuader. For example, it may be counterproductive to tell people that they can contribute to sustainable development by purchasing environmentally friendly groceries without explaining which attributes are indicative of environmentally friendly products. Most likely, consumers with little prior knowledge would find it difficult to identify environmentally friendly products in stores and thus feel incapable of making a difference.

The intervention applied in this research project combined appeals to convince individuals that they can contribute to sustainable development by everyday consumption decisions (i.e., well baby appeals) with examples of specific consumption behaviors that help promote sustainable development (i.e., action-specific information) and information to facilitate mastery of the behaviors. As for appeals to increase consumers' perceived ability to make a difference it was emphasized that individual consumers can directly and indirectly (i.e., by encouraging others) contribute to sustainable development. Because sustainable development requires the contribution of many people (cf. Chapter 5.1), it was assumed that convincing individuals of their ability to indirectly contribute to sustainable development is crucial to the effectiveness of the intervention.

What information was provided to increase consumers' perceived direct impact on sustainable development and to facilitate mastery of effective behaviors? It is plausible to assume that consumers' SDSE partly depends on their knowledge about the environmental and social impacts of consumption behaviors. Consider the

following example: a consumer who is unaware of the greenhouse gas emissions associated with grocery storage and distribution and who does not know that it is possible to reduce one's carbon footprint by purchasing seasonal instead of non-seasonal vegetables or locally produced instead of imported foods may not believe that his/her purchase decisions can help mitigate climate change. It was expected that SDSE can be increased by a) providing information on environmental and social impacts of consumption behaviors and which attributes are indicative of sustainable products; and b) providing examples of behaviors that help reduce one's ecological footprint (e.g., buying ecological products) and improve the working and living conditions of small-scale producers in developing countries (e.g., buying fair trade products).

Many attributes of sustainable groceries, such as low greenhouse gas emissions and fair payment for producers, are not directly observable (cf. Roth, Klingler, Schmidt, & Zitzlsperger, 2009), which means that consumers have to infer these attributes from information provided on the packaging of the product or on shelf tags, etc. Product labels (e.g., eco and fair trade labels) can aid the identification of sustainable products (Gallastegui, 2002). McDonald, Oates, Thyne, Alevizou, and McMorland (2009) found that UK consumers who buy sustainable groceries rely on product labels as purchase guides. In Norway, a large number of such labels are in use, and research suggests that not all consumers in the Nordic countries are familiar with all the labels (cf. Hanss & Böhm, 2012; Thøgersen, 2000 for an overview). This is a problem, inasmuch as a lack of familiarity with the labels might complicate the identification of sustainable products in the store and hence negatively affect consumers' perceived ability to choose sustainable products. It was therefore assumed that familiarizing consumers with labels that indicate sustainable product attributes should help increase self-efficacy (cf. Ellen et al., 1991).

Gupta and Ogden (2009) suggest that, in order to increase consumers' self-efficacy, interventions should emphasize how individual actions can contribute to collective gains. Their suggestion was implemented in this research project by illustrating how consumers can indirectly contribute to sustainable development. More specifically,

examples were provided of everyday situations in which one's sustainable behaviors are visible to others, and it was pointed out that in these situations other consumers may be encouraged to also contribute to sustainable development (cf. Chapter 5.5). Moreover, the cumulative effects on sustainable development that can occur if other people in turn encourage some of *their* friends, relatives, etc. to contribute were illustrated. In addition, it was emphasized that by purchasing sustainable products, consumers can send important signals to decision makers in industry and agriculture and hence stimulate the implementation of more sustainable means of production and distribution (cf. Shrum, Lowrey, & McCarty, 1995).

The intervention consisted of four parts. In the first part, information to increase the salience of sustainability issues was provided, to lay the foundation for increasing SDSE (cf. findings of Obermiller, 1995, mentioned above). The second part emphasized that humans can solve sustainability issues, and in the third and fourth parts the measures to increase SDSE described above were applied. Further details of the intervention will be provided in the Method section of Study 2 (Chapter 8.2.3).

7. Overall aims of the project

In sum, the project pursued the following aims: first, to investigate how well *social values* (pro-social vs. pro-self values), *time perspective* (short-term vs. long-term time perspective) and *self-efficacy* (general self-efficacy, GSE, and sustainable development self-efficacy, SDSE) explain individual differences in the purchasing of sustainable groceries. Most of the existing research to investigate whether values, time perspective, and self-efficacy predict sustainable consumption had focused on one of the predictor variables. Therefore, the aim of this project was to establish to what extent social values, time perspective, and self-efficacy account for non-overlapping parts of the variance in the purchasing of sustainable groceries.

Special emphasis was placed on SDSE, a construct that had not been investigated in previous research. With regard to SDSE, the main objectives were to explore the dimensionality of the construct (i.e., can different facets of SDSE be distinguished?) and to investigate whether different facets of self-efficacy have different weights as predictors of sustainable consumption. In addition, the relation between SDSE and GSE was explored.

With regard to social values, one of the objectives was to compare the predictive power of two value classifications: the SVO and the self-enhancement and self-transcendence values of Schwartz's classification of basic human values.

Second, the project aimed to investigate whether informing consumers about how they can contribute to sustainable development directly (i.e., through their own behaviors) and indirectly (i.e., through encouraging other people to join in) makes it possible to increase consumers' SDSE and to motivate consumers to purchase sustainable groceries. With regard to SDSE, one of the main questions was whether SDSE is causally related to sustainable consumption.

8. Methods

A cross-sectional study and an intervention study were conducted to achieve the research aims summarized in the preceding chapter. By means of cross-sectional approaches, one can investigate how closely variables are interrelated. This was applied in Study 1 to the relations between social values, time perspective, self-efficacy, and sustainable consumption. Whether variables are causally related cannot be answered by cross-sectional approaches; however, intervention approaches can answer this latter question. Therefore, in order to investigate whether SDSE is causally related to sustainable consumption, an intervention approach was chosen for Study 2.

Both studies were conducted via the internet: Study 1 was conducted via the online survey platform of a market research institute, and Study 2 was conducted via a website that was designed specifically for this purpose in cooperation with a web designer. The decision to conduct the studies via the internet was based partly on economic reasons. In addition, we assumed that participating in an online study would be more convenient than participating in a paper-and-pencil questionnaire survey (e.g., because no questionnaire needs to be mailed back afterwards), which may increase people's willingness to take part in the studies.

The population of interest was consumers living in urban communities in Norway. To residents of urban communities in Norway, sustainable product alternatives are available in various grocery categories, albeit some sustainable products can only be found in specialized stores. Availability of certain types of sustainable groceries, such as fair trade products, is more limited in rural areas in Norway (cf. Chapter 4).

Participants in both studies were recruited from among people living in the municipality of Bergen. With about 260,000 inhabitants at present, Bergen is the second largest city in Norway. The focus on Bergen residents facilitated the conduct of the studies, particularly the home delivery of groceries that the participants purchased during the studies (cf. Chapters 8.1.2 and 8.2.2).

In the following chapters, the methods used in Study 1 (Chapters 8.1 to 8.1.4) and Study 2 (8.2 to 8.2.4) will be described. The findings of Studies 1 and 2 will be summarized afterwards, together with a description of the objectives of the three research papers (Chapters 9.1 to 9.3).

8.1 Study 1

Study 1 investigated how important social values (i.e., SVO and the self-enhancement and self-transcendence values), time perspective (i.e., CFC), and self-efficacy (i.e., GSE and SDSE) are to predicting the purchasing of sustainable groceries (Figure 3). The findings of Study 1 are presented in Papers 1 and 2.

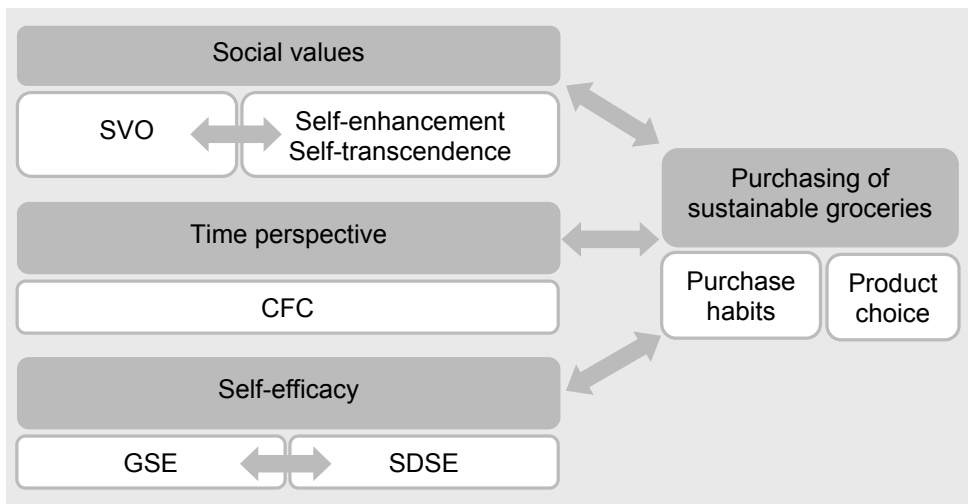


Figure 3: Relations between individual characteristics and sustainable consumption investigated in Study 1.

8.1.1 Participants

Study 1 involved 402 people living in the municipality of Bergen, recruited via the online panel of a market research institute. Just over half of the participants were female ($n = 219$), and the age range was 18 to 64 years ($M = 42$ years, $SD = 12$). The sample composition was representative of the municipality of Bergen with regard to

gender and age (i.e., residents between 18 to 64 years). All participants reported that they bought groceries on a regular basis.

8.1.2 Measurements

Values: SVO was assessed by means of a decomposed games measure and the self-enhancement and self-transcendence values were measured by means of the portrait value questionnaire (PVQ).

The decomposed games measure of SVO was adopted from Van Lange, De Bruin, Otten, and Joireman (1997). It comprises nine three-alternative games in which participants decide how they want to share points with another person. Participants are instructed to assume that the points are of value to themselves and the other person and to imagine that they do not know nor will get to know the other person in the future. For example, the first game comprises the following three combinations of points: A (480 to self and 80 to the other person), B (540 self and 280 other), and C (480 self and 480 other). Combination A represents the competitive choice because it yields the highest relative gain in points for the respondent, combination B represents the individualistic choice because it yields the highest gain for the respondent, and combination C represents the cooperative choice because it yields the highest joint gain and the smallest difference between the gains. Those participants who chose consistently in at least six of the nine games were classified as competitive, individualistic, or cooperative. Afterwards, participants with a competitive or an individualistic orientation were pooled into a group of *pro-selfs* (cf. Chapter 5.3). Comparing pro-self with pro-social (i.e., cooperative) people is common practice in social dilemma research (e.g., Brucks & Van Lange, 2007). Previous research has demonstrated that the decomposed games instrument is an internally consistent, temporally stable, and valid measure of SVO (e.g., Liebrand & Van Run, 1985; Van Lange & Kuhlman, 1994).

The PVQ (e.g., Schwartz et al., 2001) consists of 40 verbal portraits of different people. Each portrait describes the goals or aspirations of the person that refer to one of the 10 basic human values (Schwartz, 2006). For example, the portrait “He likes to

be in charge and tell others what to do. He wants people to do what he says.” describes a person for whom power values are important. Participants were asked to indicate how similar the portrayed person is to themselves, on an answer scale ranging from 1 (*not like me at all*) to 6 (*very much like me*). The higher a participant rates a portrait, the more important the described value is to the participant.

