

Reference Effects in Consumer Food Choice

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INTRODUCTION

In many instances, consumers dislike to experience changes in the construction of their environment, especially if such changes imply to give up on something valuable. In general, people prefer their current situation, even if they would be better off in another situation (Kahneman, 2003; Knetsch, 1995; Thaler, 1980). In other words, they stick to what they habitually do or what they have now and are reluctant to change. This concept is relevant to brand loyalty and the acceptance of product innovations. However, it is also relevant to public policy aimed at changing food habits into healthier food intake in the population. The increasing prevalence of citizens in industrialized countries being overweight or obese in the last 25 years has direct consequences on development of cardiovascular diseases, diabetes and some cancers (World Health Organization, 2000). This is often caused by an unbalanced energy management which can be attributed to increased food consumption and a more sedentary lifestyle. Because of their repetitive nature, unhealthy food choices can be characterized as habits. A conscious decision process is therefore less likely to occur and past behaviour is often a strong predictor of current choices (Albarracín & Wyer Jr., 2000; Betsch, Haberstroh, Molter, & Glöckner, 2004; Brug, De Vet, De Nooijer, & Verplanken, 2006). The popularity of unhealthy food products is commonly ascribed to the hedonic aspects of these goods. The term hedonic is derived from the Greek term for 'sweet' which relates to pleasure. The concept of pleasure is strongly linked with approach behaviour in contrast to the concept of pain which is more naturally associated with avoidance behaviour (Higgins, 2006). People like to experience pleasurable events, whereas they rather avoid painful events. The intrinsic appeal of hedonic goods might cause difficulties in attempts to decrease preferences for unhealthy food.

This thesis will focus on the impact of reference effects on consumer food choices as a possible new insight in influencing consumer food preferences. First, an overview of the difficulties in influencing consumer food consumption is provided. Next, reference effects are discussed as a possible new perspective on the existence of food habits and the difficulties in influencing consumer food choices. The general ideas behind this theory are first explained in Section 1.2, then Section 1.3 relates these concepts to actual consumer food preferences. Sections 1.4 and 1.5 introduce food type and food portfolios to further elaborate on the concept of reference effects in their relation to consumer food choices. Food portfolios are introduced to further investigate and relate the concept of reference effects to the attempts to influence food consumption patterns. The final section of this chapter will provide a brief outline of what will be discussed in the remainder of this thesis.

1.1 Consumer health and influencing food consumption

Influencing people's food habits is difficult to accomplish. Consumers seem to make unhealthy food choices which may eventually lead to the development of life-styles favouring more and more quick meals and fast-food consumption. Our current environment seems to cause difficulties in maintaining a healthy diet and practise regular physical exercise (Hill & Peters, 1998). Technological innovations like improved preservatives, artificial flavors or microwaves are used as explanations for an increase in quantity and variety of foods consumed (Cutler, Glaeser, & Shapiro, 2003; Zhang & Rashad, 2008). Cutler, Glaeser, & Shapiro (2003) found that especially groups who reduced their time spent at preparing food most, were more likely to be overweight or obese. Nowadays mass preparation of food has led to a context in which consumers can satiate their desires anywhere and whenever they like, affecting the impatient consumers most. Preference for immediate utility over delayed utility is termed time preference (Frederick, Loewenstein, & O'Donoghue, 2002). A strong preference for immediate consumption of unhealthy food over delayed health benefits could lead to an increase in consumer obesity (Zhang & Rashad, 2008). Most of our dietary choices are based on what we see others eating, what tastes sweet or salty and what brings satiety, in which a trade-off is made between immediate pleasure and health consequences in the future (Smith, 2004). From a historical point of view, consumption of food was crucial to stay alive, whereas nowadays food is for a large part associated with the social interactions in life (Walker, Walker, & Adam, 2003). This development may be of great importance in the difficulties to adapt food choices to today's abundance of food supply. In addition, it indicates that the difficulty in influencing food habits is strongly associated with the dual function of food products in providing pleasure, and their necessity for biological survival. There are large differences in health behaviours across consumers, but the ones who value their health strongly, as well as invest strongly in education and income, generally show much healthier behaviours (Cutler & Glaeser, 2005). Although genetics is an important factor in explaining the variation in obesity among consumers (Allison et al., 1996) communication and providing information is often the subject of research in attempts to influence consumer food choices and consumption patterns. Parents shape their children's consumption patterns which thereafter may last for a lifetime (Savage, Fisher, & Birch, 2007). As a solution to childhood obesity, studies have focused on the effects of food marketing especially for children. Results showed that marketing was most effective in maintaining existing behavior rather than in persuading people to change their behaviour (Grier, Mensinger, Huang, Kumanyika, & Stettler, 2007; Hoek & Gendall, 2006). Hoek and Gendall (2006) stated that less healthy foods should be presented less prominently and should be made more expensive or difficult to access to reduce the salience of less healthy goods, consequently resulting in reduced consumer susceptibility to consume these goods. Some studies focused on the influence of costs by studying concepts like the 'fat-tax' as a possible solution in reducing obesity in our society (Caraher & Cowburn, 2005). The popularity of fat-taxes among policy-makers was explained by the assumption that prices and costs are key elements in consumer choices. Higher prices for less healthy foods are expected to result in reduction of their consumption, whereas on the contrary price reductions for healthy food may lead to an increase of healthy food consumption. Because food choices for individual products

also depend on other goods because of their combined consumption, proposals like fat-taxes need to be considered carefully for unwelcome implications (Blaylock, Smallwood, Kassel, Variyam, & Aldrich, 1999). However, food-taxes intended to influence food behaviour of a specific group, for example children, or focused on food manufacturers may eventually help encourage a more healthy food consumption (Caraher & Cowburn, 2005).

The above-mentioned instruments to influence consumer food choices all assume consumers to be more or less rational decision makers. Intentions to perform a certain behaviour are assumed to be the best predictors of performing that behaviour, for example changing a complex everyday behaviour like a healthier diet (Koelen & Van den Ban, 2004; Verplanken & Faes, 1999). A belief in a certain health threat and in the effectiveness of healthy behaviour should according to the Health Belief Model automatically result in that specific type of health behaviour (Janz & Becker, 1984). However, this type of cognitive decision models in consumer research neglects the unconscious nature of most of our decision making. Due to low levels of involvement and time constraints, food choices are, for example, often based on simple cues like taste or convenience (Blaylock et al., 1999; Verbeke, 2008). Past behaviour and habits are better predictors of actual food choices compared to attitudes and intentions (Köster, 2009; Verplanken, 2006). In addition, unconsciously learned food preferences are probably most difficult to change. Even when consumers know their behaviour is unhealthy, it is often too difficult for them to resist habitual pleasures. Hence, they frequently ignore information campaigns aimed at changing their behaviour (Köster, 2009). All consumers are interested in the taste of foods, but only consumers who are highly involved may search for information about healthiness, and the more consumers believe that they know everything, the less they base their actual food choices on food knowledge (Verbeke, 2008). Because people can be expected to be motivated to search for health and avoid illness, it should be relatively easy to promote healthy decision making (Rothman & Salovey, 1997). Also, theories on the variety seeking tendency of people expects consumers to be willing to change their food consumption easily (McAlister & Pessemier, 1982; Van Trijp & Steenkamp, 1992). However, many other aspects play a significant role in consumer decision making. The next section focuses on reference effects and Prospect Theory to relate unconscious processes to consumer decision making. Many earlier studies focused on more rational models to influence consumer food choices and encountered difficulties in applying these models to change consumers' unhealthy food intake. Although some studies acknowledge the influence of unconscious decision processes on consumer food choices, little research has investigated the impact of reference effects on consumer food choices. This thesis is a first attempt to relate these concepts to consumer choices for different types of food.

1.2 An introduction to reference effects

Consumer decision making generally seems to contradict perfect rationality. Because of limited information, limited consumer resources, personal characteristics or situational factors, optimal decision making considering all choice options is difficult. In addition, consumers seem to be unaware of most of the decisions they make (Wansink & Sobal, 2007). In dual processing theories, two different types of decision making are acknowledged (Cantin & Dube, 1999;

Chaiken, 1980; Chaiken & Trope, 1999; Shiv & Fedorikhin, 1999). The studies distinguished between intuitive and analytic types of decision making. In an intuitive type of reasoning, a person might be more vulnerable to the use of heuristics and biases in a choice situation (Kahneman, 2003). One of these biases is loss aversion which is explained by Prospect Theory (Kahneman & Tversky, 1979). Loss aversion is described by assuming an S-shaped value function in which the value of a change is experienced in relation to a reference situation (Kahneman & Tversky, 1984). The value function is concave in the domain of gains and convex in the domain of losses and considerably steeper for losses than for gains. The shape of the value function implies that the loss of utility associated with giving up a good is perceived as greater than the utility gain associated with receiving the good, causing a preference for one's current endowments and resulting in consumers who rather stick to their status quo than switch to an alternative (Kahneman, Knetsch, & Thaler, 1990; Knetsch, 1995, 2001). According to this model, consumers do not think in terms of wealth, but in terms of gains and losses in perspective to a neutral reference state causing a relatively strong preference of consumers for keeping goods in their possession (Kahneman & Tversky, 1979). Even if an alternative would objectively provide higher utility, consumers seem to prefer their current state when given the opportunity to exchange it for the alternative. The reluctance to accept negative changes relative to the reference point indicates loss aversion (Kahneman, 2003; Kahneman & Tversky, 1984; Samuelson & Zeckhauser, 1988).

Thaler (1980) refers to this phenomenon as the endowment effect, which is the reluctance of people to part with assets belonging to their endowment. Consumers seem to assign value to an object simply because they own it, which has been demonstrated with a variety of goods such as pens, binoculars, mugs and candy bars (Kahneman et al., 1990; Knetsch, 1989), and in laboratories as well as field settings (Johnson, Hershey, Meszarous, & Kunreuther, 1993). Tversky and Kahneman (1981) explain the fact that people prefer the most readily available option by the mental effort needed to find and judge potential alternatives leading to a more intuitive type of reasoning and the use of heuristics instead of ratio. Sellers and buyers might therefore evaluate goods in different ways. Sellers seem to focus on the positive features of the item being traded. Forcing them to focus on the negative features reduced the endowment effect (Nayakankuppam & Mishra, 2005). Samuelson and Zeckhauser (1988) use the term status quo bias for a similar effect in their studies. In addition, they found that a stronger preference for the status quo existed the greater the investment made in it. Brand loyalty and pioneer firm advantage may, for example, be explained by status quo bias (Tversky & Kahneman, 1991). Also, a stronger dissimilarity of the choice alternative to the current endowment caused people to be more loss averse (Chapman, 1998; Shogren, Shin, Haynes, & Kliebenstein, 1994; Van Dijk & Van Knippenberg, 1996).

According to Prospect Theory, context is important for valuation. The value of an entitlement and the valuation of a change seems to be made relative to or in terms of deviation from a certain reference point. As a consequence, negative or positive changes will not only differ due to their signs but also due to whether they are in the domain of gains or losses. Positive changes may be evaluated as a reduction of a loss like negative changes may be evaluated as foregone gains depending on the reference state of evaluation. According to the different valuations of gains and losses, this distinction is interesting because positive changes

resulting in a reduction of a loss may be more valuable than ones that provide gains (Knetsch, 2001).

Higgins (1997) introduced a different perspective on the evaluation of gains and losses. His Regulatory Focus Theory distinguishes between the presence and absence of positive outcomes (promotion focus, gain or non-gain situations) and between the presence and absence of negative outcomes (prevention focus, loss or non-loss situations) to reduce discrepancies between current states and desired end-states (Higgins, 1997; Idson, Liberman, & Higgins, 2000; Liberman, Idson, Camacho, & Higgins, 1999; Roney, Higgins, & Shah, 1995; Tykocinski, Higgins, & Chaiken, 1994). Idson et al. (2000) found that the pleasure of a gain was evaluated more positively than the pleasure of a non-loss and that the pain of a loss was generally greater than the pain of a non-gain. The impact of an outcome depended on whether it was experienced in relation to obtaining positive outcomes or avoiding negative outcomes and whether it was evaluated as a success or a failure. Gains and losses seemed to be experienced more intensively than non-gains or non-losses, probably because the latter deal with non-realized outcomes (Liberman, Idson, & Higgins, 2005).

The findings by Idson et al. (2000) about a gain being more pleasurable than a non-loss seem to contradict Prospect Theory. The main difference between both theories is the different evaluation of a non-loss compared to a gain. A non-loss is loss related, but it also relates to success, because it succeeds in avoiding a mismatch to a desired end point in a prevention focus (Roney et al., 1995). In Prospect Theory a positive change might, due to the reference point, be evaluated as a reduction of a loss instead of being a gain. According to Idson et al. (2000) the main difference between the two theories are the different desired end-states. Prospect Theory distinguishes between two positive outcomes (gain and a reduction of a loss) and two negative outcomes (a foregone gain and a loss). Gain-related outcomes are changes toward or away from a desired end-state, whereas loss-related aspects are changes toward or away from an undesired end-state. The comparisons Idson et al. (2000) made in their research were all towards the same desired end-state. In a promotion focus the goal is to move towards the desired end-state, whereas in a prevention focus the goal is not to move away from the desired end-state. Regulatory Focus Theory proposes that a “nonloss” represents successfully attaining a prevention-focus minimal goal from the perspective of regulatory focus, but can also represent eliminating a loss in relation to an undesired end-state from the perspective of Prospect Theory. Idson et al. (2000) state that both kinds of “nonlosses” occur in the real world and that it is useful to distinguish between them.

It still seems unresolved whether the effect of gain–loss formulations on choice can be ascribed to the fact that they are in the domain of losses or gains and whether they are formulated as successes or failures (Mandel, 2001). Roney et al. (1995) found that persistence and performance were both greater in positive-outcome-focus framing conditions than in negative-outcome-focus framing conditions suggesting that focusing on a positive outcome versus a negative outcome seems more important than just focusing on the domain. By crossing the two types of formulations we can distinguish between congruent and incongruent gain–loss frames. It might be that a framing effect will only be detected if the two theoretically distinct framing manipulations are congruent in their sign. A study by Rothman and Salovey (1997) focused on health recommendation and found differences in the effectiveness of either

loss- or gain-framed messages depending on the involvement of a person. The next section further elaborates on reference effects and loss aversion applied to consumer health and specifically to consumer food choices.

1.3 Reference effects in relation to consumer food choices

In perspective of the strong prevalence in our society of citizens being overweight and obese it is interesting to relate the impact of loss aversion to consumer food preferences. Little research has focused on reference effects in consumer food choices, although part of consumer food habits may be explained by it. A broader perspective on loss aversion or the endowment effect may lead to consumer food habits being considered as a preference for the status quo type of food intake (Samuelson & Zeckhauser, 1988). This may lead to the prevalence of a lifestyle which is then difficult to change. Insofar loss aversion changes consumer behaviour in a single choice, status quo bias may lead to the development of a certain preference of one type of food. When such a choice is made consecutively a habit for a certain consumption pattern may develop. A few studies on the endowment effect considered food choices, indicating endowment effects to exist for certain types of food products, however compared with non-food products (Antonides, Bolger, & Trip, 2006; Dhar & Wertenbroch, 2000). This thesis will focus on endowment effects of different types of food products. A general distinction can be made between hedonic and utilitarian food products which respectively provide affective gratification or lead to more instrumental consequences (Batra & Ahtola, 1991). Both types of food may activate different types of decision processes which has consequences for the consumer's susceptibility to loss aversion or endowment effects. For example, forfeiture choices stimulated more spontaneous reactions, leading to a stronger impact of hedonic aspects and consequently a stronger preference for hedonic goods (Dhar & Wertenbroch, 2000). Hedonic goods may therefore also be more susceptible to reference effects like loss aversion or the endowment effect.

Because consumers are unaware of most food decisions they make, they simply do not recognize the influence of their environment on their own food choices (Wansink & Sobal, 2007). Thoughtless food consumption causes consumers to stick with unhealthy choices (Hoek & Gendall, 2006). These effects may be attributed to the use of an intuitive type of decision making leading to stronger preferences for hedonic goods (Shiv & Fedorikhin, 1999). Baumeister, Bratlavsky, Muraven & Tice (1998) refer to the phenomenon of ego depletion which is temporary reduction of one's capacity to engage in action like, for example, decision making and is caused by an effortful previous action. Resisting a gratifying hedonic good may cause the depletion of cognitive capacity resulting in the use of heuristics in subsequent decisions. Consecutive food choices may therefore be more susceptible to hedonic aspects of food leading to an increase in hedonic food consumption.

In another study, Johnson and Goldstein (2003) found that defaults had a strong effect on consumer choices. For example, results of their study showed that preferences corresponded with the presented default option. Defaults often represent the existing state and default choices imply that less effort is involved, however according to classical economic theories defaults should not determine preferences. A food related study reported similar

outcomes as the non-food-related studies presented by Johnson and Goldstein (2003). Consumers who were asked to delete components from a fully loaded pizza ended up with a richer pizza compared to consumers asked to add components to a basic pizza (Levin, Schreiber, Lauriola, & Gaeth, 2002). In this experiment, different starting points served as the status quo, resulting in different consumption choices. However, defaults may also suggest that an alternative rather than the existing state is recommended. Reference effects may therefore play an important role in influencing consumer food choices. Preferences are constructed in relation to the status quo, so preference for choice alternatives may change subject to what is considered the status quo (Tversky & Kahneman, 1981; Tversky & Kahneman, 1991). Reference points can therefore be described as mental constructs, because awareness of ownership rather than ownership itself can cause preferences for a good (Strahilevitz & Loewenstein, 1998). When alternatives are considered the status quo in reference to a current state, they may become preferred options resulting in preference reversals (Thaler, 1980). Also, representing alternatives in terms of wealth instead of gains and losses may decrease loss aversion (Tversky & Kahneman, 1981). The framing of reference levels can therefore play a large role in determining preferences (Hartman, Doane, & Woo, 1991).

The next two sections introduce two additional aspects which might be of interest in studying reference effects in consumer food choice. The next section will focus on loss aversion in relation to product bundles which could be associated with food portfolios. These insights could be of great interest if knowledge of endowment effects of food products is applied to the area of influencing consumer food consumption patterns. Section 1.5 focuses on functional food products as an interesting type of food product in changing to a more healthier consumption pattern.

1.4 Loss aversion and food portfolios

Most of the available literature on the endowment effect focuses on one good in possession. With respect to the difficulties in attempts to change consumer consumption patterns, relating endowment effects to product bundles, as such representing a type of food portfolio, may be of interest. Relevant studies in this area of research merely showed the positive effects of gaining a product bundle, which are offers of two or more similar or different goods at a single price (Gaeth, Levin, Chakraborty, & Levin, 1991; Stremersch & Tellis, 2002; Yadav, 1994). The described studies demonstrated the positive effects of bundling goods from a marketing point of view and measured the willingness of gaining a product bundle compared to the willingness of gaining the individual components of the bundle. Not much research focused on the loss of a product bundle. Comparing the impact of the loss of a product bundle with the loss of a single good, might be of interest in relating food endowment studies to food consumption patterns.

Gaeth et al. (1991) showed that product bundling led to higher willingness to spend than what could be expected on the valuation of the sum of its parts. Stremersch and Tellis (2002) mention mental accounting leading to different consumer perceptions of multiple gains and multiple losses compared to a single gain or loss of the same amount. Multiple gains or losses are evaluated as more rewarding or punishing compared to a single gain or loss.

Endowment effects or the willingness of consumers to part with their endowment might also be influenced by the product bundle in endowment. If consumer food habits are considered a preference for the status quo type of food portfolio (Samuelson & Zeckhauser, 1988), the studies on product bundling may predict consumers to change part of their status quo behaviour more easily than to adopt an entirely different consumption pattern. Results of a study by Heath, Larrick, & Wu (1999) showed that people who set sub goals change their behaviour more easily than people who focus on their ultimate goal only.

1.5 Functional versus regular food products

The main focus of this thesis will be on the impact of reference effects on hedonic and utilitarian food products. However, the recent introduction of functional food in supporting consumers to fulfill the need for a more healthy food consumption pattern might be interesting to add to endowment studies on food choices. Several definitions of functional food products exist, but a common description is: functional foods, including whole foods and fortified, enriched or enhanced foods, have a potentially beneficial effect on health when consumed as part of a varied diet on a regular basis, at effective levels (American Dietetic Association, 2004, p.814). Functional food products represent an important product category, because they not only provide health benefits in terms of reducing the likelihood of disease, they sometimes even claim to treat and cure specific diseases (Black & Campbell, 2006). According to Khan (1981) functional foods can be placed between hedonic and nutritional 'food', and 'pharmaceuticals' the role of which is medical. Functional foods are normal foods and beverages, but beneficially affect particular functions of the body in addition to their nutritional value, to improve health or well-being and/or reduce risk of diseases (Blades, 2000; Hasler, 2000; Khan, 1981; Yeung, Hobbs, & Kerr, 2006). Important in the acceptance of functional foods is the consumers' belief in the health benefits of this type of food products in which even subjective knowledge is enough to adopt functional foods in one's consumption pattern (Verbeke, 2008). According to Khan's (1981) food choice model, people select food products rather than ingredients for their consumption patterns. The findings of a study reported by Hasler (2000) suggested that consumers nowadays also make explicit choices for specific nutrients and their health benefits.

As they compete with food products as well as medicine, functional food products should focus on hedonic as well as functional criteria. So, a functional food product can combine the two basic consumption effects of affective gratification and instrumental consequences (Batra & Ahtola, 1991). Usually 'healthy' goods are not used as rewards as opposed to hedonic goods which often serve this purpose (Roininen & Tuorila, 1999). In addition to what utilitarian food products provide, functional food products might also be appreciated for their hedonic quality and serve the purpose of being also experienced as a reward. The utilitarian aspects of functional food products may lead to a more deliberate decision process, whereas possible hedonic aspects may be important in an intuitive type of decision process. Many experiments investigating loss aversion showed that the majority of the consumers chose to keep a good in their endowment instead of exchanging it for another product, because of the endowment effect. Hedonic goods are expected to be even more

susceptible to loss aversion, because they evoke more intuitively based decisions. Functional food products will probably be mainly valued for their utility, which will result in people to be more reluctant to exchange a regular food product for a functional food product than to exchange a given functional food product for a regular food product. However, if it is possible to change functional food products in preferred food choices for consumers their hedonic aspects may lead to a status quo bias for these type of foods and consequently result in a healthier food consumption pattern.

1.6 Overview of the thesis

Although endowment and reference effects are well-known aspects and are referred to in many contexts, their relation with consumer food consumption has not yet been explored. In this thesis, several applications of loss aversion in the perspective of consumer food choices will be discussed. The two types of decision making suggest that some types of food choices might be more susceptible to loss aversion or status quo effects than other types. In Chapter 2 the impact of endowment effects on consumer food choices for utilitarian and hedonic food products will be presented to relate reference effects to these two types of food. To further investigate the impact of type of decision process we study the effect of limited cognitive capacity in food endowment choices in Chapter 3. Limitations in consumers' cognitive capabilities in decision making may lead to a stronger use of heuristics and biases in a choice situation. Cognitive constraints might therefore lead to relatively strong consumer preferences for keeping goods in their endowment and in particular for hedonic food. Also, not much is known about the meaning of gender differences in relation to food choices. Different studies in somewhat other disciplines found gender differences in verbal or analytic skills or in making financial investments which may be explained by the two types of decision making. As a consequence gender differences in loss aversion related to food choices are expected and described in Chapter 4. Chapter 5 focuses on the impact of framing effects related to consumer food choices. Because of loss aversion, food preferences may change subject to whether they are experienced in the loss or gain domain (Knetsch, 2001). A change of the reference point of evaluation may result in preference changes and lead to, for example, less strong 'want' preferences. In the final chapter all the experimental outcomes will be discussed in relation to consumers' unhealthy food choices and the still strong prevalence of obesity in our society.

ENDOWMENT EFFECTS FOR HEDONIC AND UTILITARIAN FOOD PRODUCTS

ABSTRACT

Part of consumer food habits may be explained by reference effects, status quo bias and loss aversion, but little research has focused on these processes in food choices. This chapter is a first attempt at understanding the impact of these effects in consumer decision making with respect to hedonic versus utilitarian food products. One between-subjects experiment and two replications show that the endowment effect is relatively strong for hedonic food products compared to utilitarian food products. The results suggest that status quo bias for hedonic food products may lead to subsequent relatively unhealthy food habits.

2.1 Introduction

Standard economic models assume that consumer choices are based on absolute outcomes and are about equally sensitive to positive and negative deviations from a given status quo. However, in Prospect Theory (Kahneman, 2003; Kahneman & Tversky, 1979), the carriers of utility are not absolute outcomes but gains and losses relative to a neutral reference point. Usually the status quo serves as the reference point from which any changes are evaluated. Negative changes with respect to the reference point (losses) have a larger impact than commensurable positive changes (gains). Because of loss aversion, consumers endowed with a product, even if they did not select it themselves, tend to keep the product rather than give it up for an alternative (Kahneman, Knetsch, & Thaler, 1991; Knetsch, 1995, 2001). Taking a broader perspective, consumer food habits may be considered as a preference for the status quo type of food intake (Samuelson & Zeckhauser, 1988) resulting in a lifestyle which is difficult to change. Although part of consumer food habits may be explained by it little research has focused on reference effects, status quo bias and loss aversion in consumer food choices. Dhar and Wertenbroch (2000) found that preferences for M&Ms (hedonic good) as compared with glue sticks (utilitarian good) were more positive in forfeiture than in acquisition choices. These results indicate that consumers seem to respond with different sensitivity to losses and gains when these evaluations are related to either hedonic or utilitarian goods. Antonides et al. (2006) reported less willingness to exchange peppermints for pens than vice versa, suggesting a stronger endowment effect for the hedonic than for the utilitarian good.

This research is a first attempt to relate loss aversion to consumer choice of hedonic versus utilitarian food products. We first describe the process of loss aversion in relation to the

type of food. Next, we describe one experiment and two replications in which we manipulate the type of food in a choice task, and finish with some conclusions and recommendations.

2.2 Making food choices

2.2.1 *Loss aversion*

In daily life consumers face a number of situations in which they have to make a decision. Due to limited information or limited consumer resources the number of choice options is often incomplete and usually not optimally considered by the consumer. This imperfectness in decision making may lead to the use of heuristics and biases in a choice situation. One such bias is loss aversion, causing relatively strong preference of consumers for keeping products in their possession. Consumers seem to prefer their current state when given the opportunity to exchange it for an alternative, even if they would objectively be better off in the alternative situation. In such situations consumers do not seem to think in terms of states of wealth, but rather in terms of gains and losses relative to the current state. Reluctance to accept negative changes relative to the reference point indicates loss aversion (Hardie, Johnson, & Fader, 1993; Kahneman, 2003; Kahneman & Tversky, 1984; Samuelson & Zeckhauser, 1988).

Loss aversion implies that consumers evaluate losses as more unpleasant than a commensurate gain is evaluated as pleasant (Tversky & Kahneman, 1991). This behaviour was described by assuming an S-shaped value function (Kahneman & Tversky, 1984) which is concave in the domain of gains and convex in the domain of losses and considerably steeper for losses than for gains. A consequence of loss aversion is that the loss of utility associated with giving up a good is perceived as greater than the utility gain associated with receiving the good, causing a preference for one's current endowments and resulting in consumers who rather stick to their status quo than switch to an alternative. Thaler (1980) refers to this phenomenon as the endowment effect, which is the reluctance of people to part with assets belonging to their endowment. Samuelson and Zeckhauser (1988) have demonstrated a similar effect which they coined status quo bias. The greater the investment in the status quo alternative, the more strongly it will be retained. For example, status quo bias may explain brand loyalty and pioneer firm advantage (Tversky & Kahneman, 1991). Loss aversion is also related to the type of choice alternative: if the items are highly similar, the endowment effect is present less strongly (Chapman, 1998; Shogren et al., 1994; Van Dijk & Van Knippenberg, 1996).

Preference for choice alternatives may change subject to what is considered the status quo (Tversky & Kahneman, 1991). The status quo normally serves as a reference level, but alternatives can become more interesting when portrayed as the status quo (Thaler, 1980). The framing of reference levels can therefore play a large role in determining preferences (Hartman et al., 1991). Changes of reference points often lead to preference reversals (Johnson & Goldstein, 2003; Johnson et al., 1993). Insofar as the endowment effect changes consumer behavior in a single choice, status quo bias may lead to a certain preference for one type of good. When such a choice is made consecutively a habit for a certain consumption pattern may develop. It is therefore likely that consumer food habits can partly be explained by reference

effects, because habits may be considered as a preference for the status quo (Kahneman, 2003; Knetsch, 1995; Samuelson & Zeckhauser, 1988; Thaler, 1980).