Because this research had an emphasis on social values, only those verbal portraits were considered that represent self-enhancement (i.e., power and achievement) and self-transcendence values (i.e., universalism and benevolence). For each value type an index variable was computed by averaging participants’ ratings of the portraits that represent the respective value type. Cronbach’s alpha values were $\alpha = .72$ (power), $\alpha = .87$ (achievement), $\alpha = .76$ (universalism), and $\alpha = .67$ (benevolence). Each participant’s scores on the index variables were corrected for response tendencies (cf. Schwartz, 2006).

Previous research has shown that the PVQ has good internal reliability and convergent validity (e.g., Schwartz, 2006; Schwartz et al., 2001). Compared to the Schwartz Value Survey (i.e., the initial instrument to measure the basic human values, cf. Schwartz, 2006), the PVQ is assumed to be a more tangible and less cognitively challenging value measure. The Schwartz Value Survey has been described by respondents as an intellectually challenging task, whereas respondents to the PVQ typically report no difficulties (Schwartz et al., 2001).

Time perspective: The CFC questionnaire (Strathman et al., 1994) was used to measure respondents’ time perspective. The questionnaire consists of 12 statements that capture different aspects of considering the short and long-term future consequences of one’s behaviors. An example of such a statement is: “I consider how things might be in the future, and try to influence those things with my day to day behavior.” Participants were asked to indicate to what extent they agreed with each statement, on a five-point answer scale ranging from 1 (*extremely uncharacteristic*) to 5 (*extremely characteristic*). Research has demonstrated that the CFC questionnaire possesses high internal and test-retest reliability and good convergent and

discriminant validity (for an overview see Joireman et al., 2006). Analyses by Strathman et al. (1994) suggest that CFC has a single underlying factor.

In this project, a Norwegian version of the CFC questionnaire by Brun (2001) was used. This version of the questionnaire features three additional items that are not included in the instrument proposed by Strathman et al. (1994). Ratings were partly recoded so that high scores on all questionnaire items represented a long-term time perspective. Then a CFC index variable was computed by averaging participants' ratings of the 15 statements. Cronbach's alpha was $\alpha = .78$.

General self-efficacy: GSE was measured by means of the general perceived self-efficacy scale proposed by Schwarzer and colleagues (e.g., Schwarzer et al., 1999). The GSE scale is composed of 10 questionnaire items, each consisting of a statement about a person's perceived ability to bring about desired outcomes and cope with adverse events. An example is: "It is easy for me to stick to my aims and accomplish my goals." Participants indicated the extent to which they agreed to each statement on a four-point answer scale ranging from 1 (*not at all true*) to 4 (*exactly true*).

Scholz, Gutiérrez-Doña, Sud, and Schwarzer (2002) report a study that investigated the psychometric properties of the GSE scale in 25 countries. Their results suggest that GSE is a unidimensional construct and that the GSE scale possesses high internal consistency. In addition, the GSE scale was found to possess good test-retest reliability (for an overview see Scholz et al., 2002) and convergent and discriminant validity (Luszczynska, Gutiérrez-Doña, & Schwarzer, 2005). In this research, a Norwegian version of the GSE scale (Leganger et al., 2000) was used. A GSE score was computed for each participant by averaging ratings of the ten statements (cf. Schwarzer, 2011); higher scores indicated higher GSE. Cronbach's alpha across the 10 GSE items was $\alpha = .86$.

Sustainable development self-efficacy: SDSE was measured by means of 20 questionnaire items. Each item consisted of a statement that captured the specific aspects of SDSE. The following aspects of SDSE were covered: the perceived ability to promote environmental preservation, a socially fair distribution of resources, and

economic welfare; belief in one's ability to directly (i.e., by one's own sustainable behaviors) and indirectly (i.e., by encouraging others) contribute to the three sustainable development dimensions; belief in one's ability to contribute to sustainable development locally (i.e., in Norway) and globally. For example, one statement that captured the perceived ability to directly contribute to a socially fair distribution in Norway was: "With my everyday consumption and buying behavior I can contribute to a socially fair distribution of resources in this country".

One issue related to sustainable development was given particular attention: climate change. Three of the SDSE items were adopted from Kellstedt et al. (2008) and measured people's perceived impact on climate change. An example is: "I believe my actions have an influence on global warming and climate change."

Participants used a four-point answer scale to indicate the extent to which they agreed with each of the statements, ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). Four distinct facets of SDSE were identified (cf. Chapter 9.1) by means of an exploratory factor analysis (principal component analysis, PCA). For each facet an index variable was computed by averaging items with high loadings on the respective component. High scores on the index variables indicated high self-efficacy. Cronbach's alpha values for the SDSE facets ranged from $\alpha = .85$ to $.92$.

Purchasing of sustainable groceries was measured by means of a purchase habit (short: PH) questionnaire and a product choice. The PH questionnaire comprised 17 statements about purchases of groceries with various sustainable product attributes. Each statement addressed either groceries in general or a specific category of groceries (e.g., dairy products, beverages, or cosmetics). Sustainable product attributes that were covered are, for example, minimal and recyclable wrapping, domestic production, the humane treatment of animals. An example of a PH item is: "When shopping groceries I choose products with little wrapping." Five of the items showed labels that are indicative of sustainable products (e.g., the Fairtrade label and the Debio Ø-label). Participants were asked to indicate how often they choose products with the presented attributes in their everyday grocery shopping. The answer

scale ranged from 1 [*rarely (less than 10% of the time)*] to 5 [*usually (more than 90% of the time)*]. If participants never bought the product category covered by an item (e.g., foods), they could indicate this by ticking off a “I never buy” answer category. Choices in this category were treated as missing values in the data analysis.

The selection of product attributes and labels covered by the PH items was guided by findings from a previous study (Hanss & Böhm, 2012). This previous study explored how important Norwegian consumers thought various product attributes to be for sustainable groceries and which labels Norwegian consumers considered indicative of sustainable groceries. The present study focused on those product attributes that were considered important and those labels that were considered indicative of sustainable groceries. A similar selection of product attributes was used in a study by Gilg et al. (2005) to cover “green” consumer behaviors.

A PCA was conducted to explore whether distinct facets of PH could be distinguished. Four components were retained (cf. Chapter 9.1) and index variables were computed by averaging items with high loadings on the respective component. Higher values on the index variables indicated that the respective sustainable products are purchased more often. Cronbach’s alpha values for the PH facets ranged from $\alpha = .61$ to $.81$.

The self-report PH measure used in the current study assessed people’s memories of their everyday purchasing behavior. A potential problem with such measures is that people’s memories may not be perfectly reliable, for example, because people do not accurately remember their past product choices (cf. Biel et al., 2005). Therefore, we included an additional measure of sustainable consumption: we asked participants to choose between packages of fruits and vegetables that were delivered to their homes after the study. The products served as incentives to participate in the study. Two pairs of packages were presented; each pair consisted of one package with conventionally grown produce and one package with ecological produce (i.e., the same kinds of fruits and vegetables as in the package with conventional produce). The latter packages were labeled “ecological” and featured the Debio Ø-label. Each

participant could choose one of the four packages. The difference between the two pairs of packages was that they contained different kinds of produce. The ecological packages contained somewhat lower quantities than the conventional packages to account for the higher purchase prices of ecological products. Participants' choices were binary coded (conventional vs. sustainable) for the analysis.

8.1.3 Procedure

Study 1 was conducted in the autumn of 2008. Invitation emails were sent to 1,873 members of the online panel of a market research institute. The invitation announced that the aim of the study was to investigate attitudes toward various aspects of everyday life and consumption. In addition, it was explained that the study comprised two consecutive sessions, with one week between the sessions.

Of the panelists invited, $n = 435$ (i.e., 23.2%) chose to participate and entered the first session (i.e., the product choice) via personalized links to the survey platform. Of those panelists who had chosen a product package, $n = 402$ (i.e., 92.4%) took part in the second session. The second session contained the questionnaires to measure PH, SVO, the Schwartz values, CFC, GSE, and SDSE. The PH questionnaire was placed at the end of the survey in order to separate it as much as possible from the product choice. All other questionnaires were presented in random sequence.

8.1.4 Statistics

Data were analyzed with the statistical packages SPSS and R. PCAs were conducted to explore whether distinct facets of SDSE and PH can be distinguished. Regression analyses (linear least-squares regression, robust regression, logistic regression) were performed to investigate the relations between social values, time perspective, self-efficacy, and the purchasing of sustainable groceries.

8.2 Study 2

In Study 2, an informational intervention was applied which aimed to increase SDSE and to encourage consumers to purchase sustainable groceries (cf. Figure 4). The

study had a randomized pre-test-post-test design. It consisted of nine parts, including a six month follow-up, and was conducted from November 2009 to June 2010 via the internet. The findings of Study 2 are presented in Paper 3.

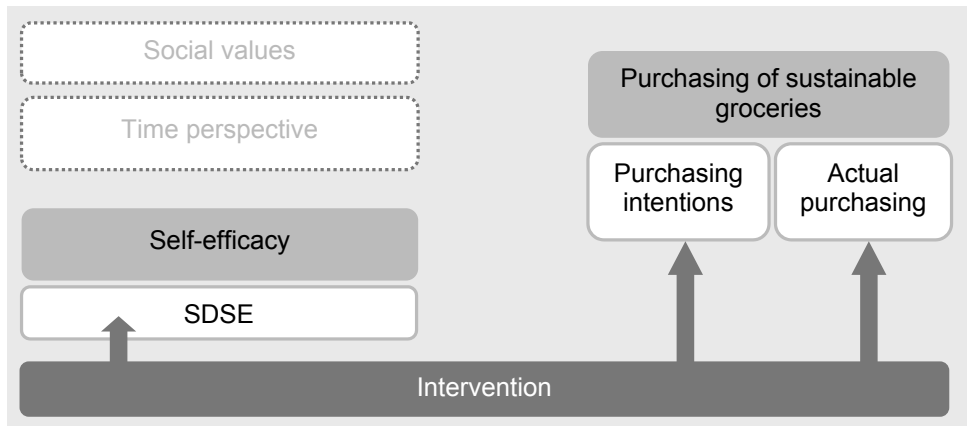


Figure 4: Intervention effects investigated in Study 2.

8.2.1 Participants

The sample consisted of 145 people living in the municipality of Bergen. Participants were between 18 and 70 years of age ($M = 38$ years, $SD = 14$), and $n = 93$ of the participants were female. The composition of the sample was not entirely representative of the municipality of Bergen (comparison data for the municipality of Bergen were retrieved from the webpage of SSB: <http://www.ssb.no/>). Because underage and elderly people were not included in the study, the age group of 20 to 60 years was overrepresented in the sample (92% vs. 63% in Bergen). Relative to the municipality of Bergen, a larger proportion of the sample was female (64% vs. ca. 50% in Bergen) and married (63% of the participants were married or had a life partner; 33% of the Bergen residents are married), and held a college degree (64% in the sample vs. 35% in Bergen). The median household income category in the sample was 350.000 to 449.000 NOK (p.a. after tax, 17%). Compared to the greater Bergen area, lower-income households (with less than 150.000 NOK p.a.) were slightly overrepresented, and higher-income households (with more than 550.000 NOK p.a.) were slightly underrepresented in the sample.

Participants were recruited in the autumn of 2009 through flyers distributed to 2,000 randomly selected households, and through newspaper announcements. Flyers and newspaper announcements invited people to sign up for an online study conducted by the University of Bergen and provided them with information on the aims of the study (i.e., learning about people's opinions and preferences relating to everyday consumption), and that participants would receive a present worth 500 NOK (about 66 Euro). The publicity also provided a link to the website on which people could sign up for the study.