2.2.2 Hedonic versus utilitarian goods

To explain the magnitude of reference effects from product type we need to make a distinction between two basic consumption effects: (1) consummatory affective (hedonic) gratification from sensory attributes, and (2) instrumental, utilitarian functions or consequences of consumption (Batra & Ahtola, 1991). Consumption of hedonic goods can be characterized by an affective multi-sensory emotional experience, including tastes, sounds, scents, tactile impressions and visual images, which are far more subjectively than objectively oriented (Hirschman & Holbrook, 1982). Utilitarian goods are those whose consumption is more cognitively driven, instrumental, and goal oriented and accomplish a functional or practical task (Dhar & Wertenbroch, 2000). A distinction can also be made between reasoned preferences as 'shoulds' and affective preferences as 'wants' (Dhar & Wertenbroch, 2000). 'Wants' are often related to immediate benefits whereas 'shoulds' relate to benefits in the long run (Bazerman, Tenbrunsel, & Wade-Benzoni, 1998). 'Wants' might harm consumers in the long run and might therefore be associated with pleasures related to guilt (Giner-Sorolla, 1999). 'Wants' can also be defined as 'vices,' i.e., preferences for goods with unhealthy payoffs such as fattening food or sweets and 'shoulds' as 'virtues,' i.e., preferences for goods with healthy payoffs such as food products high in vitamins or minerals (Wertenbroch, 1998).

The hedonic and utilitarian types of consumption effects may lead to different consumer choices. Such effects may already show up in framing consumption effects of food products. Utilitarian framing of consumption effects may for example result in lower preference for food products. Raghunathan, Naylor and Hoyer (2006) showed that information about healthiness of different food products resulted in a stronger preference for goods which were portrayed as less healthy. Also, a significantly larger group of people bought a snack when it was advertised as 'new' than when it was advertised as 'healthy' (Köster, 2003). Roininen and Tuorila (1999) support these findings by showing that 'healthy' products are usually not used as a reward as opposed to hedonic goods which often serve this purpose. This suggests that some types of food choices might also be more susceptible to loss aversion or status quo effects than other types. The objective of this chapter is therefore investigating the impact of the endowment effect on consumer food choices between hedonic and utilitarian types of food.

Dhar and Wertenbroch (2000) found that forfeiture choices increase the impact of hedonic aspects in overall evaluation resulting in a relative preference for hedonic over utilitarian goods as compared with acquisition choices. Standard economic utility models might be valid for products of which utilitarian performance is highly valued by consumers, but not for goods of which the value is based on emotional aspects (Hirschman & Holbrook, 1982). Dhar and Wertenbroch (2000) explain the stronger preference for hedonic aspects in forfeiture tasks than in choice tasks by the impulsiveness of the decision. An acquisition choice task needs more justification which enhances preferences for utilitarian features in contrast to forfeiture choices which stimulate more spontaneous elaboration.

Figure 2.1 shows four possibilities in evaluating products in forfeiture and gain tasks (Knetsch, 2001). According to the four quadrants in this model consumers can make different choices between receiving or giving up on goods. Quadrants I and IV refer to the endowment effect, implying forfeiture of one good, and acquisition of the other good. Dhar en Wertenbroch (2000) employed quadrants II and III. In their experiments half the participants made a choice between two goods without endowment and the other half made a choice between two goods in their endowment. The first group was confronted with a choice between two gains (quadrant II) whereas the second group was confronted with a choice between two losses (quadrant III).

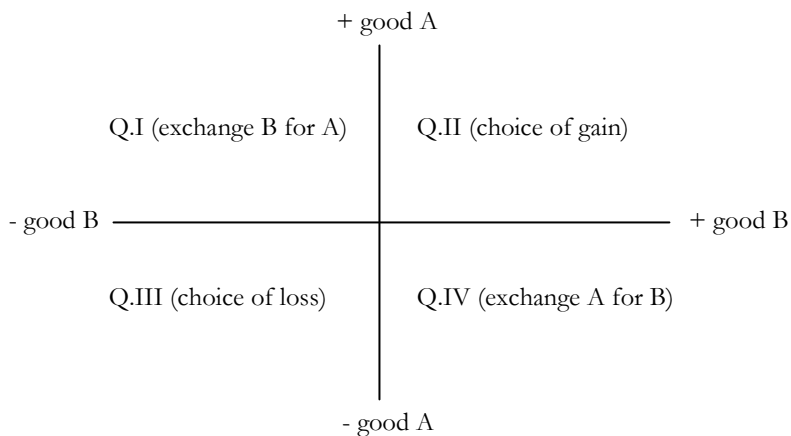


Figure 2.1 Valuation of gains versus losses adapted from Knetsch (2001)

In our research we will confront participants with choices in quadrants I and IV, related to hedonic and utilitarian food products. In the experiments in this chapter participants will receive either a hedonic or utilitarian type of food product and make a decision between keeping their endowment or exchanging this good for the other type of food. Our interest is in giving up hedonic goods for utilitarian goods in particular. Many experiments related to loss aversion show that the majority of the consumers choose to keep a good in their endowment instead of exchanging it for another good, because of the endowment effect. In addition, consumer preferences in forfeiture choices seem to depend on the product type in endowment (Dhar & Wertenbroch, 2000).

Okada (2005) found that relative preference for hedonic compared to utilitarian goods is higher when the goods are evaluated in isolation than when evaluated in comparison. She explains the stronger preference for utilitarian goods, when both hedonic and utilitarian goods are presented together, by feelings of guilt when justifying a hedonic choice and by the difficulty in quantifying the benefits of hedonic goods. To the extent that endowment choices are made more in isolation than comparison choices, preference for the hedonic good should be higher when evaluated in a more focused situation (isolation) than when presented together with the utilitarian good in the choice condition.

In line with the research described above and because of the short-term preference for hedonic aspects in food products stimulating spontaneous reactions, we expect that people are more reluctant to exchange a given hedonic food product for a utilitarian food product than to exchange a given utilitarian food product for a hedonic food product.

In this chapter we will therefore test the following assumption:

H1: Exchanging hedonic food for utilitarian food items is less likely than vice versa.

Next, we describe one experiment and two replications to test the hypothesis using different pairs of snacks for exchange.

2.3 Experiments

In the experiments we tested the assumption that the endowment effect is stronger for hedonic than for utilitarian food products. In the experimental condition half the participants were provided with a hedonic food product whereas the other half were provided with a utilitarian food product. They were then given the opportunity to exchange their endowment for the alternative good. To rule out the possibility that the difference in endowment effect was due to a higher initial preference for one of the goods, a control group was given a choice between the two goods, without prior endowment.

2.3.1 Method

A between-subjects experiment with two replications was designed to test our hypothesis. We provided 554 pupils and students, aged 16-20 years old, at 27 different secondary schools and one university in different cities in the Netherlands with either a utilitarian food product (either an apple or a package of raisins) or with a hedonic food product (either a Mars bar, potato crisps or a lollipop). Both goods were, in different combinations, randomly distributed in the classroom. Pupils in a single classroom received one of two goods in the following combinations, an apple combined with a Mars bar or an apple combined with potato crisps. Students at the university received either a small package of raisins or a lollipop.

When all participants in a classroom possessed either one of the two food products, they all received the same questionnaire. The questionnaire dealt with ten aspects, related to both goods, serving as a manipulation check concerning hedonic and utilitarian product attributes. All participants had to evaluate both goods by answering all questions in private. The final question concerned the choice to keep the food product which was given to them or to exchange it for the other food product which was handed out in the classroom. Immediately after all participants completed the questionnaire the exchange of goods was carried out for those who did not want to keep the food product given to them.

In the control condition a comparable but different sample of 541 pupils and students filled out the questionnaire and made a simple choice between the two goods in the different combinations without prior endowment, and also received the food product of their choice.

2.3.2 Results

Table 2.1 shows the attitude judgments of both goods regarding ten different product attributes on bipolar 7-point scales for the respondents in the control group. The outcomes of the control group were used as a manipulation check for the differences between both types of food products, because the participants in this group were not influenced in their judgment by

the endowment of one of the goods. However, the outcome of the group endowed with either one of the goods was almost comparable and only differed in a reverse judgment of the energy attribute. In the control condition, participants judged the utilitarian goods to ‘give more energy’ than the hedonic goods. Pupils who were endowed with a Mars bar indicated the hedonic good to give more energy compared to the utilitarian good. This result suggests the importance of a short-term objective in consuming a Mars bar which is in agreement with the distinction Dhar and Wertenbroch (2000) made between ‘shoulds’ and ‘wants.’

The results in Table 2.1 show that the utilitarian and hedonic food products mostly differed in perceptions concerning the utility of the product, i.e., ‘healthiness,’ ‘not fattening,’ ‘improves resistance,’ and ‘functionality.’ Regarding these four aspects and the ‘performance improvement’ and ‘satisfying effect’ judgments of the goods, the attitude towards utilitarian goods was significantly more positive than towards hedonic food products.

Table 2.1 Average product attitudes, and t-values for product attitude differences in the choice condition

Attributes	Utilitarian good	Hedonic good	t-value	
			Choice condition	
Taste ^a	5.50	5.70	-2.54	*
Appearance ^a	5.09	5.26	-2.04	*
Satisfying effect ^a	5.36	4.77	6.24	**
Healthiness ^a	6.78	1.92	81.09	**
Not fattening ^a	5.82	2.59	22.33	**
Gives energy ^a	5.20	4.88	3.59	**
Improves performance ^a	4.94	3.94	11.40	**
Improves resistance ^a	5.95	2.37	45.80	**
Functionality ^b	6.00	2.80	25.85	**
Hedonism ^b	4.08	6.32	-19.22	**

* $p < .05$, ** $p < .01$

^a based on apple, Mars bar and potato crisps

^b based on apple, potato crisps, raisins and lollipop

The variables ‘hedonism’ and to some extent ‘taste’ and ‘appearance’ scored significantly higher for the hedonic goods than for the utilitarian goods. The outcomes show that utilitarian goods were indeed judged as more utilitarian, whereas the hedonic goods were judged significantly higher on hedonic attributes which suggests that the manipulation check was successful. However, in addition to the overall functionality and hedonic value, the largest differences in product perception concerned utilitarian product attributes.

Table 2.2 shows the choice percentages by experimental condition. In the endowment conditions, 54.4% wanted to keep their utilitarian food product, whereas 76.4% wanted to keep their hedonic food product. Without product endowment, 54.5% preferred the hedonic food products to the utilitarian food products. These results indicate that an endowment effect existed for both goods ($\chi^2 = 5.81$, $p < .05$ for utilitarian goods and $\chi^2 = 37.87$, $p < .01$ for hedonic goods).

Table 2.2 Choices between utilitarian and hedonic food products in endowment and choice conditions

Initial situation	Product choice		Total
	Utilitarian good	Hedonic good	
Endowment utilitarian good	54.4%	45.6%	270
Endowment hedonic good	23.6%	76.4%	284
Choice condition	45.5%	54.5%	541

Correcting for the initial preference for the hedonic food products, the endowment effect was found to be stronger for the hedonic than for the utilitarian goods. The preference for the utilitarian food products in the choice condition was 45.5% but when endowed with a hedonic food product 21.9% of the supposed utilitarian lovers in this condition kept the hedonic food product ($.764 - .545 = .219$). The stronger endowment effect for hedonic food products can be shown by comparing the probabilities of keeping the product in endowment when the other product is actually preferred (in the choice condition). The probability of keeping a hedonic good (H), given the preference for a utilitarian good (U) in the choice condition equals

$$(1) \quad \text{Prob}(H|U) = \text{Prob}(H \text{ and } U) / \text{Prob}(U).$$

For hedonic goods Equation 1 leads to an outcome of .481 ($.219 / .455$) ($s.e. = .059$). For the supposed hedonic lovers in the utilitarian endowment condition, a similar calculation led to a probability of .163 ($s.e. = .065$) to keep the utilitarian good, given the preference for a hedonic good. Outcomes of a Monte Carlo simulation using the observed probabilities to generate drawings from the binomial distribution showed that the difference between both conditional probabilities is significant indicating an overall stronger endowment effect for hedonic food products which is consistent with our hypothesis ($p < .01$).

Next, we conducted a probit regression analysis to show whether the endowment of one type of good was important in the decision to keep that food product in endowment.

Table 2.3 Probit regression of choosing a hedonic good instead of a utilitarian good

	Regression coefficient	Coefficient / standard error
Constant	.11	2.11 *
Endowment utilitarian food product	-.23	-2.41 *
Endowment hedonic food product	.61	6.18 **

* $p < .05$, ** $p < .01$

Log likelihood = -714.00876

Table 2.3 shows that the endowment of both types of goods was significant in explaining the choice of hedonic food products. Since the endowment of a utilitarian food product negatively influenced the choice of a hedonic good, these results indicated endowment effects for both

types of goods. To test for equality of the two endowment effects, we conducted a probit regression analysis in which the endowment parameters of both goods were set equal. A significant difference in the log likelihoods of these two models shows that the endowment effects in Table 2.3 were significantly different ($\chi^2 = 5.99, p < .05$), indicating a stronger endowment effect for the hedonic than for the utilitarian food products.

A third probit regression analysis shows the effect of product attribute judgments that were important in keeping the product in one's endowment. To reduce the amount of information, a pooled across-all conditions principal component analysis was conducted to reduce the number of attitude variables. We could only use eight of the ten product attitudes and excluded 'functionality,' and 'hedonism,' because these two aspects were excluded in the first experiment with apples and Mars bars. We also had to exclude the data of the raisins and lollipops experiment, because in this experiment the students were only asked to evaluate both goods on their functionality and hedonic value. Because this group was relatively small to the total experimental group, the outcomes of a probit regression similar to the one reported in Table 2.3 but excluding the raisins and lollipop experiment were similar to the outcomes reported in Table 2.3. To be able to analyse both product attitudes simultaneously, differences between the scores on the eight aspects for both goods were calculated. The relevant statistics showed the feasibility of principal component analysis to reduce the number of aspects into three orthogonal components (Bartlett's test was significant, Kaiser-Meyer-Olkin measure equalled 0.656). These components were: (1) Energizing effect, associated with 'gives energy,' 'improves performance,' and to some extent with 'satisfying effect,' and 'improves resistance,' (2) Hedonic value, which was associated with 'taste,' 'appearance,' and 'satisfying effect,' and (3) Physical well-being, associated with 'healthiness,' 'not fattening' and 'improves resistance.' The first and third component were considered utilitarian. We computed factor scores indicating the three components.

Table 2.4 Probit regression of choosing a hedonic good instead of a utilitarian good

	Regression coefficient	Coefficient / standard error
Constant	.21	3.27 **
Endowment utilitarian food product	-.48	-4.25 **
Endowment hedonic food product	.59	4.95 **
Hedonic value ^a	.82	13.56 **
Energizing effect ^b	-.19	-4.01 **
Physical well-being ^b	-.15	-3.24 **

** $p < .01$

Log likelihood = -491.66698

Note: results based on apple (*U*), Mars bar (*H*) and potato crisps (*H*)

^a based on calculated scores on perceived attribute differences (*H-U*)

^b based on calculated scores on perceived attribute differences (*U-H*)

Table 2.4 shows the results of the probit analysis, where for all observations the influences of condition and the three factors on the probability of choosing a hedonic food product are shown. The hedonic value difference between hedonic and utilitarian goods

appeared far more significant in explaining the choices than the energizing effect and physical well-being differences. Furthermore, there still existed an endowment effect for both types of goods, but due to the introduction of participants' perceived attribute differences between the two types of goods, the magnitudes of the two endowment effects were not significantly different anymore ($\chi^2 = .16, n.s.$). These results indicate that if we control for especially the perceived differences in hedonic attributes between both types of goods, the difference between both endowment effects disappears, suggesting that the stronger endowment effect for the hedonic food products was mainly caused by its hedonic quality.

2.3.3 Discussion

The experiments showed that the endowment effect was significantly stronger for hedonic than for utilitarian food products. When we consider the attitudes towards both goods measured in the control condition, the most important differences, in addition to the overall functionality and hedonic value perception, between the two types of goods concerned utilitarian aspects. These aspects were evaluated significantly more positively for the utilitarian goods than for the hedonic goods. These results seem to be consistent with the distinction Dhar and Wertenbroch (2000) made between 'shoulds' as reasoned preferences and 'wants' as affective preferences. Although the largest differences in attribute judgments concerned utilitarian aspects, a probit regression analysis showed the strong influence of the hedonic value difference in the choice of hedonic food products which is consistent with Hypothesis 1 predicting different endowment effects for the two goods. The results of the probit analyses confirmed the stronger endowment effect for hedonic food products, but in addition, showed that correcting for the differences in hedonic perception of both goods reduced the significant difference in endowment effects of the two types of goods.

2.4 Conclusions and recommendations

The results of the three experiments showed a stronger endowment effect for the hedonic than for the utilitarian good as perceived by the pupils which is in agreement with our hypothesis. The choices in these experiments were among other things explained from the perceived hedonic value difference between the two goods. These findings correspond with the results of Dhar and Wertenbroch (2000), indicating that hedonic aspects of goods are more important in loss choices compared to gain choices. In our research, where the focus was on food products and their utilitarian and hedonic aspects, the control condition can be interpreted as a gain choice situation in which the relative preference for the hedonic product was significantly lower (54.5%) than in the endowment (forfeiture) condition (76.4%) ($p < .01$). A probit regression analysis showed that if we control for different product judgments the difference between both endowment effects is not significant anymore. So, if both types of goods were made more similar (after correcting for attitude differences) their endowment effects also became equal. Since the control for attribute differences between both goods almost exclusively influenced the endowment effect of the utilitarian goods, this suggests that the relatively stronger endowment effect for hedonic goods is mainly due the hedonic value of

hedonic goods. This finding might be of interest for policy purposes which we will come back to later in this section.

Okada (2005) relates cognition to reversals of 'wants' and 'shoulds' preferences. She found that relative preference for hedonic compared to utilitarian goods is higher when the goods are evaluated in isolation than when evaluated in comparison which is consistent with our findings. She explains the more frequent choice for utilitarian alternatives when hedonic and utilitarian products are presented together by feelings of guilt. As Giner-Sorolla (1999) also refers to 'wants' which might be associated with pleasures related to guilt, it seems interesting to investigate whether guilt might play a role in the stronger endowment effect of hedonic food products.

Consumer decision making recently led to increasingly unhealthy food choices which resulted in the development of lifestyles favouring quick meals and fast food. Increasing prevalence of being overweight or obese in industrialised countries in the last twenty-five years is a major cause of increasing rates of cardiovascular diseases, diabetes and some cancers (WHO, 2000). Being overweight or obese arises from unbalanced energy management; i.e., energy intake exceeds energy output, which can be attributed to changed patterns of food consumption and a more sedentary lifestyle. Interventions aimed at either changing attitudes and motivation through knowledge transfer or by influencing factors in the environment of the consumer have been only moderately successful (Brug & Van Lenthe, 2005). Combinations of both strategies are expected to have the largest impact, but figures of persons being obese or overweight in western countries show that consumers, in particular children, are still tempted to make unhealthy food choices, despite the interventions. With respect to the issue of many adults and children being overweight, it is desirable to understand the factors that may sustain or change consumer food habits.

Because of their repetitive nature, unhealthy food choices are characterized as a habit. A conscious decision process is therefore less likely to occur and past behaviour is often a strong predictor of current choices (Albarracin & Wyer Jr., 2000; Betsch et al., 2004; Brug et al., 2006). Providing information will therefore be of limited value, hence we propose a different approach. In this chapter we focused on a different type of unconscious process influencing current food choices, i.e., reference effects. Reference effects occur when consumer preferences change subject to what is perceived as the status quo. The results in this chapter showed that consumer preferences changed when food products were in the consumer's endowment compared to choice conditions (implying no endowment).

The popularity of unhealthy food products is commonly ascribed to the hedonic aspects of these products. This appeal of hedonic goods might cause difficulties in attempting to change preferences for unhealthy food. Short-term preferences for the hedonic aspects of unhealthy food might stimulate spontaneous reactions, causing people to be more reluctant to give up on unhealthy food products or even unhealthy food habits. We therefore assume an unhealthy food lifestyle to be difficult to change partly because of loss aversion and status quo bias. This chapter described a first attempt to understand the impact of these effects on food choices. Results showed that status quo bias for hedonic food products may lead to subsequent relatively unhealthy food choices and indicate that focusing on the healthy aspects of consumption is relatively ineffective in stimulating healthy food consumption. Instead,

attempts at making the healthy alternative more hedonic, so diminishing the differences between both types of goods, and therefore reducing the relatively strong endowment effect for hedonic goods, might influence food choices into a more healthy direction. To the extent that the endowment effect is caused by food habits the relatively strong endowment effect for hedonic food products may work to the advantage of an enduring and unhealthy food consumption style and further understanding of the endowment process is needed, to try to overcome the difficulties in changing this food consumption style. Further research should focus on the aspects which enlarge the endowment effect of utilitarian food consumption to get a more in-depth understanding of possible solutions to change consumers' unhealthy food preferences.

COGNITIVE CAPACITY AND ENDOWMENT EFFECTS FOR HEDONIC VERSUS UTILITARIAN FOOD PRODUCTS

ABSTRACT

Consumer food choices may partly be explained by status quo effects and loss aversion. Here, we focus on the influence of limited cognitive capacity on loss aversion related to food products. Two experiments with 1439 pupils of secondary schools show that cognitive constraints increase the overall endowment effect and that the impact of limited cognition is stronger for hedonic food products than for utilitarian food.

3.1 Introduction

Current consumer food choices may lead to increasing numbers of persons being overweight or obese, ill-health, and rising medical expenses (WHO, 2000). Several factors may cause consumers to stick to unhealthy food choices, including discounting future health, social influence also advertising, and thoughtless food consumption (Hoek & Gendall, 2006; Seiders & Petty, 2004; Wansink & Sobal, 2007; Zhang & Rashad, 2008). Consumers seem to be aware of only a fraction of the many food decisions they make and are unaware or unwilling to acknowledge the influence of the environment on their food decisions (Wansink & Sobal, 2007). This chapter focuses on the effects of cognitive constraints on food choices. Cognitive constraints tend to reduce consumers' attention to the food choice process such as in the process of a food habit. Furthermore, limits on the functioning of the working memory generally lead to more impulsively made decisions (Hinson, Jameson, & Whitney, 2003). For example several studies showed that distraction during consumption has resulted in higher food consumption (Boon, Stroebe, Schut, & Ijntema, 2002; Higgs & Woodward, 2009; Poothullil, 2002).

Abstracting away from the realistic settings used in the experiments described above, might be useful to improve further the understanding of food consumption. In particular, we will study the influence of cognition on the endowment effect. In addition to the environmental factors that influence consumers' decisions, difficulty in changing food choices might be caused by loss aversion. Consumers endowed with a good, even if they did not select it themselves, tend to keep this good rather than give it up for an alternative (Kahneman et al., 1991; Knetsch, 1995, 2001). Deviation from default options, which often represent the current

state or status quo, involves losses and leads to loss aversion (Tversky & Kahneman, 1991). Consumers seem to anchor on current choices without thinking of evaluating their status quo properly. Insofar as loss aversion changes consumer behavior in a single choice, status quo bias may lead to a certain preference for one type of good. When such a choice is made consecutively, a habit for a certain consumption pattern may be developed afterwards. Consumers' reluctance to part with one's endowment may lead to a preference for the status quo type of food intake resulting in a lifestyle, which is quite difficult to change (Wittman, 2005).

With respect to the issue of increasing prevalence of being overweight or obese, it is desirable to understand the factors that influence endowment effects regarding food consumption. In this chapter, we study the influence of cognitive constraints on the endowment effect of food products in order to contribute to the understanding of food consumption. We first describe the process of loss aversion in relation to the type of food, and the influence of cognitive capacity. Next, we describe two experiments in which we manipulate the type of food in a choice task as well as the consumer's cognitive capacity, and finish with some conclusions and recommendations.

3.2 Food choices, loss aversion and cognitive capacity

Consumers' limitations in their capabilities in decision making may lead to the use of heuristics and biases in a situation of choice (Simon, 1990). One such bias is loss aversion, resulting in a relatively strong consumer preference for keeping goods in their endowment. This strong preference results from consumers' evaluating losses as more unpleasant than commensurate gains are evaluated as pleasant (Kahneman et al., 1991; Kahneman & Tversky, 1979). The greater perceived loss of utility associated with giving up a good compared to the utility gain associated with receiving the good, leads to a preference for one's current endowment and consumers who rather stick to their status quo than switch to an alternative. Endowment effects and status quo biases are similar phenomena and are explained by people's reluctance to part with assets in their endowment (Samuelson & Zeckhauser, 1988; Thaler, 1980, 2000). Much empirical evidence (e.g., Hartman et al., 1991; Johnson & Goldstein, 2003; Johnson et al., 1993) indicates that choices depend on the status quo which is often considered as the reference level for comparison with choice alternatives. Alternatives short of the reference level are generally considered as losses, whereas alternatives beyond the reference level are generally considered as gains. Hence, changes in reference points often lead to preference reversals. For example, Johnson et al. (1993) found that consumer preferences for insurance options depend on what was presented as the standard option.

3.2.1 Effects of decision process on loss aversion

The general preference of consumers for status quo alternatives might be further explained by different types of decision processes that take place in product evaluation, such as dual processing (Cantin & Dubé, 1999; Chaiken, 1980; Chaiken & Trope, 1999; Shiv & Fedorikhin, 1999). Different models use dual processing systems to deal with information received and show that decision making involves both analytic and intuitive aspects. Basically, there are two

different ways in which consumers can make decisions: by reasoning and by using emotions or cues. In analytic mode choices are influenced mainly by consequence-related cognitive processes, whereas in intuitive mode choices are influenced by automatic affective processes (Chaiken, 1980; Petty & Cacioppo, 1986). The intuitive decision mode seems to be favored when the analytic decision mode is impaired due to lack of involvement in decision making per se, inability, or also lack of opportunity (Baumeister, 2002, Baumeister, Sparks, Stillman, & Vohs, 2008). Kahneman (2003) makes a similar distinction between System I (intuition) and System II (reasoning) types of judgment, and states that normal decisions use System I, except when System II detects a potential error.

The intuitive type of decision making is likely to make consumers more vulnerable to a number of heuristics and biases, including loss aversion (Kahneman, 2003). Research by Pochepsova, Amir, Dhar, & Baumeister (2007) showed that resource depletion increased the share of reference-dependent choices, which confirmed their main idea that resource depletion would lead to a greater reliance on intuitive processing in choice. In this chapter, we will therefore test the following first hypothesis:

H1: In general, exchanging food items in one's endowment is less likely if cognitive capacity is constrained than in the unconstrained case.

3.2.2 Interaction effects of decision process and food type concerning loss aversion

When we relate dual processing systems to choices of product types we can make a distinction between two basic consumption effects: 1) consummatory affective (hedonic) gratification from sensory attributes, and 2) instrumental, utilitarian functions or consequences of consumption (Batra & Ahtola, 1991). Consumption of hedonic goods can be characterized by an affective multi-sensory emotional experience, including tastes, sounds, scents, tactile impressions and visual images, which are far more subjectively than objectively -oriented (Hirschman & Holbrook, 1982). Utilitarian goods are those whose consumption is more cognitively driven, instrumental, and goal oriented and which accomplish a functional or practical task (Dhar & Wertenbroch, 2000). Specific decision processes may lead to explicit choices for goods with either mainly utilitarian or hedonic aspects. Dhar and Wertenbroch (2000) found that forfeiture choices increased the impact of hedonic aspects in overall evaluation resulting in a relative preference for hedonic over utilitarian goods as compared to acquisition choices. They explain this stronger preference for hedonic aspects in forfeiture tasks by the impulsiveness of the decision. A choice task needs more justification that enhances preferences for utilitarian features in contrast to forfeiture choices that stimulate elaboration that is more spontaneous. Similarly, the concept of affective choice mode implies that for expressive products, meant to be used for hedonic rather than utilitarian goals, product choice takes place by holistic product evaluation (Mittal, 1988).

Okada (2005) relates cognition to preference reversals for hedonic goods and utilitarian goods. Relative preference for hedonic compared to utilitarian goods is higher when the products are evaluated in isolation than when they are compared (Okada, 2005). When hedonic and utilitarian goods are presented together, the utilitarian alternative is chosen more frequently; a fact which she explains by feelings of guilt when justifying a hedonic choice and

by the difficulty in quantifying the benefits of hedonic goods. To the extent that endowment choices are made more in isolation than comparison choices, cognitive constraints may lead to an even stronger preference for the hedonic good when evaluated in a more focused situation (isolation) than when compared to the utilitarian choice.

Shiv and Fedorikhin (1999) found that a reduction of the consumer's cognitive capacity has led to simplified decision processes and preference for hedonic types of food, but only if real alternatives were presented instead of pictures (Shiv & Fedorikhin, 2002). Cognitive constraints might therefore lead to a stronger preference or endowment effect for hedonic than utilitarian goods because affective feelings rather than cognitive reasoning have a strong impact on consumer choices when decisions are made more intuitively. In this chapter, we will therefore test the following second hypothesis:

H2: The cognitive constraint influence on the endowment effect is stronger for hedonic than for utilitarian food items.

Loss aversion implies that consumers normally keep the good in their endowment instead of exchanging it for another good. We expect that, in the case of cognitive constraints, people are even more reluctant to exchange food products. The latter effect is expected to be even stronger for hedonic food than for utilitarian food. Next, we describe two experiments to test the hypotheses using different pairs of snacks.

3.3 Experiment 1. Hedonic versus utilitarian food products

The first experiment has been designed to test the influence of cognitive capacity on the endowment effect for different types of food. In this experiment we have compared two different hedonic food products with a utilitarian food product.