The present served as compensation for taking part in the study and consisted of grocery products that participants could choose during the course of the study, and a monetary incentive that varied depending on which grocery products participants chose (cf. Chapter 8.2.2). In addition, cinema vouchers were raffled among those participants who completed all parts of the study.

Participants were randomly assigned to one of two groups: an intervention and a control group. The intervention group consisted of 73 participants ($n = 48$ female) with a mean age of 39 years ($SD = 13$). The control group consisted of 72 participants ($n = 45$ female) with a mean age of 38 years ($SD = 15$).

8.2.2 Measurements

Purchasing of sustainable groceries: All participants received a budget of 500 NOK to buy groceries. In two study parts before and in two study parts after the intervention, participants were presented with two pairs of grocery products. Each product pair consisted of a conventional product (e.g., spaghetti) and a sustainable alternative (i.e., certified ecological and/or fair trade) of the same product category and quantity. All products were presented with a picture of the package, information about the quantity, and a purchase price. The sustainable alternatives were indicated by the terms “økologisk” (i.e., ecological) and/or “fair trade” and the labels Debio Ø and/or Fairtrade Max Havelaar. The purchase prices were the average prices of the products in local supermarkets; all conventional products were somewhat cheaper

than the respective sustainable alternatives. The order in which the product pairs were presented was randomized across participants.

From each pair of groceries, participants chose between the conventional and the sustainable product. The purchased products were delivered to participants' homes at the end of the study. Participants knew that the purchase budget exceeded the maximum amount that they could spend on the groceries and that the remaining budget would be handed out to them at the end of the study, together with the purchased groceries. It was assumed that, by providing participants with the remaining budget, the product purchasing task would closely resemble everyday shopping situations in which consumers usually can save money by choosing conventional instead of sustainable products.

Purchasing intentions: A questionnaire composed of 18 items was used to measure intentions to purchase sustainable groceries (i.e., purchasing intentions, PI). Each item consisted of a statement about the purchasing of groceries with sustainable attributes (e.g., fair payment to producers, little packaging). For example, one item stated: "When I buy food and have the choice, I will buy products that guarantee fair payment to the producers." Participants were asked to indicate how likely they were to reach a particular decision, as described by the statements in their grocery shopping on an 11-point answer scale ranging from 0 (*no, definitely not*) to 10 (*yes, definitely*).

Three distinct facets of PI were identified (cf. Chapter 9.3) by means of an exploratory factor analysis (PCA), and index variables were computed by averaging the items with high loadings on the respective PI components. Higher values on the index variables indicated stronger intentions to purchase sustainable products. Cronbach's alpha values for the PI facets ranged from $\alpha = .75$ to $.91$.

Sustainable development self-efficacy: SDSE was measured by means of 24 questionnaire items. Twenty items were adopted from Study 1. The four additional items were included to measure how strongly consumers believed that they could promote sustainable development by purchasing sustainable products. In Study 1,

SDSE was measured with regard to everyday consumption and purchasing behavior but not explicitly with regard to the purchasing of sustainable products. An example of the additional items is: “By purchasing sustainable (e.g., ecological and fair trade) products, I can encourage more sustainable agricultural practices.” Participants were asked to indicate the extent to which they agreed with the statements on a five-point answer scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Because the questionnaire to measure SDSE differed from the questionnaire used in Study 1, another PCA was conducted to explore the dimensionality of SDSE. Five components were retained (cf. Chapter 9.3) and index variables were computed by averaging the items with high loadings on the respective SDSE components. Higher scores on the index variables indicated higher self-efficacy. Cronbach’s alpha values for the five SDSE facets ranged from $\alpha = .82$ to $.94$.

8.2.3 Procedure

A website was developed in cooperation with a web designer. The website served as the platform for participant registration, product purchases, the questionnaires to measure PI and SDSE, and the intervention. The internet address of the website was provided on the flyers and in the newspaper advertisements used to recruit participants. The website provided information on the aims and duration of the study. In addition, information about incentives and confidentiality was provided. Consumers who decided to participate entered their personal information (e.g., age, gender, e-mail address) on a registration form. Personalized links to the first study part were sent via email after the registration period.

The study was divided into nine parts. Parts 1 and 2 served as the pre-test: in these two parts, product purchases, PI, and SDSE were measured. In study Parts 3 to 6, the participants took part either in the intervention or in a control condition. Parts 7 and 8 were identical to Study Parts 1 and 2 and served as the post-test measurement of product purchases, PI, and SDSE. Part 9 was a follow-up measurement of PI and SDSE. For Study Parts 2 to 8, email invitations were sent out to participants who had completed the preceding study part. If a participant had not completed a study part

within four days of receipt of the invitation, he/she received an e-mail reminder. Parts 1 to 8 were conducted at an interval of one week between consecutive study parts. Participants who had completed Study Parts 1 to 8 received the purchased groceries and the remaining budget via home delivery. Six months after Study Part 8, those participants who had completed Parts 1 to 8 were contacted once more and asked to take part in the follow-up.

Intervention condition: The objective of the intervention was to provide information to promote the purchasing of sustainable products via increasing participants' SDSE. A four-step procedure was chosen to achieve this objective:

The intention behind the first and the second steps of the intervention was to lay the foundations for increasing participants' self-efficacy. Intervention Step 1 (Study Part 3) informed the participants about major environmental problems (e.g., pollution, climate change) and socio-economic problems (e.g., poverty and related health issues). Several authors suggest that increasing consumer's awareness of sustainability problems in combination with enhancing a sense of personal efficacy may be an effective approach to promoting sustainable consumption (e.g., Kim & Choi, 2005; Webster, 1975). Step 2 (Study Part 4) pointed out that human activities are among the main causes of the problems presented in the first step. The intention was to build confidence in humanity's ability to mitigate the problems.

Intervention Step 3 (Study Part 5) aimed to increase self-efficacy with regard to *directly* contributing to sustainable development. Examples were provided of how consumers can reduce their contribution to environmental and socio-economic problems and, thereby, foster sustainable development. The purchasing of locally produced, ecological, and fair trade groceries are examples of activities that were covered. When applicable, eco and fair trade labels (e.g., the Debio Ø-label and the Fairtrade Max Havelaar label) were depicted in order to familiarize participants with labels that indicate sustainable products. Moreover, two fictitious Norwegian consumers were introduced whose consumption habits differed with regard to the associated amount of carbon emissions. The intention was to illustrate how

individuals can alter their carbon footprint by everyday consumption decisions (e.g., *sometimes* instead of *never* buying ecological and seasonal food). Step 3 concluded by emphasizing that, by choosing between consumption options, consumers can “vote” for and thus foster more or less sustainable means of production, product transportation, and trade.

Intervention Step 4 (Study Part 6) aimed to increase self-efficacy with regard to *indirectly* contributing to sustainable development. The basic idea of this intervention step was to provide examples of everyday situations in which a person’s sustainable behaviors are visible to other people. For example, products with eco and fair trade labels might be visible to colleagues during lunch breaks at work or to friends during a picnic. It was emphasized that sustainable development requires contributions by many people and that setting a good example by contributing to sustainable development may motivate other people to join in. “Domino effects” (i.e., cumulative contributions to sustainable development) were illustrated that would occur if a person’s contribution to sustainable development encouraged some of his/her friends, relatives, or colleagues to join in, who in turn encouraged some other people in their environment, and so on.

At the end of each step, participants were asked to answer questions concerning the topics that were covered (cf. Appendix A). The participants were informed of this in the instruction to each intervention step. One aim was to encourage participants to deliberate over the covered topics. In addition, analysis of participants’ answers produced insights into how well the information provided was conveyed.

The intervention applied in the current study was in many ways similar to the commons education intervention that Thompson and Stoutemyer (1991) used to reduce household water consumption (cf. Chapter 6.1). For example, Thompson and Stoutemyer provided information on problems associated with water overuse, such as impacts on ecosystems, and stressed the importance of individual efforts to conserve. Furthermore, a list of concrete advice on how to save water was provided.

Control condition: Participants in the control group carried out tasks that were unrelated to the topics of sustainable development and sustainable consumption. In Study Part 3, participants were presented with seven car types and 13 colors. The participants' task was to ascribe each car type the color that they found matched the car type best. In Study Part 4, participants rated the same car types and colors with regard to how much they liked them. In Study Parts 5 and 6, affective qualities of the car types and colors were measured by means of asking participants to rate the car types and colors on semantic differential scales. These data were collected as part of another research project (see Hanss, Böhm, & Pfister, 2012).

8.2.4 Statistics

Data were analyzed with the statistical package SPSS. Missing data were replaced by means of multiple imputation. Since, as yet, there are no standard rules for pooling ANOVA results in multiple imputation (cf. Van Ginkel, 2010), ANOVAs to test the effects of the intervention were formulated in terms of a general linear model. Post-hoc (*t*) tests were performed to further explore between- and within-group effects.

9. Papers: objectives and summary of results

9.1 Paper 1

The objectives of Paper 1, “*Can I make a difference? The role of general and domain-specific self-efficacy in sustainable consumption decisions*”, were to explore the dimensionality of SDSE and to investigate whether SDSE and GSE predict the purchasing of sustainable groceries. In addition, the relation between SDSE and GSE was explored. Data collected in Study 1 were used to address these research objectives.

A PCA revealed that four facets of SDSE can be distinguished: the perceived ability (a) to encourage others to contribute to sustainable development (*SDSE Influence on Others*); (b) to help preserve the natural environment through one’s actions in general and consumption decisions in particular (*SDSE Influence on the Environment*); (c) to help promote a socially fair distribution of resources and economic welfare through one’s consumption decisions (*SDSE Influence of Consumption on Socially Fair Distribution of Resources and Economic Welfare*); and (d) through one’s actions in general (*SDSE Influence of Actions in General on Socially Fair Distribution of Resources and Economic Welfare*).

Concerning PH, four facets could be distinguished (PCA). The four facets represented the purchasing of (a) domestic and seasonal products (*PH Domestic-Seasonal*); (b) certified ecological and fair trade products (*PH Eco-Fair-Trade*); (c) animal products with a guarantee of humane treatment and cosmetics that are environmentally friendly and have not been tested on animals (*PH Animals-Cosmetics*); and (d) products with environmentally friendly packaging and products that have been transported without much energy being used (*PH Packing-Energy*).

SDSE explained a significant proportion of the variance in how frequently consumers choose sustainable products in their everyday grocery shopping (i.e., PH), and in participants’ choices between the ecological and conventional incentive products.

However, one facet of PH was not predicted by SDSE: the purchasing of domestic and seasonal products (PH Domestic-Seasonal).

SDSE Influence on Others turned out to be the best predictor of PH, specifically of the facets PH Eco-Fair-Trade, PH Animals-Cosmetics, and PH Packing-Energy. One more SDSE facet contributed to explaining variance in PH: SDSE Influence of Consumption on Socially Fair Distribution and Economic Welfare predicted the purchasing of certified ecological and fair trade products (PH Eco-Fair-Trade). The choice of ecological incentive products was predicted by only one of the SDSE facets: SDSE Influence on the Environment.

GSE was weakly related to SDSE but did not contribute to explaining variance in sustainable consumption.

In sum, the findings suggest that different facets of self-efficacy should be considered in the domain of sustainable development. Perhaps most importantly, the perceived ability to promote sustainable development *directly* should be distinguished from the perceived ability to promote sustainable development *indirectly*. While the perceived direct impact on environmental outcomes is distinct from the direct impact on social and economic outcomes, the perceived indirect impact is represented by only one facet that comprises environmental as well as social and economic outcomes.

The distinction between direct and indirect self-efficacy is not only of interest from a conceptual perspective but also with regard to predicting sustainable consumption. The finding that the perceived ability to encourage others was an important predictor of PH points at the collective nature of sustainable consumption, that is, the fact that it requires the joint contributions of many consumers to make a significant difference. In order to further investigate the directionality of the relation between SDSE and sustainable consumption, research is needed to test whether increasing SDSE makes it possible to promote the purchasing of sustainable products. This research question was addressed in Paper 3.

9.2 Paper 2

The objectives of Paper 2, “*A social dilemma perspective on sustainable consumption: Social values, time perspective, and self-efficacy beliefs predict purchases of environmentally friendly and fair trade groceries*”, were threefold: (1) to investigate how well social values (i.e., SVO and the self-enhancement and self-transcendence values) and time perspective (i.e., CFC) predict the purchasing of sustainable groceries (i.e., the four PH facets identified in Paper 1); (2) to investigate whether self-efficacy with regard to encouraging others to contribute to sustainable development (i.e., SDSE Influence on Others) explains additional, non-overlapping parts of the variance in the purchasing of sustainable groceries; and (3) to explore the relation between SVO and the self-enhancement and self-transcendence values. Data from Study 1 were used to address these research objectives.

It was found that the two value classifications were associated with different facets of sustainable consumption. SVO was associated with the purchasing of ecological and fair trade products (i.e., PH Eco-Fair-Trade); the self-enhancement and self-transcendence values were associated with all four PH facets, but to varying degrees and depending on which PH facet was examined. The relations between PH, SVO, and the self-enhancement and self-transcendence values were in the expected directions, with one exception: power values (self-enhancement) were positively associated with PH Eco-Fair-Trade. Overall, the self-enhancement and self-transcendence values explained a larger proportion of the variance than SVO. Universalism values were the best predictor among the self-enhancement and self-transcendence values for three PH facets.

Interestingly, the self-enhancement and self-transcendence values were only weakly related to SVO, which suggests that the two classifications represent different elements of pro-social and pro-self values.

Time perspective contributed to explaining variance in PH, in addition to values. Consumers with a long-term time perspective were more likely than those with a short-term time perspective to purchase domestic and seasonal products (PH

Domestic-Seasonal), products with a guarantee that animals had been treated humanely and cosmetics that are environmentally friendly and not tested on animals (PH Animals-Cosmetics), and products with minimal packaging and products that have been transported with little energy being used (PH Packing-Energy).

Self-efficacy with regard to encouraging others explained additional variance in PH. In conjunction with SVO and CFC, SDSE Influence on Others was positively associated with all four PH facets. In conjunction with the self-enhancement and self-transcendence values and CFC, SDSE Influence on Others was associated with two PH facets: PH Animals-Cosmetics and PH Packing-Energy. Additional analyses suggested that SDSE Influence on Others partly mediated the relations between universalism values and PH and between CFC and PH.

9.3 Paper 3

The objective of Paper 3, “*Promoting purchases of sustainable groceries: An intervention study*”, was to test the potential of an informational intervention for increasing consumers’ SDSE and promoting sustainable consumption (i.e., purchasing intentions and actual purchases of sustainable groceries). The paper reports data collected in Study 2.

Different facets of purchasing intentions (PI) and SDSE were distinguished based upon the results of exploratory factor analyses (PCA). Three components were retained for PI that represented intentions to purchase groceries with various sustainable attributes: (a) minimal packaging and fair payment for producers (*PI Resource-Saving-Ethical*); (b) certified ecological foods and products from farmer-to-consumer direct marketing (*PI Ecological Foods*); and (c) domestic and seasonal products (*PI Domestic-Seasonal*).

For SDSE, five components were retained: (a) self-efficacy with regard to encouraging others to contribute to sustainable development (*SDSE Others*); (b) contributing to sustainable development in Norway (*SDSE Domestic*) and (c) around the world (*SDSE Global*); (d) promoting sustainable development by purchasing

sustainable products (*SDSE Sustainable Products*); and (e) helping preserve the natural environment and mitigate climate change (*SDSE Environment-Climate*).

The aims of the intervention were partly achieved: After the intervention, intentions to purchase domestic and seasonal products (i.e., PI Domestic-Seasonal) and certified ecological products (i.e., PI Ecological Foods) were strengthened in the intervention group but not in the control group. In addition, participants in the intervention group purchased more ecological and fair trade products after the intervention than before, whereas purchasing behavior remained unchanged in the control group. Contrary to the assumptions, the intervention had no effects on PI Resource-Saving-Ethical.

An analysis of participants' answers to the questions that were asked during the intervention suggests that the information provided was well conveyed. In particular, intervention group participants were quite confident in their ability to directly and indirectly contribute to sustainable development (cf. Appendix A). However, when SDSE was measured after the intervention, it turned out that the intervention did not affect any of the SDSE facets. Thus, the effects of the intervention on sustainable consumption were not due to increased self-efficacy.

An alternative explanation for the effects on purchasing intentions and purchases of sustainable products can be derived from participants' feedback to the study (cf. Appendix B). Many of the comments made by intervention group participants indicated that their knowledge about sustainable consumption had increased during the course of the study. It is possible that increased knowledge led to stronger purchasing intentions and more purchases of sustainable products after the intervention.

10. Discussion

The main objectives of the project were two-fold. First, the project investigated how well social values, time perspective, and self-efficacy predict sustainable consumption. To the author's knowledge, this was the first project to investigate social values, time perspective, and self-efficacy together in connection with the purchasing of sustainable groceries. Another novelty in this project was that self-efficacy was measured with regard to three dimensions of sustainable development: environmental preservation, social fairness, and economic welfare. Previous studies had solely investigated people's efficacy beliefs with regard to environmental preservation.

Study 1 showed that social values, time perspective, and sustainable development self-efficacy (SDSE) contributed to explaining the purchasing of sustainable groceries, albeit to varying degrees depending on which facet of sustainable purchases was investigated. These results are in line with existing research suggesting that social (e.g., Pepper, et al. 2009), temporal (e.g., Joireman, Lasane, et al., 2001), and efficacy (e.g., Kim & Choi, 2005) concerns are associated with sustainable consumption. An important addition to the existing literature is that social values, time perspective, and self-efficacy accounted for non-overlapping parts of the variance in the purchasing of sustainable products.

General self-efficacy (GSE) was unrelated to sustainable consumption, whereas domain-specific SDSE was related to sustainable consumption. This finding ties in well with Smith-Sebasto and Fortner's (1994) finding that environmental action locus of control was more closely related to environmentally friendly behavior than general locus of control.

Second, the project assessed whether the purchasing of sustainable groceries and SDSE (i.e., the assumed determinant of sustainable consumption) can be promoted by an informational intervention. The findings of Study 2 showed that the intervention encouraged consumers to purchase sustainable groceries without affecting self-

efficacy. This demonstrates that educational campaigns can promote sustainable consumption without increasing consumers' self-efficacy. However, an important question remains unanswered: is SDSE an antecedent of sustainable consumption, and therefore are intervention strategies that increase consumers' SDSE effective for promoting sustainable consumption?

Hereinafter, theoretical and practical implications of the findings will be discussed, followed by a presentation on methodological concerns and the project's major strengths and limitations. Finally, directions for future research will be given.

10.1 Theoretical implications of the findings

On a very general level, this project lends support to calls to revise traditional models of rational economic decision making (e.g., rational choice theory). These models assume that humans are interested in their own welfare only, and a consumer's choice is assumed to be independent of other consumers' choices. Paavola (2001) argues that "the usual view of rationality as strictly welfare-maximizing behavior must be abandoned and replaced by a wider notion of rationality" (p. 232), in which consumer preferences may reflect values other than self-centered interests, such as moral concerns. Study 1 of the current project showed that consumers who purchase sustainable products attach importance to pro-social values and have a general tendency to consider the long-term future consequences of their behaviors. These findings suggest that consumers with preferences for sustainable products are concerned with the consequences of their actions that may affect the wellbeing of other people, including future generations. Although these associations are correlational – and thus conclusions about causality are not possible – it seems reasonable to assume that the purchasing of sustainable products is at least partly motivated by social considerations. The finding that those who purchase sustainable products also believe that their own sustainable behaviors will encourage others to cooperate suggests that consumers regard purchasing decisions to be – at least to some extent – socially dependent.

On a more specific level, Study 1 showed that the chosen approach to studying sustainable consumption, drawing from agentic theories of decision making and social dilemma research, makes it possible to distinguish between consumers who frequently and those who less frequently buy sustainable groceries. Social values, time perspective, and domain-specific self-efficacy together accounted for a significant amount of the variance in purchasing behavior. However, it should be noted that a substantial amount of the variance remained unexplained. A plethora of individual (e.g., attitudes, cf. Tanner & Wölfling Kast, 2003) and product characteristics (e.g., price premium and quality, cf. Grankvist & Biel, 2007) were found to be associated with the purchasing of sustainable groceries. Presumably, the inclusion of additional variables would have allowed for an even better prediction of sustainable purchases.

Whether consumers experience social and temporal conflicts when deciding between sustainable and conventional groceries, as was assumed in this project, partly depends on which consequences are salient and how heavily they influence the purchase decision. For example, a consumer who thinks that ecological produce is healthier than conventional produce and believes that ecological farming helps protect the environment may not experience a conflict between individual and collective interests when deciding between ecological and conventionally grown produce. Indeed, a number of studies indicate that consumers buy sustainable – particularly ecological – foods because they consider these products to be healthier and to taste better (e.g., Schifferstein & Oude Ophuis, 1998). Griskevicius, Tybur, and Van den Bergh (2010) assume that the purchasing of green products can serve a status-enhancing function. Thus, consumers seem to link some individual (short-term) advantages with the purchasing of sustainable groceries.

10.1.1 Sustainable development self-efficacy

This project investigated SDSE, a construct that represents self-efficacy in the domain of sustainable development and that extends related constructs that capture people's perceived impact on environmental preservation, such as PCE (e.g., Ellen et

al., 1991), EAIC (e.g., Smith-Sebasto, 1992), or ELOC (Cleveland et al., 2005). Environmental preservation is but one dimension of sustainable development (cf. WCED, 1987), and SDSE incorporates the dimensions of social fairness and economic welfare, in addition to environmental preservation. Factor analyses in Studies 1 and 2 show that consumers' self-efficacy concerning social fairness and economic welfare is represented by different facets of SDSE than their self-efficacy concerning environmental preservation (cf. Papers 1 and 3). In addition, the facet of SDSE that represents people's perceived ability to influence (by their consumption activities) a socially fair distribution of resources and economic welfare contributed to predicting purchase habits in Study 1 (cf. Paper 1). These findings suggest that the inclusion of social fairness and economic welfare is a valuable extension to existing operationalizations of self-efficacy, and useful, if the aim is to predict sustainable consumption.

Does SDSE capture people's perceived impact on sustainable development better than existing measures that focus on the environmental dimension of sustainable development? One way to approach this question is to take a look at how consumers understand the sustainability concept. If consumers solely think of environmental preservation in connection with sustainability, then SDSE may not be an improvement on existing measures, such as measures of PCE or ELOC. Hanss and Böhm (2012) found that environmental, social, and economic concerns occurred as elements in Norwegian consumers' understanding of sustainability. Thus, the measures of SDSE used in Study 1 and 2 should capture people's perceived impact on sustainable development more comprehensively than other measures of efficacy beliefs that comprise environmental preservation only.

SDSE, as it was measured in the present research, incorporated not only people's perceived direct impact but also their perceived indirect impact on sustainable development. Existing measures of PCE and ELOC lack this social component of wielding influence. Smith-Sebasto's (1992) locus of control inventory includes items to measure a person's perceived impact on the environment by *convincing others* to carry out behaviors with beneficial environmental consequences. Convincing others

may be a more demanding form of asserting influence over others than setting a good example that encourages other people to join in.