3.3.1 Method

A between-subjects experiment was designed to test our hypotheses. We provided 815 pupils, aged 16-18 years old at 18 different secondary schools in the Netherlands with either a utilitarian food product (a mandarin) or with a hedonic food product (a Mars bar or potato crisps). Both goods, a mandarin and either a Mars bar or potato crisps, were randomly distributed in the classrooms together with a written questionnaire. In half of the classes participants were asked to remember a 7-digit number, thus reducing their cognitive capacity. Participants in the other half of the classes were asked to remember a 2-digit number, which was not influencing their cognitive capacity. This method has been tested successfully in the literature (Gilbert, Giesler, & Morris, 1995; Gilbert & Hixon, 1991; Gilbert & Osborne, 1989; Shiv & Fedorikhin, 1999, 2002).

The first item in the questionnaire concerned pupils' decisions to keep the food product that was given to them or to exchange it for the other good that was handed out in the classroom. After answering this question, pupils were asked to recall the given number. The questionnaire continued with the evaluation of ten aspects, related to both goods, serving as a manipulation check concerning the hedonic value and utility of both goods, and several questions about the influence of cognitive load on their feeling of control and responsibility

for the choice they have made¹. This latter information served as a manipulation check of the number recall task and indicated whether subjects in the busy condition felt less in control when making their choice compared to the not-busy subjects. When all pupils completed the questionnaire they could keep the food product given to them or exchange it with the experimenters in case they did not want to keep the good given to them.

3.3.2 Results

Table 3.1 shows the attitude judgements (on bipolar 7-point scales) regarding ten product attributes that differed significantly between the utilitarian and the hedonic food products. Perceptions concerning functionality of the utilitarian product, i.e., ‘healthiness,’ ‘not fattening,’ ‘improves resistance,’ ‘improves performance,’ and ‘functionality,’ were significantly more positive than perceptions of the hedonic food product. The attitudes ‘taste,’ ‘appearance,’ ‘gives energy,’ and ‘hedonic value’ scored significantly higher for the hedonic food products than for the utilitarian food product. Apparently, the mandarin was perceived as more healthy and functional, whereas the potato crisps and the Mars bar were perceived as more hedonic which shows that the food type manipulation was successful.

Table 3.1 Average product attitudes, and t-values for product attitude differences

Attributes	Utilitarian food product	Hedonic food product	t-value	
Taste	5.34	6.08	-10.69	**
Appearance	4.72	5.62	-12.45	**
Satisfying effect	5.03	4.88	1.92	
Healthiness	6.82	1.96	98.42	**
Not fattening	6.02	2.69	28.99	**
Gives energy	4.85	5.29	-5.72	**
Improves resistance	6.03	2.48	49.36	**
Improves performance	4.71	4.18	8.39	**
Functionality	5.98	2.84	36.85	**
Hedonic value	4.45	6.18	-22.13	**

** $p < .01$

Although most pupils performed very well on the number recall task, significant differences were found in participants’ judgment of the responsibility and control aspects across the experimental conditions. All pupils were asked to indicate their feelings of control and responsibility over the choice they have made in keeping or exchanging their food product, using 7-point bipolar scales. To reduce the amount of information, a pooled across-all conditions principal component analysis was conducted. The relevant statistics showed the feasibility of principal component analysis to reduce the number of aspects into two orthogonal components (Bartlett’s test was significant, Kaiser-Meyer-Olkin measure equaled .769). These two components were: (1) Control, associated positively with ‘Feeling

¹ Questions based on Cramer & Perreault (2006) and Schoorman & Holahan (1996)

responsible,' Choice reflects normal behaviour,' 'Control over choice,' 'Influence on choice,' and negatively on 'Experimenters' responsibility for their choice,' and 'Feeling powerless' (Cronbach's Alpha = .71), and (2) Guilt, which was associated with 'Feeling guilty for trading,' and 'Receiving is a good excuse for keeping' (Cronbach's Alpha = .39). We computed factor scores indicating the control component. Independent of the product type in endowment and for the pupils who received a hedonic endowment, we found a significant difference between both cognitive load conditions for the control variable ($p < .01$). When pupils did not experience cognitive load, they felt more in control compared to pupils who experienced cognitive load indicating that the cognition manipulation was successful. Differences within both experimental conditions indicated that pupils who received a hedonic good evaluated 'the fact that they received the food product as a present was a good excuse for keeping it' significantly higher than the pupils who received a utilitarian food product ($p < .05$) which is in agreement with the finding that hedonic goods often serve as rewards (Roininen & Tuorila, 1999).

In both experimental conditions pupils made a choice between keeping or exchanging the food product which was given to them.

Table 3.2 Product choices by type of endowment and cognitive constraint condition

Initial situation	Product choice		Total
	Utilitarian good	Hedonic good	
Endowment utilitarian food product			
Without cognitive constraint	51.8%	48.2%	195
With cognitive constraint	59.2%	40.8%	206
Endowment hedonic food product			
Without cognitive constraint	19.8%	80.2%	192
With cognitive constraint	12.2%	87.8%	222

The results in Table 3.2 show that choices differed by experimental condition. Independent of product type significantly more pupils preferred to keep their product in endowment when they were confronted with cognitive load (74.1%) compared to pupils who were not experiencing cognitive load (65.9%) which is consistent with our first hypothesis ($\chi^2 = 6.49, p < .05$). The influence of cognitive constraints across product type differed in agreement with our second hypothesis. A chi-squared analysis showed no significant difference in choice preferences across cognitive load conditions for utilitarian endowments ($\chi^2 = 2.24, n.s.$). In the hedonic endowment condition, comparison of both cognitive constraint conditions showed that pupils who experienced cognitive load significantly more often chose to keep their good in endowment compared to the not-busy group ($\chi^2 = 4.53, p < .05$). It appeared that cognitive load more strongly influenced the endowment effect for the hedonic food product than for the utilitarian food product which confirmed Hypothesis 2.

3.3.3 Discussion

The outcomes of the experiment showed that cognitive constraints induced by the number recall task influenced the participants' decision to keep or exchange their good in endowment.

This is likely to be due to the reduced perceived feelings of responsibility and control in decision making, induced by cognitive constraints. Under these circumstances, intuition dominates reasoning, leading to loss aversion. The results showed that the endowment effect was significantly stronger under cognitive constraint than without constraint, which is consistent with Hypothesis 1.

The results concerning the product attribute judgments in this experiment showed that participants' perceptions concerning the product attribute judgments differed significantly between the utilitarian and hedonic food products. As expected the mandarin scored more positively on utilitarian-related attributes, whereas the Mars bar and potato crisps scored more positively on hedonic attributes. The difference in attribute judgments is consistent with Hypothesis 2, which has predicted different influences of cognitive constraints on the endowment effect of the two goods. The influence of cognitive constraints on consumer choices to keep a food product in endowment has been significantly stronger for the hedonic than for the utilitarian food items.

3.4 Experiment 2. Functional food products versus regular food products

The second experiment was designed to test the influence of cognitive capacity on the endowment effect for functional and regular food products. Functional food products beneficially affect particular functions of the body to improve health or well-being and/or reduce the risk of diseases in addition to their nutritional value (Blades, 2000; Hasler, 2000; Khan, 1981; Yeung et al., 2006). In comparison to their regular equivalent, which is mainly valued for its hedonic aspects, functional food products are specifically interesting because of their utilitarian aspects.

3.4.1 Method

We provided 624 pupils, aged 16-18 years old at 17 different secondary schools in the Netherlands with either a regular product (a packed slice of gingerbread or orange juice) or with a functional food product (a slice of gingerbread enriched with calcium or orange juice full of vitamins). Pupils in a single classroom received either a regular good or their functional equivalent. In half of the classes, the participants were asked to remember a 7-digit number, whereas pupils in the other half of the classes were asked to remember a 2-digit number. Two goods were randomly distributed in the classrooms together with a similar questionnaire as used in Experiment 1, which included one extra question about the functionality of the goods.

3.4.2 Results

Table 3.3 shows product attitude judgments (on bipolar 7-point scales) for regular and functional food products. The outcomes indicated that judgments for the two goods differed significantly in the aspects 'not fattening,' 'gives energy,' 'improves resistance,' 'improves bones/teeth,' and 'functionality.' All judgments concerning functionality, except the 'not fattening' perception, were significantly more positive for the functional food products than for the regular food products. Apparently, the functional food products were perceived as more functional and to some extent healthier, which has shown that the food type

manipulation was successful. No significant differences were found between the two product types for hedonic product attributes.

Table 3.3 Average product attitudes, and t-values for product attitude differences

Attributes	Regular food product	Functional food product	t-value
Taste	4.96	4.97	−.03
Appearance	4.88	4.97	−1.09
Satisfying effect	4.48	4.43	1.04
Healthiness	5.19	5.11	1.81
Not fattening	4.64	4.52	3.07 **
Gives energy	4.87	4.96	−3.02 **
Improves resistance ^a	4.96	5.25	−4.64 **
Improves bones/teeth	3.63	4.34	−11.86 **
Improves performance	4.14	4.20	−1.87
Functionality	4.55	4.68	−3.03 **
Hedonic value	4.86	4.87	−.23

* $p < .05$, ** $p < .01$,

^a based on experiment with orange juices

A similar control variable as in Experiment 1 was computed to analyze the differences in pupils' judgments of feelings of responsibility and control in both experimental conditions. Independent of product type and for the pupils who received a functional endowment, we found a significant difference between both cognitive load conditions for the control variable ($p < .01$). When pupils did not experience cognitive load, they felt more in control compared to pupils who experienced cognitive load indicating that the cognition manipulation was successful. There were no significant differences within the two cognitive load conditions between the two goods.

Table 3.4 shows the pupils' choices by experimental condition. In the endowment condition without cognitive constraint, 72.5% wanted to keep the regular food product, whereas 85.1% wanted to keep the functional food product. With cognitive constraint, 82.6% wanted to keep the regular product, whereas 84.6% wanted to keep the functional product.

Table 3.4 Product choices by type of endowment and cognitive constraint condition

Initial situation	Product choice		Total
	Regular good	Functional good	
Endowment regular food product			
Without cognitive constraint	72.5%	37.6%	149
With cognitive constraint	82.6%	17.4%	172
Endowment functional food product			
Without cognitive constraint	14.9%	85.1%	141
With cognitive constraint	15.4%	84.6%	162

The cognitive constraint increased the overall endowment effect, but not significantly so ($\chi^2 = 2.46$, *n.s.*) and tended to increase the endowment effect for the regular good more than for the functional good. For the regular endowment group, significantly more pupils chose to keep their endowment when they were cognitively constrained than when not experiencing cognitive load ($\chi^2 = 4.70$, $p < .05$). In the functional endowment condition, we found no significant difference in food preferences between both cognitive load conditions ($\chi^2 = .02$, *n.s.*). It appeared that cognitive load more strongly influenced the endowment effect for the regular food product than for the utilitarian functional food product.

3.4.3 Discussion

The most important attitude differences between the regular and the functional food products were the impact on bones and teeth as well as the improvement on some other functional attributes. All of these judgments were significantly more positive for the functional food product. The results of Experiment 2 have shown, in agreement with these differences, that cognitive constraints more strongly influenced the endowment effect of the regular product than for the utilitarian functional food product, which is consistent with Hypothesis 2. The outcomes of the responsibility questions have shown that especially the pupils who received the functional food product felt less control over and responsibility for their choice when their cognitive capacity was limited.

3.5 Summary overall results

This summary focuses on the overall influence of cognitive constraints on the endowment effect of food products and in particular on the specific product type effects.

3.5.1 Results

The results of the control variable have shown a significant difference in participants' judgment of control in both experimental conditions independent of product type in endowment ($p < .01$). Participants' feelings of responsibility and control were more positively evaluated in the condition without cognitive constraints compared to the constraints case. The results in Table 3.5 show that choices differed by experimental condition.

Table 3.5 Choices of keeping or exchanging the product in endowment by cognitive load condition

Condition	Decision concerning product in endowment		Total
	Keep product	Exchange product	
Without cognitive constraints	71.3%	28.7%	677
With cognitive constraints	78.2%	21.8%	762

Without cognitive constraints 71.3% wanted to keep their good in endowment, whereas with cognitive constraints 78.2% preferred to keep their endowment. Pupils were

more likely to keep a good in endowment than exchanging it for the alternative when experiencing cognitive constraints ($\chi^2 = 9.02, p < .01$).

In addition, a probit regression analysis was conducted to show what was important in explaining the stronger endowment effect in a cognitively constrained choice situation. Table 3.6 shows that cognitive load condition as well as, to a much larger extent, product type were significant in explaining the choice to keep a product in endowment ($p < .01$).

Table 3.6 Probit regression of keeping a good in endowment instead of exchanging

	Regression coefficient	Coefficient / standard error
Constant	.36	5.86 **
Cognitive load ^a	.22	3.01 **
Type of endowment ^b	.43	5.82 **

** $p < .01$

^a reference category: no cognitive load

^b hedonic/regular. Reference category: utilitarian/functional

Endowment of a hedonic good as well as being cognitively constrained in the choice condition explained pupils' choices to keep a given endowment. The introduction of an interaction effect between cognitive load condition and product type, excluded in Table 6, has shown that hedonic food products in a cognitive constraint condition did not change the number of pupils preferring to keep their endowment (.197, *n.s.*).

3.5.2 Discussion

Overall results showed that, due to a decrease in participants' feeling of control in decision making when experiencing cognitive constraints, more pupils preferred to keep their good in endowment. Being forced to rely on a more intuitive type of decision making increased the endowment effect of food products. A probit regression analysis confirmed the influence of cognitive constraints on the endowment effect and in addition indicated the importance of product type on the endowment effect. The type of good was important in explaining the choice to keep a good in endowment with hedonic/regular goods showing a higher endowment effect than utilitarian/functional goods. Although, the interaction effect of type of endowment and cognitive load condition indicated a stronger endowment effect for hedonic goods when experiencing cognitive constraints, this effect was not significant in explaining the stronger endowment effect.

3.6 Conclusions and recommendations

In this chapter, we have focused our attention on the impact of cognitive constraints on the endowment effect of food products. Both experiments showed that cognitive constraints, induced by the number-recall task, influenced participants' decisions to keep or exchange their given goods. This effect was due to different perceived responsibility and feeling of control

over the choices made across the cognitive constraint conditions. In general, the participants indicated, by answering the responsibility questions in the questionnaire, that they felt less control over their choice when their cognitive capacity was limited. This lack of control reflected on the choices they made in keeping or exchanging their food products. The overall results showed that the endowment effect was significantly stronger in the condition when participants were cognitively constrained than in the unconstrained condition, which has confirmed Hypothesis 1. According to Kahneman (2003) consumers seem to make more use of their intuitive decision mode when their analytic decision mode is less accessible. The intuitive type of decision making causes consumers to be more sensitive to biases such as loss aversion, which is in agreement with these results showing that participants were more likely to keep their endowment when they experienced cognitive load.