Previous studies have investigated whether trust in others' cooperative intentions explains decisions in social dilemmas (e.g., Joireman et al., 1997). Both trust in others' cooperation and SDSE concerning one's influence on others represent people's expectations about the behavior of others (i.e., will others cooperate or not?). An important conceptual difference, however, is that, in the case of SDSE, expectations about the behavior of others are a consequence of one's own behavior, whereas in the case of trust in others, expectations about the behavior of others may be independent of one's own behavior. For example, a person may have strong trust in others because of favorable contextual factors. Imagine a person who believes that others will carry out the target behavior because "the others" belong to a demographic group for whom the personal costs associated with the behavior are comparatively lower; for example, in Norway, people who live in larger cities may have easier access to fair trade foods than people who live in more rural areas (cf. Terragni & Kjærnes, 2005). SDSE concerning one's indirect impact, in contrast, refers to the inference of a causal relationship between one's own behavior and the adoption of the behavior by others. Thus, this SDSE facet can be regarded as an expression of personal control and a strategic motivation to encourage other people to help achieve desired outcomes. Similarly, McClintock (1978) suggests that, in situations of social interdependence, a person's choices may be the expression of a strategic approach to steering other people's choices in a desirable direction.

The results of Studies 1 and 2 showed that peoples' perceived *direct* impact and their perceived *indirect* impact on sustainable development are represented by distinct facets of SDSE (cf. Papers 1 and 3). Facets that represent people's perceived direct impact as well as facets that represent people's perceived indirect impact contributed to predicting sustainable consumption in Study 1. Interestingly, the perceived indirect impact turned out to be a more important predictor than the perceived direct impact (cf. Paper 1). In addition, when social values and time perspective were controlled for, SDSE Influence on Others was still associated with facets of sustainable

consumption (cf. Paper 2). Together, these findings suggest that the perceived indirect influence should be included in operationalizations of SDSE.

As has already been noted in the theory section, sustainable consumption can be regarded as a large-scale social dilemma, and people's *objective* and *perceived* ability to directly make a difference is likely to decline as an increasing number of people become involved in the dilemma. Confidence in being able to motivate other people to cooperate may be a pivotal clue to understanding why people decide to pursue collective interests in large-scale social dilemmas, despite their negligible direct impact.

What conclusions can be drawn concerning the validity of SDSE? Support for the criterion validity of SDSE comes from the findings that SDSE predicted sustainable consumption and that SDSE Influence on Others was positively related to universalism values (cf. Paper 2). The finding that SDSE Influence on Others partly mediated the relation between universalism values and PH (cf. Paper 2) resembles Kim and Choi's (2005) finding that collectivism was only indirectly associated (i.e., through PCE) with the purchasing of environmentally friendly products.

However, Borsboom, Mellenbergh, and Van Heerden (2004) criticize the approach of drawing conclusions about validity based upon correlational relations between the measured attribute and other attributes. According to Borsboom et al. (2004), validity is about measurement and "a test is valid for measuring an attribute if and only if (a) the attribute exists and (b) variations in the attribute causally produce variations in the outcomes of the measurement procedure (p. 1061)." Furthermore, the authors argue that, in order to draw conclusions about the validity of a measure, a theory of response behavior needs to be tested that makes assumptions about how variations in the attribute are *causally* related to (i.e., determine) variations in responses on the measurement instrument.

The questionnaires to measure SDSE in this research were not systematically constructed on the basis of a theory about causal relations between self-efficacy variations and questionnaire scores. Item response modeling (cf. Wilson, 2005) may

allow for a more systematic development of an SDSE questionnaire based upon item difficulties. Item response modeling has been applied to develop and evaluate self-efficacy measures in domains other than sustainable development, for example, in the domain of health behaviors (Watson, Baranowski, & Thompson, 2006).

Another question related to the validity of SDSE is whether the various facets of the construct were stable across studies. The factor structure of SDSE obtained in Study 2 was in many ways similar to the factor structure obtained in Study 1. In both studies, the perceived indirect influence on sustainable development and the perceived direct influence on the environment and climate change occurred in distinct facets of SDSE. Another similarity was that the perceived ability to promote sustainable development through one's consumption decisions emerged as a distinct facet of SDSE: *SDSE Influence of Consumption on Socially Fair Distribution and Economic Welfare* in Study 1 and *SDSE Sustainable Products* in Study 2. However, a difference between Studies 1 and 2 was that the perceived ability to promote sustainable development locally was represented by a different SDSE facet than the perceived ability to promote sustainable development globally in Study 2, whereas, in Study 1, local and global impact did not emerge in separate facets.

Possible explanations for the differences in SDSE factor structures are that additional items were included in the questionnaire used in Study 2 (i.e., the items to measure self-efficacy with regard to purchasing sustainable products) and that the sample in Study 2 was not entirely representative of the municipality of Bergen.

10.1.2 Social values and time perspective

This research demonstrated that consumers who attach importance to pro-social values and those who have a long-term time perspective are more likely to choose sustainable products in their everyday grocery shopping than consumers who attach less importance to pro-social values and who have a short-term time perspective. Most likely, consumers with strong pro-social values attach greater importance to the consequences of their purchasing behavior for the collective than consumers with strong pro-self values and are therefore more likely to purchase sustainable groceries.

Similarly, the future benefits of sustainable consumption should be more salient to consumers with a long-term time perspective compared to those with a short-term time perspective.

To the author's knowledge, this was the first project to investigate social values and time perspective together in connection with the purchasing of sustainable groceries. Previous research has, however, investigated social values and time perspective separately, in different domains of sustainable consumption. For example, pro-social values were found to be positively associated with the purchasing of fair trade products (Ma & Lee, 2011) and preference for environmentally friendly transportation (Van Vugt et al., 1996). Joireman et al. (2004) investigated social values and time perspective together in connection with choice of transportation and found that preference for environmentally friendly transportation was positively associated with having a long-term time perspective. Contrary to the findings of Van Vugt et al. (1996), no association was found for pro-social values.

Study 1 of this research showed that social values and time perspective account for non-overlapping parts of the variance in purchases of sustainable products. However, not all facets of sustainable purchase habits were predicted by values and time perspective. A plausible explanation for this finding is that the assumed individual disadvantages of buying sustainable products are not equally pronounced for all types of groceries. For example, a seasonal vegetable may be cheaper than an out-of-season alternative. Moreover, consumers may consider product attributes other than price or environmental and social impacts when choosing between sustainable and conventional groceries. For example, Grankvist and Biel (2001) found that personal health is an important criterion for consumers who purchase ecological foods. Buyers of ecological foods also believed that ecological foods were healthier than conventional foods. Consumers who think that sustainable groceries have benefits for themselves (e.g., ecological foods being better for their health) and for others should be less likely to experience social conflicts when they choose between sustainable and conventional products. Consequently, pro-social and pro-self values may be less important for predicting purchase behavior.

According to Van Lange and Joireman (2008), pro-social and long-term orientations may not always lead to collectively beneficial behavior: the authors discuss a number of “paradoxical” effects of social and temporal orientations. For example, in multilayered social dilemmas (i.e., dilemmas in which actors can be grouped at various levels), a pro-social orientation may lead to behavior that threatens collective wellbeing if the interests of an actor’s in-group are in conflict with the interests of the collective. A consumer with a pro-social orientation who focuses on the wellbeing of fellow citizens (in-group) may support “unfair trade” practices by a domestic company if he/she expects that the national economy will benefit from this support. Thøgersen and Ölander (2002) found that benevolence values, an orientation toward the wellbeing of one’s in-group, were negatively related to environmentally friendly behaviors, including the purchasing of organic foods. According to the authors, this finding indicates that sometimes a concern for the wellbeing of close others can conflict with a concern for the environment.

10.2 Practical implications of the findings

From a practical perspective, the findings of Study 1 showed that social values, time perspective, and SDSE are useful for predicting sustainable consumption. Practitioners with an interest in promoting sustainable consumption can use the results of Study 1 to get a better picture of who the buyers and non-buyers of sustainable groceries are. In most cases, the target group of practitioners may be consumers who do not currently buy sustainable products, or only very seldom. To put it simply, these consumers tend to focus on their own welfare and on the short-term future consequences of their behaviors, and they are less likely to think that they can personally contribute to sustainable development. These findings may prove useful in the design of tailored information campaigns.

Study 1 was correlational, and so the findings allow no conclusions to be drawn as to whether pro-social values, a long-term time perspective, and high SDSE determine preferences for sustainable products. Thus, further research is needed to establish

whether intervention strategies that strengthen these individual characteristics are effective for promoting sustainable consumption.

Information campaigns are a popular tool among organizations that promote sustainable consumption. Whether the provision of information can effectively promote sustainable consumption was investigated in Study 2. In line with previous research (e.g., De Young et al., 1993), Study 2 demonstrated that informational campaigns can be used to encourage consumers to purchase sustainable groceries. The key to success may be to equip consumers with the knowledge required to successfully carry out the target behavior and effectively achieve the target outcomes. Frick, Kaiser, and Wilson (2004) argue that educational campaigns to promote conservation behavior should address three forms of knowledge: *system knowledge* (e.g., knowledge about anthropogenic environmental problems), *action-related knowledge* (i.e., knowledge about behavior options to mitigate the problems), and *effectiveness knowledge* (i.e., knowledge about the relative effectiveness of the behavior options for mitigating the problems). Frick et al. (2004) found that the three knowledge forms were interrelated (i.e., system predicted action-related knowledge and system and action-related knowledge predicted effectiveness knowledge) and that action-related and effectiveness knowledge predicted conservation behavior. Although system knowledge was not directly associated with behavior, the authors assume an indirect relation through the other two knowledge forms.

The intervention applied in the present research provided information on anthropogenic problems related to sustainable development (e.g., climate change), suggested behaviors for mitigating the problems (e.g., buying local products), and provided information on the effectiveness of individual behaviors (e.g., CO₂-saving potential if one buys local products). Although the intervention was not developed with respect to the three knowledge forms suggested by Frick et al. (2004), the information provided clearly touched upon the three knowledge elements: system, action, and effectiveness.

Unfortunately, the effects of the intervention on knowledge were not measured, and therefore it is not possible to draw conclusions as to whether participants were more knowledgeable after the intervention. If we assume that the intervention covered the three forms of conservation knowledge suggested by Frick et al. (2004), then the effects of the intervention on purchase behavior suggest that system, action-related, and effectiveness information can be used to promote sustainable consumption.

The intervention used in Study 2 was quite extensive, which offers a problem for its application in “real life” campaigns: if consumers are not paid an incentive, some may feel less motivated to follow the campaign over a period of several weeks. A more fun and engaging format for the campaign should help reduce this problem. For example, the campaign could be transformed into an educational game or a social network online application that provides information on sustainable consumption alternatives and visualizes a player’s direct and indirect (by encouraging others in the social network) impact.

10.3 Methodological considerations

10.3.1 Sampling and representativeness

Participants in Studies 1 and 2 were recruited from among people living in the municipality of Bergen. In Study 1, the participant sample was representative of the municipality of Bergen with respect to gender and age. However, in view of the low response rate in Study 1 (21% of those who were invited to participate completed the survey), generalizations should be made with caution.

In Study 2, the participant sample was not entirely representative of the municipality of Bergen. For example, the age group of 20 to 66 years was overrepresented, as were women, people with higher education, and households with small incomes. This limits the extent to which the findings can be generalized across the entire municipality. Another limitation with regard to the extent to which the findings can be generalized is that quite a few participants dropped out of Study 2. This applies mainly to conclusions about the long-term effects of the intervention, because a

particularly high number of participants dropped out after Part 8 (i.e., the part before the follow-up).

Both studies were conducted via the internet. Given that a comfortable majority of Norwegians have internet access at home, the fact that the studies were conducted online should not compromise the extent to which the findings can be generalized. According to SSB (2012), the share of Norwegians between 16 to 64 years of age who indicated that they accessed the internet from home during the preceding three months was between 75% and 96% in 2008, 77% and 97% in 2009, and 81% and 98% in 2010 (in all three years, the share was lower among older than among younger citizens).

10.3.2 Measures

The questionnaires used to measure SDSE, PH, and PI were developed as part of the project because existing measures did not capture the various aspects of self-efficacy and sustainable consumption that this project intended to investigate.

The questionnaires to measure SDSE were inspired by (and comprised) the three questionnaire items proposed by Kellstedt et al. (2008) to measure self-efficacy with regard to climate change. The three items capture (a) a person's perceived *direct* impact on climate change, (b) a person's perceived *indirect* impact on climate change by encouraging others to act in ways that help mitigate climate change, and (c) the degree to which a person believes that humans are responsible for climate change. To capture the broader concept of SDSE, several questionnaire items were added. For example, the SDSE questionnaire used in Study 1 comprised items to measure a person's perceived *direct* and *indirect* impact on three dimensions of sustainable development: environmental preservation, social fairness, and economic welfare. Perceived direct impact was assessed with regard to one's actions in general and consumption decisions in particular. The questionnaire used in Study 2 comprised additional items to measure a persons' perceived ability to contribute to sustainable development by purchasing sustainable products.

Due to restrictions in questionnaire length, not all possible combinations of SDSE elements were included in the measurement. For example, the perceived ability to contribute to a socially fair distribution of resources and economic welfare was measured for two geographical scopes: national and global. Geographical scope was, however, not varied for the perceived ability to foster environmental preservation. In revisions of the measure, the SDSE elements should be varied more systematically.

The questionnaires to measure SDSE described sustainable development-related outcomes on a rather abstract level: “preservation of natural resources”, “socially fair distribution of resources”, “economic welfare”. Future research may find it useful to include more concrete and tangible outcome descriptions, which may be easier for participants to grasp and which may yield a more nuanced measurement of self-efficacy. Examples of more concrete outcome descriptions are: helping reduce the ecological damage from agriculture, contributing to the protection of animals, improving the working and living conditions of people in developing countries, helping reduce malnutrition in developing countries, promoting fair treatment of workers in industry and agriculture, and promoting economic growth in economically deprived areas. A potential problem with such concrete descriptions is that the link between purchasing decisions and outcomes may not always be self-evident, and so participants who do not have broad knowledge about the environmental, social, and economic impacts of grocery production, trade, and consumption may find it difficult to answer the items. Instead of revealing individual differences in self-efficacy, a questionnaire with more concrete descriptions of outcomes may reveal differences in knowledge about how production, trade, and consumption patterns relate to sustainable development.

The use of abstract outcome descriptions could be one of the reasons why no intervention effects on SDSE were observed in Study 2. In the intervention, we provided examples of how individual consumers can contribute to concrete sustainable development-related outcomes. The items used to measure SDSE described outcomes on a more abstract level. For example, the intervention showed that if one purchases fair trade products, one can help *secure fair payment for small-*

scale farmers in developing countries. In the SDSE questionnaire, participants were asked about their confidence in being able to *foster economic welfare around the world* by means of their everyday consumption and buying behavior. Because of the different levels of abstraction, the SDSE measure may not have been sensitive enough to capture changes in self-efficacy.

Another possible amendment of the SDSE measure is the inclusion of items to assess people's control beliefs with regard to purchasing sustainable groceries, in particular, the perceived ability to identify sustainable groceries in the stores. Tanner and Wölfing Kast (2003) found that having adequate knowledge about how to distinguish between environmentally friendly and environmentally harmful products predicted the purchasing of ecological foods.

The composition of items to measure PH (Study 1) and PI (Study 2) was guided by the findings of a study in which Norwegian consumers were asked how important various product attributes are for sustainable groceries (Hanss & Böhm, 2012). Product attributes that were rated to be of high (e.g., recyclable packaging) and medium (e.g., humane treatment of animals and local production) importance in Hanss and Böhm's (2012) study were included in the PH and PI questionnaires. However, it should be noted that the questionnaires focused on product attributes that relate to environmental outcomes; attributes that relate to social outcomes (e.g., fair payment for producers) were underrepresented and attributes that relate to economic outcomes (e.g., good value for money) were not mentioned explicitly in the PH and PI questionnaires. Hanss and Böhm found that Norwegian consumers did not consider economic attributes (i.e., good value for money and longevity) to be very important for sustainable products. Fair payment for producers, in contrast, was considered an important attribute of sustainable products, and so the project may have benefited from the inclusion of additional items to capture the purchasing of fair trade products.

The questionnaires to measure time perspective and values were adopted from the literature and had all been shown to possess good psychometric properties (cf.

Chapters 8.1.2 and 8.2.2). However, these questionnaires do not measure values and time perspective in connection with sustainability issues. Perhaps, the predictive power of values and time perspective would have been even higher if more domain specific measures had been used, such as the instrument proposed by De Groot and Steg (2008) to measure egoistic, altruistic, and biospheric value orientations.

10.4 Strengths and limitations

A principal strength of the present research is the combination of cross-sectional and intervention approaches. Most of the published research on sustainable consumption is cross-sectional – comparatively few studies have chosen an intervention or experimental approach. This is particularly true of the literature that deals with the purchasing of sustainable groceries. The intervention study in the present research contributes to the literature in that it provides insights as to how the purchasing of sustainable groceries can be promoted.

Obvious limitations of the intervention study are (a) that the possible effects of the intervention on participants' knowledge were not measured, and (b) that the combined testing of the intervention steps does not make it possible to draw any conclusions as to how effective the different elements of the intervention were.

Concerning its ecological validity, a principal strength of the project is that sustainable consumption was measured by observing actual product purchases (in addition to self-report behavior measures) made with “real” money. Previous studies on sustainable consumption have often relied on self-report behavior measures (e.g., Tanner & Wölfing Kast, 2003) or resource management tasks in which participants are to decide how many units of a resource (often simply described as “points”) they want to harvest from a common pool (e.g., Brucks & Van Lange, 2008).

It may be viewed both as a strength and a limitation that domain-specific self-efficacy was measured with self-developed questionnaires. The questionnaires to measure SDSE were broader in scope than existing measures of perceived efficacy, which focus only on environmental outcomes (e.g., PCE), and are therefore a potentially

valuable contribution to the literature. Limitations related to the measurement of SDSE have already been discussed above (cf. Chapters 10.1.1 and 10.3.2).

Another limitation of the project is that no conclusions can be drawn as to whether the focal variables are *causally* related. Thus, the question of whether social values, time perspective, and self-efficacy determine purchase decisions between sustainable and conventional groceries cannot be answered.

10.5 Directions for future research

Future research should investigate whether pro-social values, a long-term time perspective, and SDSE are determinants of sustainable consumption. This will entail the development and testing of strategies to affect values, time perspective, and self-efficacy.

In experimental studies, Kerr (1992) manipulated self-efficacy and found that higher self-efficacy resulted in a stronger tendency to engage in collectively beneficial behavior (i.e., investments in a public good). Self-efficacy (in this case, people's estimates of how important their contributions were for the achievement of the public good) was manipulated by varying the objective impact that a person's contribution had on the achievement of the public good. For example, in one experiment, a person's investment of \$10 US did not always increase the value of the public good by \$10, sometimes the value of the public good increased by \$2, sometimes by \$18.

Kerr (1992) and similarly De Cremer and Van Vugt (1998, see below) provide support for the notion that self-efficacy is an important determinant of people's decisions in social dilemmas. Whether self-efficacy affects consumers' purchasing decisions between conventional and sustainable groceries remains a topic for future research. A promising strategy to increase consumers' objective and perceived efficacy may be to break down the challenge of sustainable development into smaller, local problems (i.e., *scope reduction*, cf. Wiener & Doescher, 1991). If the focus is on local instead of global problems, sustainable development can be "framed" as a social dilemma on a smaller scale, in which fewer people are involved. Kerr (1989) found

that self-efficacy tended to be higher in small-group than in large-group social dilemmas.

Scope reduction may also increase people's identification with other people who are involved in the social dilemma. For example, if an informational campaign focuses on environmental problems with a national scope, people may identify to a greater degree with other people who are involved in the problems (e.g., because they regard fellow citizens as their in-group) than if the campaign focuses on distant or global environmental problems. An experiment by De Cremer and Van Vugt (1998) showed that group identification in social dilemmas increased self-efficacy (i.e., perceived impact in terms of achieving a public good) and cooperative behavior (i.e., contribution to a public good).

Another approach to increase self-efficacy may be to give consumers feedback about the negative environmental and socio-economic impacts linked to their consumption habits, in addition to informing them about the ways in which they can reduce those impacts. According to Bandura (1977), performance accomplishments (in this case, experiencing that one can contribute to sustainable development by changing one's consumption habits) are important sources of self-efficacy. Thøgersen (2005) notes that providing feedback allows people to monitor their progress and is therefore an important tool of consumer empowerment. Moreover, feedback has been found to foster sustainable consumption, for example in the domain of household energy use (for an overview see Abrahamse et al., 2005).

Study 1 showed that, among the various facets of SDSE, a person's perceived indirect impact on sustainable development (i.e., by encouraging others) is particularly important in predicting sustainable consumption. One option to increase consumers' perceived indirect impact may be to increase the social visibility of consumption decisions. In an online intervention study similar to the one conducted in this project, one group of participants could become members of a virtual community in which each member's past purchases are visible to the other community members. In

addition, the entire community's performance (e.g., the share of sustainable product purchases) could be made public.

One way in which sustainable consumption patterns can spread in a community is via social norms. If sustainable consumption decisions are visible to other community members, it should be more likely that social norms for sustainable consumption evolve, and thus that people purchase sustainable products. An interesting option for future intervention studies is to explain how social norms can evolve and that social norms can result in compliant behavior. The effects of social norms on behavior could be illustrated by describing examples of easily accessible studies, such as the studies about hotel towel reuse reported by Goldstein et al. (2008).

With regard to values and time perspective, a common assumption is that these are relatively stable individual characteristics (e.g., Sagiv et al., 2011; Strathman et al., 1994), and thus one may conclude that there is little that can be done to promote pro-social values and a long-term time perspective. Van Lange and Joireman (2008, 2010) express a slightly different view, according to which social and temporal orientations are susceptible to situational influences. The authors use the metaphor of a slot machine to characterize the assumption that different social and temporal orientations can be activated in different situations and that people differ with regard to how likely it is that a specific orientation will be activated. In other words, people may have a general tendency toward a social or temporal orientation, but they also have "slots" in which a different orientation may be activated; being predisposed toward one orientation simply means that one has a higher proportion of "slots" for this orientation than for other orientations.

An obvious question that arises out of Van Lange and Joireman's (2008, 2010) assumptions is: what can be done to make pro-social values and a long-term time perspective more salient? Biel et al. (2005) suggest that values can be primed by contextual cues. Biel et al. report a computer-assisted study in which participants purchased products in a simulated grocery store. After environmental values had been primed by a poster displaying an intact natural environment (a cow in a green

landscape), participants became more likely to purchase eco-labeled groceries. Howes and Gifford (2009) demonstrated that the endorsement of environmental values can be increased by means of presenting decision-scenarios (i.e., taking a stand for or against a moratorium on oil and gas drilling) which involved a strong pro-environmental social norm (i.e., important others expect that one takes a stand for the moratorium). These findings suggest that values can be activated by relatively low-cost and easy-to-implement measures.