Hypothesis 2 stated that the influence of cognitive constraints on the endowment effect would be stronger for hedonic food products than for utilitarian food products. The first experiment focused on hedonic versus utilitarian food products. The results of this experiment showed that cognitive constraints strongly increased the endowment effect of the more hedonic food products that has confirmed Hypothesis 2. Shiv and Fedorikhin (1999) found that a reduction of consumers' cognitive capacity led to a stronger preference for hedonic goods. Their findings are consistent with the results we found in Experiment 1 where the endowment effect increased more strongly for hedonic goods in the cognitive load condition than for utilitarian goods indicating a stronger preference to keep a hedonic endowment when participants were cognitively constrained.

The second experiment focused on functional versus regular food products. The results of this experiment showed that the endowment effect for the functional food product was not influenced by cognitive constraints, while the endowment effect for the regular product strongly increased when pupils experienced cognitive load. To the extent that the functional good scored more positively on most utility aspects, the regular good could particularly be valued for its hedonic value. A stronger endowment effect for regular goods in a cognitive constraints condition is then in agreement with Hypothesis 2. Black and Campbell (2006) suggest that consumers make explicit choices for specific nutrients and their health benefits. The results of this experiment show that consumer preferences for these functional types of goods are not influenced by a decrease in cognitive ability. The outcome of the control variable, which has shown that especially pupils in the functional endowment condition felt less in control, suggests the participants' need for cognitive ability in these choice situations. Independent of experimental condition, participants' choices for functional food products showed a strong endowment effect for these type of goods. However, these are apparently not induced by a more intuitive decision mode, which is compatible with the explicit choice suggestion for functional food products by Black and Campbell (2006).

Our findings indicate that the type of decision process as well as product type seem to be important in consumer food choices. Endowment effects, especially concerning hedonic food products, have increased when consumers' cognitive capacity was constrained and decision processes were mostly based on intuition. Consumers are frequently distracted in different ways, thus giving little attention to their food choices. This process increases the likelihood of hedonic food choices (cf. Shiv and Fedorikhin, 1999) and subsequent difficulties

in changing consumers' often unhealthy consumption patterns. Further research should focus on the possible implications of these findings on food policies so as to contribute to the attempts of changing consumers' unhealthy food habits into a more healthy direction.

GENDER DIFFERENCES IN ENDOWMENT EFFECTS FOR FOOD PRODUCTS

ABSTRACT

Although there is some agreement on the influence of gender in different consumer decision domains like verbal or analytic skills, consumption or investments, there is still much unknown about the meaning of gender differences in consumer food choices. We study the endowment effect for food products which presumably may be related to food habits. A between-subjects experiment shows that endowment effects differ across genders for hedonic and utilitarian food products, especially when cognitive capacity is limited.

4.1 Introduction

In this chapter we will study gender differences in endowment effects for food products. Several studies focused on gender differences in consumer choices. Most of them found women to be more risk averse than men (Brooks & Zank, 2005; Charness & Gneezy, 2007; Croson & Gneezy, 2008). Schmidt and Traub (2002) explain the stronger risk aversion for women in risky lottery choice situations by different sensitivity to losses. Females seem to be more loss averse compared to males in such situations. However, loss aversion in other situations may not necessarily be related to risk aversion in lottery gambles. In this chapter we will therefore study differences in loss aversion across genders in the context of endowment effects for food products. The endowment effect refers to reduced willingness to give up on goods in one's possession to acquire an alternative, in which no risk is involved.

Loss aversion implies that negative changes with respect to a reference point (losses) have a larger impact than commensurable positive changes (gains). Utility is not based on absolute outcomes but on gains and losses relative to a neutral reference point according to Prospect Theory (Kahneman & Tversky, 1979). Loss aversion may explain consumers' preferences to keep a good in their endowment instead of giving it up for an alternative, even if they did not select the endowment themselves (Kahneman et al., 1991; Knetsch, 1995, 2001). Consumer food choices also seem to be sensitive to loss aversion or the endowment effect, depending on the type of good. Dhar and Wertenbroch (2000) found that preferences for M&M's as compared with glue sticks were more positive in forfeiture than in acquisition choices. Antonides et al. (2006) reported less willingness to exchange peppermints for pens than vice versa, suggesting a stronger endowment effect for the peppermints than for the pens.

This research relates gender to consumer food choices. We first describe the process of loss aversion in relation to gender. Next we describe an experiment on food choices across genders in different types of choice tasks and finish with some conclusions and recommendations.

4.2 Loss aversion and gender

According to Prospect Theory, consumers' perceived loss of utility when giving up a good is greater compared to the utility gain when receiving the same good (Kahneman et al., 1991; Kahneman & Tversky, 1979). This leads to a preference for one's current endowment and consumers who rather stick to their status quo than switch to an alternative. Endowment effects and status quo biases are similar phenomena and are explained by people's reluctance to part with assets in their endowment or deviate from the status quo, respectively (Samuelson & Zeckhauser, 1988; Thaler, 1980, 2000). Losses and gains are experienced in relation to a reference point. Alternatives short of the reference level are generally considered as losses, whereas alternatives beyond the reference level are generally considered as gains.

The general preference of consumers for status quo alternatives might be further explained by different types of decision processes that take place in product evaluation, such as dual processing (Cantín & Dube, 1999; Chaiken, 1980; Chaiken & Trope, 1999; Shiv & Fedorikhin, 1999). Basically, there are two different ways in which consumers can make decisions: by reasoning and by using emotions or cues. In analytic mode choices are mainly influenced by consequence-related cognitive processes, whereas in intuitive mode choices are based on automatic affective processes (Chaiken, 1980; Petty & Cacioppo, 1986). The intuitive type of decision making is likely to make consumers more vulnerable to a number of heuristics and biases, including loss aversion and the endowment effect (Kahneman, 2003). Shiv and Fedorikhin (1999) have shown that cognitive constraints may lead to more intuitive decision making. Distractions in everyday life may therefore result in more intuitive decisions based on heuristics and biases leading to stronger sensitivity for loss aversion and the endowment effect.

Several studies showed gender differences in information processing. Males more often than females use the intuitive mode of processing in which judgments are often based on heuristics using one single cue. Females, on the other hand, are more likely to use a more detailed analytic processing mode, in which judgments are preferably based on several available cues (Kempf, Palan, & Laczniak, 1997; Meyers-Levy, 1989; Meyers-Levy & Maheswaran, 1991). This difference in information processing is explained by parents' highly specified way of instructing daughters and more global interactions with sons (Meyers-Levy, 1989) and by the more specialized cortical hemispheres of males compared to females (Meyers-Levy, 1987). The right hemisphere is associated with heuristic information processing, whereas the left hemisphere is associated with analytic processing. Males' performance generally is explained by the activation of a single appropriate hemisphere, whereas females often use both hemispheres at the same time. Consequently, gender-biased decision making is expected in the context of loss aversion, with cognitive constraints differentially affecting the genders. Insofar the left 'analytic' hemisphere is almost always activated in females' decision processes, cognitive constraints are expected to influence their decisions. Males' decisions are expected to be influenced by cognitive constraints only when the left hemisphere is activated and not when

the single right 'heuristics' hemisphere is responsible for their choice. The above-mentioned theories indicate that men are more likely to use an intuitive type of decision making, which suggests men to be more vulnerable to heuristics and biases such as loss aversion than women. As a consequence, we expect cognitive constraints to have no influence on males' decision making and assume limited cognitive capacity to especially influence female food choices. In this chapter, we will therefore test the following hypotheses:

H1: In general, it is less likely for males than for females to exchange food items in their endowment.

H2: For females, exchanging one's endowment when cognitive capacity is constrained is less likely compared to the unconstrained condition, whereas for males there is no such cognitive constraint effect.

4.2.1 Interaction effects of decision process and food type concerning loss aversion

Relating dual-processing systems to food choices we can make a distinction between two basic consumption effects: 1) consummatory affective (hedonic) gratification from sensory attributes, and 2) instrumental, utilitarian functions or consequences of consumption (Batra & Ahtola, 1991). Consumption of hedonic goods can be characterized by an affective multi-sensory emotional experience, including tastes, sounds, scents, tactile impressions and visual images, which are far more subjectively than objectively oriented (Hirschman & Holbrook, 1982). Utilitarian goods are those whose consumption is more cognitively driven, instrumental, and goal oriented and which accomplish a functional or practical task (Dhar & Wertenbroch, 2000). Dual decision processes may lead to explicit choices of goods with either utilitarian or hedonic aspects. Dhar and Wertenbroch (2000) made a distinction between reasoned preferences as 'shoulds' and affective preferences as 'wants'. Insofar the short-term benefits of wants are easier to access than long-term consequences of shoulds come to mind, the utilitarian or hedonic value of goods might be of different importance in the two types of decision processes. Shiv and Fedorikhin (1999) found that a reduction of the consumer's cognitive capacity led to simplified decision processes and preference for hedonic types of food, but only if real alternatives were presented instead of pictures (Shiv & Fedorikhin, 2002). If male decisions, in such situations, are often based on a simplifying decision mode (Meyers-Levy, 1989), this may lead to a stronger preference for hedonic goods than for females. In addition, for females, cognitive constraints may lead to stronger preferences for hedonic goods compared to a condition where cognitive capacity is unconstrained. In this chapter, we will therefore also test the following three hypotheses:

H3: In a choice context it is more likely for males to prefer hedonic goods to utilitarian goods than for females.

H4: Exchanging hedonic for utilitarian food items is less likely for males than for females and vice versa.

H5: For females, exchanging hedonic for utilitarian food items is less likely when cognitive capacity is constrained compared to the unconstrained case, whereas for males there is no such constraint effect.

Loss aversion implies that consumers normally keep the good in their endowment instead of exchanging it for another good. We expect that gender differences may lead to different sensitivity to loss aversion related to food products. Next, we describe an experiment in which we test for differences in endowment effects across genders using different pairs of snacks.

4.3 Experiment concerning endowment effects, cognitive constraints and gender differences

In the experiment we first tested Hypotheses 1, 3 and 4 to explore both general differences in loss aversion across genders and differences specific to the type of food product. In the experimental conditions boys and girls were provided with food products and given the opportunity to exchange their endowment for another good. To rule out the possibility that a difference in endowment effect was due to a higher preference for one of the two goods, a control group was given a choice between the two goods, without prior endowment.

In addition, the experiment was designed to explore the different endowment effects across genders for the two types of food products when participants' cognitive capacity was constrained. Hypotheses 2 and 5 were tested to further improve the understanding of the influence of gender on endowment effects for food products.

4.3.1 Method

A between-subjects experiment was designed to test our hypotheses. We provided 991 pupils aged 16-18 years old at different secondary schools in the Netherlands with food products. Pupils in a single classroom each received one food product of a pair of goods, either a mandarin paired with a Mars bar or with potato crisps, or an apple paired with potato crisps. Pupils in half of the classrooms in either the mandarin/Mars bar or the mandarin/potato crisps condition were asked to remember a 7-digit number, thus reducing their cognitive capacity. Participants in the other half of these classes were asked to remember a 2-digit number, not influencing their cognitive capacity. This method has been tested successfully in the literature (Gilbert et al., 1995; Gilbert & Hixon, 1991; Gilbert & Osborne, 1989; Shiv & Fedorikhin, 1999, 2002). Pupils who received either an apple or potato crisps were not asked to remember a number.

In each class two goods were randomly distributed among the boys and girls together with a written questionnaire. The first item in the questionnaire concerned pupils' decisions to keep the food product which was given to them or to exchange it. Another group of 581 pupils who did not experience cognitive load were asked to make a choice between one of the food product pairs, thus serving as a control for the endowment choices in other classrooms. After answering these questions in private, pupils had to recall the given number if one was provided in their classroom. The questionnaire continued with several questions about the hedonic and utilitarian quality of the food products and for the number recall group about the influence of cognitive load on their feelings of control and responsibility for the choice they

made². The latter questions served as a manipulation check of the number recall task indicating whether subjects in the busy condition felt less in control when making their choice compared to non-busy subjects. After all pupils completed the questionnaire they received the food product of their choice or the exchange of goods was carried out for those who did not want to keep their good.

4.3.2 Results

In the experiment, all pupils in a classroom received or made a choice between either a utilitarian (apple, mandarin) or a hedonic food product (Mars bar, potato crisps). Besides their willingness to trade, a few items in the questionnaire asked the pupils to judge both goods on their utilitarian or hedonic quality. Table 4.1 shows the attitude judgments for all food product pairs.

Table 4.1 Average product judgments for utilitarian and hedonic food products by experimental condition

Attributes	Mars		Potato		Potato	
	Mandarin	bar	Mandarin	crisps	Apple	crisps
Taste	5.17	6.12	5.41	6.04	5.54	5.95
Appearance	4.49	5.73	4.79	5.51	5.07	5.32
Satisfying effect	4.82	5.09	5.11	4.68	5.41	4.61
Healthiness	6.80	1.84	6.80	2.10	6.83	2.02
Not fattening	6.06	2.61	5.96	2.73	5.88	2.59
Gives energy	4.63	5.79	4.92	4.78	5.39	4.59
Improves resistance	5.91	2.40	6.11	2.54	5.98	2.33
Impr. bones/teeth	4.60	1.87	4.32	2.43	4.66	2.33
Impr. performance	4.51	4.56	4.80	3.77	5.11	3.63
Functionality	5.96	2.87	5.86	2.85	6.12	2.87
Hedonic value	4.18	6.22	4.62	6.10	4.01	6.36

Note: differences between goods within food product pairs were all significant ($p < .01$), except for satisfying effect ($p < .05$) and performance (Mandarin/Mars bar), and energy (Mandarin/Potato crisps).

The outcomes indicate that the mandarin and the apple were perceived as more healthy and functional, whereas judgments of the Mars bar and potato crisps were more positive on hedonic attributes, showing that the manipulation check was successful. The different attribute judgments indicated that in general, one of the goods was perceived as mainly utilitarian whereas the other was specifically valued for its hedonic quality. In the next analyses we merely distinguish between utilitarian and hedonic goods. Table 4.2 shows the differences in food product perceptions across genders. Girls were more positive than boys about most of the utilitarian and hedonic attributes of the utilitarian goods, whereas boys' judgments were more positive than girls' judgments about most of the utilitarian attributes of the hedonic goods. This difference might be the result of different hemisphere activations resulting in a stronger

² Similar as described in Chapter 3

focus on hedonic goods for boys and on utilitarian goods for girls. As a consequence, this focus may result in different preferences across genders.