A recent study by Demarque, Apostolidis, and Joule (2012) shows how a long-term time perspective could be promoted in future intervention studies. In an experimental study, the authors increased participants' consideration of future consequences (CFC) by means of *binding communication*, that is, a combination of persuasive communication and preparatory actions (Joule, Girandola, & Bernard, 2007). Participants who took part in the binding communication condition were asked to produce arguments for why it is important to protect the environment for future generations (preparatory action), and afterwards they received a persuasive message about the benefits of environmentally friendly behaviors for future generations. The other participants either received only the persuasive message (persuasive communication condition) or none of the measures (control condition). CFC increased in the binding communication condition but not in the persuasive communication and control conditions. Concerning the effectiveness of binding communication for changing behavior, the findings are mixed: whereas Demarque et al. (2012), found no effect on behavior (i.e., supporting an environmental organization), Joule, Bernard, and Halimi-Falkowicz (2008) report a series of studies in which binding communication promoted various, environmentally friendly behaviors, such as the use of eco-labeled detergents by boaters.

With regard to the applicability of the intervention strategy used in this project, the length of the information provided may be an obstacle for "real life" campaigns. A study designed to test how effective the individual intervention steps are would reveal whether elements of the intervention can be used separately or whether the intervention steps only work in conjunction with each other.

In addition to clarifying whether social values, time perspective, and self-efficacy are causally related to sustainable consumption, efforts should be made to investigate whether the current instruments to measure SDSE can be further improved. For example, an interesting question concerns the level of detail in which sustainable development outcomes should be described (cf. Chapter 10.3.2). To that end, a questionnaire that describes sustainable development outcomes on a more concrete level should be developed. Future research should compare the psychometric properties and predictive power of this revised version with the current questionnaires to measure SDSE. Furthermore, the relation between SDSE and existing measures of efficacy beliefs with regard to environmental preservation (e.g., PCE, ELOC) should be investigated.

With regard to SDSE, a main finding of this project is that people are more likely to purchase sustainable products if they believe that their own sustainable behaviors will encourage other people to join in. The importance of this indirect component of SDSE can be explained by the fact that the joint efforts of many consumers are needed to make a significant contribution to sustainable development. Another component of perceived efficacy that may help explain why people decide to contribute to collective endeavors is *collective efficacy* (Bandura, 2006a). Collective efficacy refers to the degree to which individual members of a group believe that the group can achieve desired outcomes by joint efforts. Homburg and Stolberg (2006) found that the extent to which people engaged in behaviors to cope with environmental problems was better predicted by collective efficacy than by self-efficacy. An interesting option for future research is, therefore, to measure collective efficacy with regard to sustainable development and investigate how closely collective efficacy is related to both SDSE and sustainable consumption. When measuring collective efficacy, it may be meaningful to distinguish between different levels of aggregation (cf. Homburg & Wagner, 2007). For example, a person may doubt that his/her community can solve environmental problems but be confident that environmental problems can be solved at the national level.

An important goal of sustainable development is to make sure that future generations can meet their own needs (cf. WCED, 1987). Thus, one characteristic of consumers who support sustainable development may be an increased concern for the wellbeing of future generations. Some support for this assumption comes from Study 1, which showed that CFC was positively associated with sustainable consumption. The questionnaire items that were used to measure CFC (Brun, 2001; Strathman et al., 1994) consisted of statements about the importance of long-term consequences that may occur at some point in the future. For example, one item referred to “outcomes that may not result for many years”; more concrete references about when in the future the consequences will occur and whether future generations may be affected were not provided. A recommendation for future research is to use additional questionnaire items that explicitly measure the degree to which people believe that their current behaviors have consequences that affect future generations. Urieu and Kilbourne (2011) use the term *generativity* to refer to these beliefs and provide questionnaire items to measure generativity.

One assumption of the current project was that, when consumers decide between conventional and sustainable products, they may experience conflicts between the individual versus collective interests and the short-term versus long-term consequences of their purchase decision. Future research should address the question of how salient and influential social and temporal conflicts are in everyday grocery shopping. Qualitative in-depth interviews may help shed light on this question.

10.6 Ethics

During the planning phases of the project, the Norwegian Social Science Data Services (NSD) and the National Committee for Research Ethics in the Social Sciences and the Humanities (NESH) were consulted to ensure that the project complied with the national privacy regulations and ethical principles for research. Standard procedures for confidentiality and informed consent were applied. Participants were informed that they could withdraw from the studies at any time. All safeguards were taken to secure participants’ autonomy and self-determination. It was

emphasized that there were no right or wrong answers to the questions that were posed in the studies. Participants were at no point misled concerning the aims of the studies.

10.7 Conclusions

Fostering sustainable consumption is an integral part of the Norwegian sustainable development strategy, and it is a declared objective of the Norwegian authorities to promote the purchasing of ecological groceries (SSB, 2010). The present research is useful in part because it offers insights for researchers, politicians, and activists who intend to contribute to this objective.

Initiatives to promote environmentally friendly and socially fair means of production, distribution, and trade are an important step towards sustainability, and, to that end, consumers can contribute by means of their “votes” in the marketplace (cf. Ölander & Thøgersen, 1995; Stolle, Hooghe, & Micheletti, 2005). The findings of this project suggest that consumer support for sustainable industrial and agricultural practices may partly depend on consumers’ values, time perspective, and self-efficacy. Clearly, a plethora of other (e.g., individual, structural, and product-related) factors may affect whether consumers take a stand for sustainable development, and it is beyond the scope of this project to provide a comprehensive overview of these factors. However, two factors seem worth mentioning because they may be of particular importance to the promotion of sustainable groceries in Norway.

First, diffusion of responsibility for sustainable consumption – particularly, between public authorities and private consumers – may be an issue in Norway. Whereas public authorities ascribe at least part of the responsibility to private consumers (cf. Norwegian Ministry of Finance, 2011), many Norwegian consumers seem to rely on public authorities when it comes to food responsibilities such as quality, safety, and animal welfare, and tend to believe that products that are available in Norway generally meet high standards (cf. Berg et al., 2005; Skarstad et al., 2007; Terragni & Kjærnes, 2005). If consumers believe that, due to national regulations, all available

products meet high environmental and ethical standards, they may neither feel the need to consider the environmental, social, or economic consequences of their grocery shopping nor believe that their purchase decisions will make a difference. For example, Stolle et al. (2005) found that political consumerism (i.e., deliberately choosing or not choosing products and producers because of political and/or ethical reasons), is less common among people who trust in political institutions and more common among those who believe that individual consumer decisions can solve political grievances. An open public debate on how responsibilities for sustainable consumption should be distributed among political bodies, industry, and citizens may establish clarity.

Second, although there are compelling arguments for why private households carry some of the responsibility for sustainable consumption, one cannot deny that there are structural constraints that may limit consumers' (perceived) ability to adopt sustainable lifestyles (Thøgersen, 2005). In Norway, one of these structural constraints is that the offer of certified ecological and fair trade products is limited, particularly in many rural parts of the country (cf. Terragni & Kjærnes, 2005). Another structural constraint is the lack of a product label that summarizes a product's performance on the various sustainability dimensions. In Norway, there are a large number of eco and fair trade labels in use, partly because many sustainable product alternatives are imported, and thus, in addition to the national labels, a number of foreign and international labels can be found. Consumers may find this multitude of labels confusing rather than helpful. An integrative sustainability label would make it easier for consumers to identify sustainable products in the stores and thus empower consumers to contribute to sustainable development.

Finally, it should be noted that, in this project, sustainable consumption was conceptualized as consumption activities that help reduce any environmental and social pressures associated with conventional consumption (cf. Chapter 3). This conceptualization includes consumption activities that are an improvement upon the status quo along the environmental and social dimensions, without necessarily being sustainable in the narrow sense of the term. In the narrow sense, sustainable

consumption refers to consumption that can be generalized within and between generations (cf. Belz & Bilharz, 2005). Obviously, the development of a consumption culture that meets the latter, narrower concept of sustainable consumption is a more challenging endeavor, for example, because it involves a debate about what the needs of future generations may be and how far into the future the responsibility of current generations should be extended. Sustainable consumption in the narrow sense of the term may require more fundamental changes than the rewriting of grocery lists.

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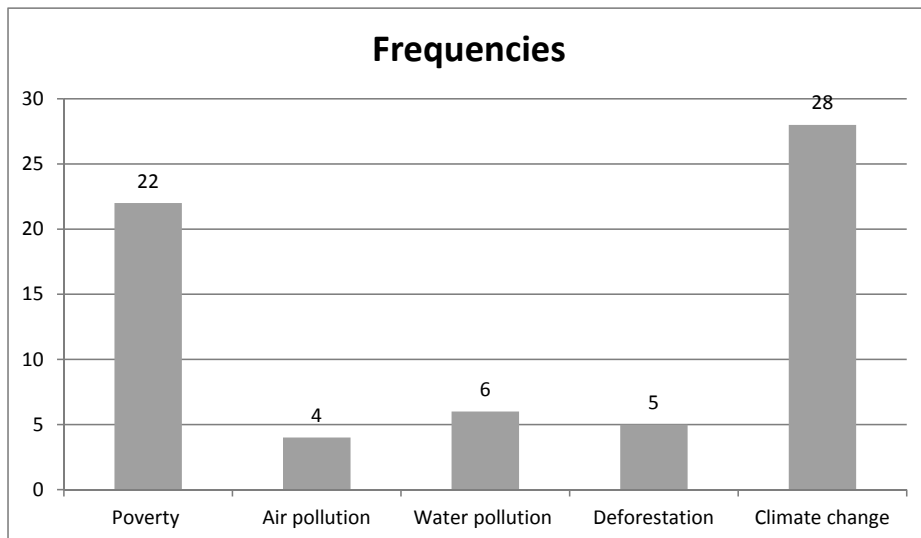
Appendix A

In the intervention condition in Study 2, participants were asked questions about the contents of each intervention step. The following tables and figures summarize participants' answers to the questions that are of principal interest in connection with the research questions in Study 2.

First Intervention Step: Perceived Level of Information about Problems

Sustainability problem	<i>n</i>	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SD</i>
Poverty	65	2	5	3.92	.645
Air pollution	65	2	5	3.83	.627
Water pollution	65	2	5	3.57	.749
Deforestation	65	2	5	3.62	.804
Climate change	65	1	5	3.97	.706

Note. At the end of the first intervention step (Study Part 3), participants in the intervention group were asked how well informed they felt about the sustainable development problems presented. Answers were given on a scale ranging from 1 (*very poorly informed*) to 5 (*very well-informed*). Mean values of approximately four indicate that the participants felt *pretty well informed* about the problems.

First Intervention Step: Problems to be Prioritized by Norwegian Politicians

Note. At the end of the first intervention step (Study Part 3), participants in the intervention group were asked which of the presented sustainable development problems should be prioritized by Norwegian politicians during the current legislative period. Each participant could choose the one problem that he/she thought should be given priority. Sixty-five participants answered the question. The figure shows how frequently the various problems were chosen by the participants. Most participants thought that poverty and climate change were the problems that should be prioritized in politics.