Table 4.2 Average product judgments for utilitarian and hedonic goods by gender

Attributes	Girls	Boys	Girls	Boys
	Utilitarian food product		Hedonic food product	
Taste	5.60 ^a	5.17 ^a	5.98	6.08
Appearance	4.96 ^a	4.63 ^a	5.50	5.52
Satisfying effect	5.24 ^b	5.04 ^b	4.61 ^a	4.95 ^a
Healthiness	6.87 ^a	6.76 ^a	1.78 ^a	2.22 ^a
Not fattening	6.35 ^a	5.58 ^a	2.28 ^a	3.01 ^a
Gives energy	5.12 ^a	4.90 ^a	4.91 ^a	5.11 ^a
Improves resistance	6.06	5.95	2.19 ^a	2.64 ^a
Improves bones/teeth	4.76 ^b	4.34 ^b	2.09 ^a	2.49 ^a
Improves performance	4.83	4.82	3.85	4.00
Functionality	6.22 ^a	5.72 ^a	2.50 ^a	3.19 ^a
Hedonic value	4.37	4.20	6.29 ^b	6.17 ^b

^a difference between boys and girls, within food product type, $p < .01$

^b difference between boys and girls, within food product type, $p < .05$

Note: differences between goods within gender groups were all significant ($p < .01$), except for satisfying effect for boys.

Tables 4.3 shows the choice percentages by experimental condition by group for the participants who were not cognitively constrained.

Table 4.3 Product choices for utilitarian and hedonic food products by endowment condition, and by gender

Initial situation	Product choice		Total
	Utilitarian	Hedonic	
Girls			
Endowment utilitarian	60.8%	39.2%	143
Endowment hedonic	31.8%	68.2%	151
Choice condition	41.6%	58.4%	267
Boys			
Endowment utilitarian	43.0%	57.0%	142
Endowment hedonic	22.0%	78.0%	132
Choice condition	34.1%	65.9%	314

Both groups of pupils who were asked to remember a 2-digit number or not asked to remember any number were considered as not cognitively constrained. Combining these two groups resulted in a large enough group of participants who were provided with different types of utilitarian and hedonic food products. Earlier studies concerning cognitive constraints considered a 2-digit number recall task as well as a no number recall task as a condition for being not cognitively busy, justifying further analysis on both experimental conditions

combined (Gilbert et al., 1995; Gilbert & Hixon, 1991; Gilbert & Osborne, 1989; Shiv & Fedorikhin, 1999, 2002).

A chi-square analysis on the preferences for the utilitarian versus hedonic goods in the choice condition without endowment, showed no significant difference across genders ($\chi^2 = 3.46$, *n.s.*). Both gender groups showed a stronger preference for hedonic goods compared to utilitarian goods. However, boys' preference for hedonic goods was significantly stronger compared to their preference for utilitarian goods ($\chi^2 = 16.34$, $p < .01$), whereas for girls no significant difference was found between preferences for the two types of goods ($\chi^2 = 3.82$, *n.s.*) confirming Hypothesis 3.

Correcting for the initial preference differences across genders in the choice condition, different endowment effects for each product type by gender were calculated. We first conducted a probit regression in which the endowment parameters of the two goods were set equal within gender groups, to show whether the endowment effect was stronger for boys or girls, independent of product type. Table 4.4 shows that the main gender effect as well as the interaction effects of gender and food endowments were significant in explaining the choice of hedonic food products.

Table 4.4 Probit regression of ending up with a hedonic good by gender

	Regression coefficient	Coefficient / standard error
Constant	.44	8.13 **
Gender ^a	-.29	-3.74 **
Girls * Endowment ^b	.37	4.98 **
Boys * Endowment ^b	.29	3.67 **

** $p < .01$

^a reference category: boys

^b absolute value of endowment effect

So, the endowment effect was significant both for girls and boys. However, a comparison of the log likelihood of this model with a model in which the endowment effect was assumed equal across genders showed no significant difference in the overall endowment effects for girls and boys as shown in Table 4.4 ($\chi^2 = .55$, *n.s.*), thus refuting Hypothesis 1.

Next, we conducted another probit regression to show whether the endowment effect for each product type differed across genders for the group not experiencing cognitive load. Table 4.5 shows that the interaction effects of girls with utilitarian endowments as well as the interaction of girls and boys with hedonic endowments were significant in explaining the choice of hedonic food products. So, endowment effects were significant for both types of goods for girls and only for hedonic goods for boys. The endowment coefficients were not much different, however. Comparisons of the log likelihood of this model with models in which the endowment effect of either utilitarian goods or hedonic goods was assumed equal across genders or in which the endowment effect of both types of goods was assumed equal for each gender group, showed no significant differences, thus refuting Hypothesis 4.

Table 4.5 Probit regression of ending up with a hedonic good by endowment condition, and by gender

	Regression coefficient	Coefficient / standard error
Constant	.41	5.63 **
Gender ^a	-.20	-1.86
Girls * Endowment utilitarian ^b	-.49	-3.71 **
Boys * Endowment utilitarian ^b	-.23	-1.81
Girls * Endowment hedonic ^b	.26	1.98 *
Boys * Endowment hedonic ^b	.36	2.56 *

* $p < .05$, ** $p < .01$

^a reference category: boys, ^b reference category: no endowment

In addition to the different types of food products provided in the experimental conditions, pupils were either experiencing or not experiencing cognitive constraints. A few items in the questionnaire asked the pupils who had to remember a number, to indicate their feelings of control and responsibility concerning the choice they made in keeping or exchanging their good on bi-polar 7-point scales. Table 4.6 shows boys' and girls' judgments for these items in each experimental condition.

Table 4.6 Average control item judgments by experimental condition, and by gender

Attributes	Without cognitive constraints		With cognitive constraints	
	Girls	Boys	Girls	Boys
Feeling responsible	5.57 ^c	5.65	5.08 ^{b,c}	5.43 ^b
Experimenters' responsibility	2.41 ^d	2.57 ^c	2.73 ^d	3.00 ^c
Choice reflects behaviour	4.71 ^c	4.55	4.27 ^c	4.45
Control over choice	6.37 ^{a,c}	6.14 ^a	6.00 ^c	6.01
Influence on choice	6.20	6.05	6.02	5.89
Feeling powerless	1.52 ^{a,c}	1.81 ^a	1.92 ^c	1.78
Feeling guilty for trading	2.37 ^{a,d}	2.07 ^a	2.14 ^d	2.21
Good excuse for keeping	3.43 ^a	3.83 ^a	3.46	3.63

^a difference between boys and girls, within cognitive constraint condition, $p < .01$

^b difference between boys and girls, within cognitive constraint condition, $p < .05$

^c differences within gender group, between conditions, $p < .01$

^d differences within gender group, between conditions, $p < .05$

In particular girls noticed the influence of the cognitive constraint on their feelings of control and responsibility for the choice they made. Girls who did not experience cognitive load felt more responsible and in control compared to girls who experienced cognitive constraints ($p < .05$). For boys we found one significant difference across cognitive load conditions, boys who experienced cognitive load indicated more often that the experimenters were responsible for their choice compared to boys who did not experience cognitive constraint. Within the group experiencing cognitive load the only significant effect was that

boys felt more responsible for their choice than girls ($p < .05$). However, there were several significant differences across genders within the non-cognitive load condition ($p < .01$). Girls felt more in control and more guilty for trading compared to boys, whereas boys felt more powerless and receiving a food product a good excuse for keeping it. The results show that our manipulation check was in agreement with earlier findings. Girls more than boys felt manipulated in their cognitive activity which indicates that girls used both hemispheres in these type of choices, whereas for boys food choices solely activated the right ‘heuristics’ hemisphere.

To study gender differences of keeping a good in endowment by gender and by cognitive constraint condition, both number recall task groups, either a 2-digit or a 7-digit number, were included in the analysis. Table 4.7 shows choice percentages of keeping a good in endowment by gender in each of the experimental conditions. A chi-square analysis showed that in general girls were significantly more likely to keep their good in endowment when experiencing cognitive constraints compared to the unconstrained case ($\chi^2 = 4.62, p < .05$). For boys we found no significant difference between both cognitive load conditions ($\chi^2 = 2.00, n.s.$) confirming Hypothesis 2.

Table 4.7 Product choices for utilitarian and hedonic food products by endowment condition, cognitive constraints condition, and by gender

Initial situation	Product choice		Total
	Utilitarian	Hedonic	
Girls			
Without cognitive constraints			
Endowment utilitarian good	63.4%	36.6%	101
Endowment hedonic good	25.8%	74.2%	97
With cognitive constraints			
Endowment utilitarian good	65.7%	34.3%	102
Endowment hedonic good	10.7%	89.3%	112
Boys			
Without cognitive constraints			
Endowment utilitarian good	40.7%	59.3%	91
Endowment hedonic good	14.8%	85.2%	88
With cognitive constraints			
Endowment utilitarian good	52.4%	47.6%	103
Endowment hedonic good	14.2%	85.8%	106

In addition, we found significant differences between general endowment effects across genders in the cognitive constraint condition. Girls were more tempted than boys to keep their goods in endowment when experiencing cognitive constraints ($\chi^2 = 4.10, p < .05$), whereas no differences across genders were found in the non-cognitive constraints condition ($\chi^2 = 1.56, n.s.$) which is in agreement with the probit regression in Table 4.4.

Another chi-square analysis showed a significant difference in preferences to keep a good in endowment across genders by product type. Girls were significantly more tempted to keep their hedonic endowment when experiencing cognitive constraints, compared to the

unconstrained case ($\chi^2 = 8.09, p < .01$). For utilitarian goods we found no significant difference between cognitive load conditions for girls ($\chi^2 = .12, n.s.$). For boys, no significant differences between both conditions were found for both type of goods in endowment (utilitarian goods: $\chi^2 = 2.69, n.s.$; hedonic: $\chi^2 = .02, n.s.$) in agreement with Hypothesis 5.

4.3.3 Discussion

In the experiment we focused on differences in endowment effects for different types of food products across genders. The outcomes showed that the food products were indeed valued for either their utilitarian aspects or hedonic quality and in addition that our cognitive constraints manipulation was successful especially for girls, in line with our expectations. Girls often use a detailed processing mode, whereas boys also use a more intuitive heuristic processing style (Kempf et al., 1997; Meyers-Levy, 1989; Meyers-Levy & Maheswaran, 1991). As a consequence, especially girls might feel constrained in using their more analytic processing style when experiencing cognitive load. Boys activate a single appropriate hemisphere for either a more heuristic or analytic processing style. The outcomes of this experiment showed that cognitive constraints barely influenced boys' food choices indicating that for our exchange tasks boys used a more intuitive processing style than girls.

In the choice condition, boys showed a stronger preference for hedonic goods which is in agreement with Hypothesis 3 and suggests a more intuitive processing style for boys according to the findings by Shiv and Fedorikhin (1999). In addition, the outcomes of the probit analysis showed a significant main gender effect indicating that boys more often ended up with a hedonic food product in this experiment. Hypotheses 4 and 5 focused on differences in endowment effects for the specific types of food products across genders in the unconstrained and constrained conditions. The outcomes suggest relatively strong endowment effects for utilitarian goods for girls and relatively strong endowment effects for hedonic goods for boys, although these differences were not significant, hence not confirming Hypotheses 4. The strong preference of boys for hedonic goods may have precluded strong endowment effects for this type of goods because an even higher preference was hardly possible. Comparisons across the cognitive load conditions showed that the girls' endowment effect for hedonic goods was significantly stronger when they experienced cognitive constraints, compared to the unconstrained case, confirming our assumptions. Especially the girls' choice of hedonic goods was expected to be influenced in case their cognitive capacity was limited.

The results could not confirm our first hypothesis in which we expected boys to be more likely to keep their good in endowment independent of product type. However, we did find significant differences in overall endowment effects, independent of product type, across genders between both cognitive constraint conditions. Girls were more likely to keep a good in endowment when cognitively constrained compared to boys, in agreement with our expectations. Because cognitive constraints did not influence the endowment effects for boys, a heuristic processing style seemed most appropriate, suggesting also a stronger overall endowment effect for boys than for girls when not experiencing cognitive constraints. The reason that our results did not confirm a stronger overall endowment effect for boys might be related to the actual preference differences across genders indicated above. The overall endowment effect analysis in the non-cognitive constraints group took into account the actual

preference differences for both types of goods in the choice condition, whereas the comparisons of endowment effects in both cognitive constraint conditions merely distinguished between the choices to keep a good in endowment by experimental condition across gender groups, neglecting the choice condition. As a consequence, results related to the cognitive constraint conditions were in agreement with our hypothesis, but significant preference differences across genders in the choice condition may also have caused difficulties in finding differences in overall endowment effects across genders, independent of product type. A somewhat equal distribution of actual preferences in the choice condition for both gender groups may be necessary to be able to compare endowment effects across genders.

4.4 Conclusions and recommendations

In this chapter we focused on gender differences in food choices. Grogan, Bell and Conner (1997) found differences in attitudes towards food products across genders. In line with their results we also found girls' perceptions of the healthiness aspects of hedonic food products to be more negative compared to boys, possibly causing different preferences for food products across genders. In accordance with the literature (Meyers-Levy, 1989, Shiv & Fedorikhin, 1999) we found a stronger preference for hedonic goods for boys in the choice condition compared to girls, in agreement with our assumptions. Boys seemed to activate the right 'heuristics' hemisphere in case of a food choice task. In addition, this resulted in girls and boys responding significantly different to cognitive constraints in their decision making. Girls were more tempted to keep goods in their endowment, especially hedonic goods, when they experienced cognitive constraints compared to girls not experiencing cognitive constraints. This finding was in agreement both with our hypotheses and with the findings of Shiv and Fedorikhin (1999) who showed that simplified decision processes induced relatively strong preferences for hedonic types of goods. Outcomes of a few items in the questionnaire showed that girls perceived a stronger influence of the number recall task on their feelings of control compared to boys. Because girls almost always activate their left hemisphere and make use of a more detailed processing mode (Meyers-Levy, 1987), cognitive constraints have a strong influence on their decision mode and especially girls might feel constrained in using their more analytic processing style when experiencing cognitive load. When analytic reasoning is limited, intuition dominates reasoning and emotions take over, resulting in stronger endowment effects for especially hedonic goods. For boys we found no significant differences in endowment effects of both types of goods across the experimental conditions which might be explained by a more intuitive decision mode for boys in both conditions. Males' activation of a single appropriate hemisphere in a choice task shows their use of either an analytic or a heuristic decision mode. The lack of a significant influence of the number recall task on their feeling of control also indicates activation of the right hemisphere in such choice situations. An earlier study by Read and Van Leeuwen (1998) focused on the effect of delay on unhealthy food choices. They found that women chose an unhealthy snack more often in immediate choices than men. This is opposite to our expectations and findings that boys more often chose a hedonic food product in the choice condition compared to girls. The different findings might be related to the different samples used in the two experiments. Because their study was conducted in an

office setting, their sample consisted of the companies' workforce, whereas we focused on pupils of secondary schools. Further research is needed to find out whether the different stages of life in the two studies may have caused the different outcomes.

The findings in our study indicate differences in endowment effects across genders especially for hedonic goods and in case of cognitive busyness which is of interest for food policy recommendations. If male food decisions often lead to the activation of the right hemisphere, choices are mostly based on a simple heuristic cue. Providing information will be of limited value and unconscious processes like reference point effects may be of particular interest in attempts to change male food choices. Distractions in every day life may lead to more hedonic 'unhealthy' types of food choices, especially for girls. Further research should focus on the possible implications of these findings in attempts to change consumers' unhealthy food consumption patterns.