Second Intervention Step: Responsibilities and Capabilities to Solve Problems

Statement

- 1 Consumption-oriented lifestyles in industrialized countries contribute to global environmental depletion.
- 2 Consumption-oriented lifestyles in industrialized countries negatively affect working and living conditions in developing countries.
- 3 Industrialized countries are mainly responsible for greenhouse gas emissions causing environmental change.
- 4 Industrialized countries have the means to mitigate environmental change.
- 5 Developing countries have the means to cope with the negative consequences of environmental change for humans and nature
- 6 Industrialized countries have the means to solve environmental problems.
- 7 Industrialized countries have the means to improve working and living conditions in developing countries.
- 8 Countries that are affected by environmental problems should solve these problems themselves.
- 9 Industrialized countries should take a leading role in tackling environmental deterioration and climate change.
- 10 Industrialized countries should take a leading role in fostering sustainable development.
- 11 Norway can contribute to mitigating environmental deterioration and environmental change.
- 12 Norwegian consumers can contribute to sustainable development by choosing sustainable products in everyday purchase situations.
- 13 Norwegian consumers can contribute to mitigating environmental change.
- 14 Norwegian consumers can contribute to tackling environmental deterioration.
- 15 Norwegian consumers can contribute to improving the working and living conditions in developing countries.

Statement No.	<i>n</i>	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SD</i>
1	63	2	5	4.43	.640
2	63	1	5	4.08	.955
3	63	2	5	4.22	.771
4	63	1	5	4.29	.812
5	63	1	5	2.16	1.11
6	63	1	5	4.08	.903
7	63	2	5	4.14	.877
8	63	1	5	2.41	1.06
9	63	3	5	4.56	.590
10	63	3	5	4.41	.687

*Second Intervention Step: Responsibilities and Capabilities to Solve Problems –
Continued*

Statement No.	<i>n</i>	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SD</i>
11	63	3	5	4.41	.663
12	63	1	5	3.98	.992
13	63	2	5	4.17	.773
14	63	1	5	4.16	.884
15	63	1	5	3.90	.962

Note. At the end of the second intervention step (Study Part 4), participants in the intervention group were asked to rate 15 statements that dealt with responsibilities and capabilities to solve the problems that were addressed in the intervention. Answers were given on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The mean values indicate that participants thought industrialized countries contribute to the problems. Participants also thought that industrialized countries have the means to mitigate/solve the problems and should take a leading role in fostering sustainable development. Developing countries were considered less capable of tackling the negative consequences of environmental change. With regard to Norway, participants thought that their country has the means to help mitigate environmental problems and that Norwegian consumers can contribute to this challenge. However, the perceived ability of Norwegian consumers to help improve working and living conditions in developing countries was somewhat less pronounced.

Third Intervention Step: Activities to Personally Contribute to Sustainable Development

Activities	Frequency
Sorting/recycling/composting waste	24
Change diet (e.g., eat more white instead of red meat, eat fish instead of meat, eat more vegetables, eat vegetarian)	19
Buy fair trade products	17
Buy ecological products	16
Take public transportation	15
Avoid packaging	11
Save energy at home (e.g., turn down room temperature at night, turn off lights when not in room, use energy-saving light bulbs, wear clothes several times before washing)	10
Buy locally produced goods (e.g., buy eggs directly from farmer)	9
Avoid waste (e.g., eat up food instead of throwing it away)	8
Walk/cycle (e.g., instead of taking public transportation)	8
Purchase less	7
Shop more consciously (e.g., when shopping for groceries)	7
Reuse/repair (e.g., clothing)	3
Avoid unnecessary car use	3
Buy used products	3
Travel with others (e.g., commuting)	3
Buy seasonal produce	2
Give equipment that is no longer used to second-hand shops (e.g., clothes)	2
Buy recyclable products	1
Harvest home-grown fruits and vegetables for own use	1
Reuse packaging	1
Return bottles	1
Spread information provided in intervention	1
Use less washing powder	1
Save water at home (e.g., shower less)	1
Exercise outside instead of in a gym	1
Share things with friends (e.g., books, clothes)	1
Prepare fresh food instead of convenience products	1
Use reusable bags when shopping	1
Stop resource-intensive interests	1
Obtain more information about seasonal produce	1
Skeptical answers	3

Note. At the end of the third intervention step (Study Part 5), participants in the intervention group were asked to mention things that they could do personally in the

current week to contribute to sustainable development (open answer). Participants were encouraged to mention everything that came to their minds. Fifty-one participants answered the question; these answers were coded by the author. The table shows how frequently the individual codes were assigned to participants' answers. The most frequently mentioned activities dealt with waste disposal and avoidance, changing one's diet, purchasing fair trade, ecological, and local products, saving energy at home, and choosing environmentally friendly means of transportation. Of those who mentioned the purchasing of fair trade and ecological products, a few participants added qualifying comments that revealed concerns about the limited availability and high purchase price of these products. Three answers indicated that participants were skeptical towards and/or critical of the topics covered in the intervention step; for example, one participant answered (translated from Norwegian): "(...) I don't care if my purchasing behavior affects people in other parts of the world – there are too many people on this planet anyway (...)."

Third Intervention Step: Implementation of Activities in Daily Life

Activity	<i>n</i>	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SD</i>
Use public transportation instead of private car	61	1	5	3.21	1.40
Eat less meat	61	1	5	3.61	.971
Buy ecological instead of conventional products	61	1	5	3.39	.900
Buy seasonal fruits and vegetables	61	2	5	3.89	.950
Buy local products	61	1	5	3.43	1.01
Avoid products with unnecessary packaging	61	1	5	3.46	.941
Buy recycled products	61	1	5	3.44	.958
Reduce amount of household waste	61	2	5	3.59	.920
Recycle glass and paper	61	1	5	4.39	.781
Buy fair trade products	61	1	5	3.49	1.07

Note. At the end of the third intervention step (Study Part 5), participants in the intervention group were presented with 10 activities that were covered in the intervention. All activities were relevant to sustainable development. Participants were asked to rate each activity with regard to how easy it would be to implement the activity in their daily lives. Answers were given on a scale ranging from 1 (*very difficult to do*) to 5 (*very easy to do*). The mean values displayed indicate that recycling was the activity that participants thought would be easiest to implement in their daily lives.

Third Intervention Step: Perceived Self-Efficacy by Activities

Activity	<i>n</i>	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SD</i>
Use public transportation instead of private car	61	1	5	3.49	1.25
Eat less meat	61	1	5	3.26	1.05
Buy ecological instead of conventional products	61	1	5	3.26	1.11
Buy seasonal fruits and vegetables	61	1	5	3.46	1.01
Buy local products	61	1	5	3.41	1.02
Avoid products with unnecessary packaging	61	1	5	3.85	.946
Buy recycled products	61	1	5	3.70	.955
Reduce amount of household waste	61	1	5	3.79	.985
Recycle glass and paper	61	1	5	4.00	.894
Buy fair trade products	61	1	5	3.54	1.10

Note. At the end of the third intervention step (Study Part 5), participants in the intervention group were presented with 10 activities that were covered in the intervention. All activities were relevant to sustainable development. Participants were asked to rate each activity with regard to how much they thought they could *personally* contribute to sustainable development by engaging in the activity. Answers were given on a scale ranging from 1 (*very small contribution*) to 5 (*very large contribution*). The mean values suggest that participants thought they would have the greatest effect on sustainable development by recycling, followed by avoiding products with unnecessary packaging, and reducing household waste. Eating less meat and purchasing ecological products were the activities that were considered least effective.

Fourth Intervention Step: Encouraging Others by Carrying out Activities

Activity	<i>n</i>	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SD</i>
Commuting to work by public transportation instead of taking the car	58	0	10	5.90	3.12
Reducing household paper waste by refusing junk mail (having a “uadressert reklame – nei takk” sticker on the mailbox)	58	0	10	7.14	2.86
Buying ecological products instead of conventional products	58	0	10	5.98	2.61
Buying fair trade products instead of conventional products	58	0	10	6.09	2.45
Recycling glass and paper	58	0	10	7.36	2.72

Note. At the end of the fourth intervention step (Study Part 6), participants in the intervention group were presented with five activities that were covered in the intervention. All activities were relevant to sustainable development. Participants were asked to rate each activity with regard to how likely it is that they can, by carrying out the activities, encourage others to do the same. Answers were given on a scale ranging from 0 (*definitely no*) to 10 (*definitely yes*). The mean values indicate that participants thought it is most likely that they would encourage others to join in by recycling glass and paper and by reducing household paper waste.

Appendix B

At the end of Study Part 8, participants in both groups (intervention and control) were offered the opportunity to give feedback concerning the study. The following table provides characteristic examples of participants' comments that give insights into how the participants perceived the study.

Examples of Participants' Feedback Concerning the Study

Comment	Topic(s) that emerged	Participant Group
"I think it was very interesting to participate in this study. Have become more conscious about how my purchasing decisions differ from my values. I will choose my words more carefully in discussions from now on!"	Conscious decisions	Control
"Interesting questions that made you think over things."	Conscious decisions	Control
"This [study] made me think about my own lifestyle and my relationship to the resources on this planet."	Conscious decisions	Control
"It was very interesting to participate in this study. The questions that were posed get a lot of attention right now, and so it was easy to answer them. I believe that this sort of study can get people to reflect about what they do and purchase in different situations. I myself have learned a lot and have changed a couple of things in my daily life. I look forward to further studies like this one."	Conscious decisions; educational value	Control
"Think it is interesting to participate in this study because it gets you thinking about your own behaviour. However, I noticed that there were no questions about why one does not purchase fair trade products or why one does not only purchase fruits from Norwegian farmers."	Conscious decisions; missing questions	Control
"Interesting. However, at some points, it would have been nice to comment on things."	Room for comments	Control
"I have participated in many other online studies, but those were much worse than this one with regard to questionnaire layout, clarity, and comprehensibility of questions. Those things were nice in your study. It was interesting to participate and I look forward to participating in further studies."	Layout; clarity of questions	Control
"I think it [the study] was interesting. Many questions were similar but that was maybe intentional."	Repetitions	Control
"The repetition of questions, in addition to the fact that many questions were about very similar things (e.g., the rating of the cars and colors) made it a little tiresome to participate."	Repetitions	Control
"I liked the study. Had, however, problems with understanding a few questions. Answered to the best of my knowledge."	Comprehensibility	Control

Examples of Participants' Feedback Concerning the Study – Continued

Comment	Topic(s) that emerged	Participant Group
“The study was interesting and I learned a lot. I altered my choices during the study and I became more conscious about my purchasing and recycling habits.”	Conscious decisions; educational value; behavior change	Intervention
“I liked this study – it made me think more about the environment and my own actions.”	Conscious decisions	Intervention
“I think the study was good. After having participated in this study, I will think more carefully about the choices that I make, for example, when shopping.	Conscious decisions; behavior change	Intervention
“I think the study was interesting and informative because of the different topics that were addressed. I would like to participate in future studies.”	Educational value	Intervention
“Lots of good information about a lot of things dealing with environment and charity. Would have been nice to have the opportunity to spread the word to people who did not participate in the study.”	Educational value; societal relevance	Intervention
“Very interesting and informative study that showed me that my everyday behaviors can make a difference.”	Educational value; self-efficacy	Intervention
“The study addressed a topic that doesn't move me a lot. However, it was informative and easy to grasp.”	Personal relevance; comprehensibility	Intervention
“It [the study] was ok. But sometimes the answer alternatives did not match what I wanted to answer. For example, some products were offered that I had never seen in the shops before.”	Answer options; product offer	Intervention
“The study was ok. However, some questions occurred repeatedly in the separate study parts. Important topic, though!”	Repetitions; personal relevance	Intervention
“I think it [the study] was a bit long. Because of the many repetitions I had to concentrate a lot (...). The topic is important, however, and I was motivated to learn more about it.”	Repetitions; personal relevance	Intervention

Note. Participants' comments were translated from Norwegian into English by the author.