FRAMING EFFECTS: INFLUENCING THE ENDOWMENT EFFECT FOR HEDONIC FOOD PRODUCTS

ABSTRACT

Consumers tend to value a product in their possession more than the same product not in their possession, indicating the endowment effect. This chapter describes three experiments in which we test the influence of different types of message framing on the endowment effect for hedonic food products. Results of these experiments show that message framing, i.e., focusing either on consumption goals or product attributes of a healthier alternative reduces the endowment effect for hedonic food products.

5.1 Introduction

In standard economic models consumer choices are based on absolute outcomes and consequently are about equally sensitive to positive and negative deviations from a given status quo. However, other studies use concepts such as loss aversion or status quo bias in which consumer choices differ according to their perspective of gaining or losing a good and according to their reference point of evaluation, respectively (Kahneman, 2003; Kahneman & Tversky, 1979). Consumers endowed with a good, even if they did not select it themselves, tend to keep the product rather than give it up for an alternative, which is described by the concepts of loss aversion and status quo bias, and which is also termed the endowment effect (Kahneman et al., 1991; Knetsch, 1995, 2001). These effects are explained by the stronger impact of losses compared to equivalent gains which is defined by the S-shaped value function of Prospect Theory which is concave in the domain of gains, and convex and much steeper in the domain of losses than in the domain of gains (Kahneman & Tversky, 1984).

Consumer food choices are, especially when they become habitual, often intuitively made. Intuitive decision making is likely to make consumers more vulnerable to a number of heuristics and biases including loss aversion (Kahneman, 2003). Biased decision processes may result in consumers ending up with too much affective ‘wants’ relative to reasoned ‘shoulds’ preferences. ‘Wants’ are preferences for goods with immediate benefits, but which might harm in the long run, whereas ‘shoulds’ are preferences for goods which are beneficial in the long run (Bazerman et al., 1998; Dhar & Wertenbroch, 2000). Batra and Ahtola (1991) make a distinction between goods which provide either an affective gratification from sensory attributes (hedonic goods) or which provide instruments to accomplish a goal (utilitarian

goods). As a consequence, biased decision making may have led to changing consumption patterns and an increasing prevalence of overweight and obesity in industrialised countries in the last twenty-five years (WHO, 2000).

Because losses are considered as more painful than similar gains provide pleasure, preferences for alternatives may change subject to whether the alternatives are experienced in the loss or gain domain of the value function. For example, given a choice between keeping a mug or giving it up for a chocolate bar one might prefer the mug, but given a choice between keeping a chocolate bar or giving it up for a mug, one might prefer the chocolate bar (Knetsch, 2001). Providing information about positive or negative aspects of choice alternatives may result in a change of the reference point of evaluation resulting in preference reversals and leading to, for example, less strong 'want' preferences. This research is a first attempt to show the impact of message framing on the status quo bias associated with hedonic food choices. We first describe the process of message framing in relation to food choices. Next, we describe three experiments in which we manipulate the type of framing and information in a choice task. We finish with some conclusions and recommendations.

5.2 Framing, loss aversion and food choices

Prospect Theory states that ranges of outcomes of a value function can either be experienced as gains or as losses (successes or failures) depending on their position in relation to a reference point (Kahneman & Tversky, 1979). Outcomes that are encoded as losses are generally considered more painful than similar-sized gains are considered pleasurable, and both types of outcomes have less marginal impact the more distant they are from the reference point. Goals may also serve as reference points and if so, people who set goals will feel bad when their performance falls short of the reference point even when they perform better than before. In the behavioural decision literature, such results have been labeled "framing effects" (Heath et al., 1999). Preferences for different goods may change subject to how one perceives what is given up or received (Tversky & Kahneman, 1991). The status quo normally serves as the reference level, hence alternatives can become more interesting when portrayed as the status quo (Thaler, 1980). Reference levels can therefore play a large role in determining preferences (Hartman et al., 1991). It is therefore likely that consumer food habits can partly be explained and maybe influenced by reference point effects, because they may be considered as a preference for the status quo type of food intake (Kahneman, 2003; Knetsch, 1995; Samuelson & Zeckhauser, 1988; Thaler, 1980).

5.2.1 Message framing

The effectiveness of persuasive messages in changing consumer preferences strongly depends on the type and way of framing (Tykocinski et al., 1994). Even in a specific area like health behaviour different aspects of the message, but also of the target behaviour, influence the effect of the message (Rothman, Salovey, Antone, Keough, & Martin, 1993). Studies that have compared positively and negatively framed persuasive messages provide some support for the expectation that potential losses or negative messages are more salient and are weighted more heavily than potential gains or positive messages (Maheswaran & Meyers-Levy, 1990;

Tykcinski et al., 1994). Also, negative news about, for example, food safety risk is more important in consumer decision making than positive news about possible health benefits (Verbeke, 2008). Results of an experiment by Maheswaran and Meyers-Levy (1990) showed that these outcomes especially hold in case of high consumer involvement in decision making. However, under low involvement conditions positively rather than negatively formulated messages were evaluated as more persuasive.

Another important aspect is the nature of the behaviour which is being promoted by message framing. Framing studies have examined health messages related to detecting a health problem, preventing a health problem, as well as those that can alleviate a health problem. The first two activities are of most interest in the context of this chapter. The perceived risk associated with detection behaviour is suggested to be important in explaining the effectiveness of negatively framed messages in this area. A loss formulation stimulates risk-seeking behaviour in order to hopefully being able to reduce the loss (Meyerowitz & Chaiken, 1987). Positively framed messages are found to be more effective in promoting prevention behaviours, probably because of consumers' risk aversion when evaluating gains (Rothman et al., 1993).

Levin, Schneider and Gaeth (1998) distinguish between three forms of framing in explaining the different effects of framing type; framing of risky choices, introduced by Tversky and Kahneman (1981), attribute framing and goal framing. This research focuses on attribute framing in which messages are formulated in terms of positive or negative features of goods, and goal framing in which the positive or negative consequences of performing or not performing certain behaviour are stressed. The effectiveness of a message focusing on product attributes or formulated as goals to achieve, further depends on whether the message is positively or negatively formulated. For attribute and goal framing contrasting effects were found for messages framed either in a positive or in a negative way. Several attribute framing experiments showed that positive framing of attributes led to more favorable evaluations of the object or event than negative framing. For example in an experiment by Levin and Gaeth (1988) consumers rated several qualitative attributes of ground beef as more favourable concerning beef labeled "75% lean" (positive framing) than beef labeled "25% fat" (negative framing). However, other studies showed that negatively framed attribute messages evoke a more thorough decision process, which in some cases may have led to a more favourable effect of the framing message (Kuvaas & Selart, 2004).

In goal framing, positively framed messages focus on the possible gains of performing a specific behavior, whereas negatively framed messages focus on avoiding possible losses as a consequence of not performing the same behaviour. Results of several experiments showed a greater impact of negatively framed messages. For example a study by Meyerowitz and Chaiken (1987) showed that negatively framed messages were more effective in persuading women to perform breast self-examination (BSE). They ascribed this effect to the loss formulation, which seems, also according to Rothman et al. (1993), to be most effective in encouraging health detection behaviour. Women were more motivated to perform BSE when negative consequences of not performing were stressed in contrast to the positive consequences of performing BSE. Conversely, prevention behaviour needs positive message framing to encourage people to perform it (Rothman et al., 1993). So, for example, a health campaign to

encourage people to eat more healthy would ask for a positively framed message. In attribute framing the positive frame refers to something desirable and the negative frame to something undesirable about the options. Levin et al. (1998) explain that consumers' attention in cases of attribute framing in negative and positive frames is "pushed" in opposite directions. Effective "pushes" will lead to more favourable responses in a positive framing than in a negative framing condition. In contrast, both positive and negative (to avoid the negative outcome) goal framing formulations encourage consumers to perform the same behaviour. Table 5.1 summarizes the effects of several aspects of message framing.

The different effects of framing types suggest the need to be very careful in formulating messages. When distinguishing between goal and attribute framing positive messages are expected to be most effective in attribute framing (under low involvement conditions, such as food choices), whereas negative messages are expected to be most effective in goal framing (under health problem detection conditions). However, reducing the endowment effect of hedonic food products can be categorized as a health prevention behaviour which fits more with a positive formulation of the goal framing message. The following hypothesis will therefore be tested in this chapter:

H1: Message framing focused on product attributes or consumption goals will be more effective in reducing the endowment effect for hedonic food products in a positive formulation than in a negative formulation.

Table 5.1 Summary of types of framing effects

Type of framing	Specific condition	Most effective formulation
Attribute framing	Low involvement	Positive
	High involvement	Negative
Goal framing	Health problem prevention	Positive
	Health problem detection	Negative

5.2.2 Focusing

So far, we focused on the type of framing and the influence of different messages in changing certain types of behaviour. Another interesting aspect in this area of research is the focus of attention. Usually, the status quo alternative is preferred because one's attention is automatically more focused on this choice. Focusing on the alternative instead of the status quo in choice situations may increase the attractiveness of the alternative and consequently lead to preference reversals for both goods (Tversky & Kahneman, 1991). Unique features of the focal option seem to be important in determining preferences (Houston & Sherman, 1995). The extent to which unique features of the focal option are positive determines the attractiveness in relation to the alternative. This effect seems to be most strong when information about the goods is retrieved from memory and not externally available (Biehal & Chakravarti, 1986; Dhar & Simonson, 1992). In endowment studies the focus is often assumed to be on the reference state which is the good in possession. Instruction tasks may evoke a change in the focal option by emphasizing the features of the alternative and consequently lead to different preferences to keep a good in endowment according to the focus of attention.

The objective of this chapter is to investigate the impact of framing on the endowment effect for hedonic food products. A strong endowment effect for hedonic food products may lead to a more unhealthy food consumption pattern which along with an impending sedentary lifestyle may lead to an increasing prevalence of people being overweight. Reference effects or framing of information might be of influence in consumer food choices. For example, results of an experiment showed that a significantly larger group of people bought a snack when it was advertised as ‘new’ than when it was advertised as ‘healthy’ (Köster, 2003). Most people probably think that healthy goods cannot be tasty. This finding was supported by showing that ‘healthy’ goods usually are not used as a reward as opposed to hedonic ‘unhealthy’ goods which often serve this purpose (Roininen, Lähteenmäki, & Tuorila, 1999). To investigate the effect of focus of attention on the endowment effect, the following hypotheses will be tested:

H2: Focusing on a utilitarian alternative will decrease the endowment effect for a hedonic good, especially when information about the alternative is retrieved from memory

Next, we describe three experiments in which we try to influence the status quo bias for hedonic food choices by message framing aimed at promoting utilitarian food choices.

5.3 Experiment 1. Goal versus attribute framing

In this experiment we tested the assumption that message framing by focusing either on consumption goals or product attributes influenced the endowment effect for hedonic food products. Participants were provided with a relatively unhealthy hedonic food product. Their willingness to trade this product for a healthier utilitarian alternative showed the effect of different types of message framing in reducing the endowment effect for a hedonic food product.

5.3.1 Method

In a between-subjects experiment, 606 pupils of 18 Dutch secondary schools were initially endowed with a hedonic food product. In addition, they received a framing message, either negatively or positively formulated and either related to consumption goals or to product attributes. So we employed a 2 (positive versus negative) \times 2 (goal versus attribute) factorial design and compared this with the outcomes of a simple endowment experiment without message framing. The simple endowment effect experiment was run in a similar group of pupils. The framing message was related to the food product they received and the utilitarian alternative (see Appendix 1). When the pupils indicated their appreciation for both goods, they were asked whether they wanted to keep their endowment or exchange it for the alternative food product. A Mars bar served as the hedonic snack, an apple served as the utilitarian alternative.

5.3.2 Results

Table 5.2 shows the percentages of pupils choosing one of the goods by experimental condition. Without message framing only 14% wanted to exchange their Mars bar for an apple.

Compared with the no-framing condition, each framing manipulation had a statistically significant effect on product choice. On average 29% wanted to exchange their Mars bar for an apple due to the framing manipulations. These results indicate that message framing decreased the endowment effect for the hedonic good in favor of the utilitarian food product. Post-hoc analyses did not show significant differences across the four framing conditions.

Table 5.2 Choices between apples and Mars bars by framing condition

Initial situation	Product choice			Chi-square
	Apple	Mars bar	Total	
Endowment Mars no framing	14% ^a	86%	146	
Endowment Mars				
Positive attribute framing	25% ^b	75%	183	5.79 *
Negative attribute framing	30% ^b	70%	172	10.51 **
Positive goal framing	34% ^b	66%	132	14.87 **
Negative goal framing	26% ^b	74%	119	5.66 *

^{a,b} Same superscripts are not significantly different, different superscripts are significantly different

* $p < .05$, ** $p < .01$

All participants judged their appreciation towards both goods on 5-point bi-polar scales before they decided to keep their hedonic food product or exchange it for the utilitarian alternative. Table 5.3 shows participants' judgments of both goods in the different framing conditions.

Table 5.3 Judgments of both goods by framing condition

Framing type	Appreciation	Appreciation
	apple	Mars
Positive attribute framing	4.45	3.09
Negative attribute framing	4.45	2.95
Positive goal framing	4.40	3.15
Negative goal framing	4.33	3.21

The outcomes show that framing type led to small differences in appreciation of especially the Mars bar. A negative type of attribute framing resulted in the lowest appreciation of the Mars bar. However, these rating scores were not significantly different.

Next, we conducted a probit analysis to study the effect of product attitudes on the food product choices. Table 5.4 shows that the attitude difference between the apple and the Mars bar was a significant factor in explaining the choice for an apple. The attitude difference, indicating a relatively positive attitude towards the apple and a relatively negative attitude towards the Mars bar, was important in the decision to exchange the Mars bar for an apple.

Table 5.4 Probit regression of attitude difference on utilitarian food choice

	Regression coefficient	Coefficient / standard error
Constant	-1.05	-12.00 **
Attitude difference	.30	8.05 **

** $p < .01$

5.3.3 Discussion

The results of experiment 1 showed that message framing influenced the status quo bias for a hedonic food product leading to a healthier food choice. Attribute framing seemed to be most effective in changing the attitudes towards both goods, especially when negatively formulated. For goal framing a positively framed message was most effective in changing attitudes which was in line with what we expected. However, none of the different attribute framing types was significantly more effective than the other types, which was not in line with our expectations in hypothesis 1. The fact that all the earlier studies found many different factors influencing the effect of framing in a choice task leading to mixed results, just confirm the difficulties in finding an effective way of framing in a specific situation. In the next two experiments messages were either focused on the status quo or the alternative to further improve our understanding of the effects of framing related to food choices.

5.4 Experiment 2. Focus and framing

In this experiment we provided two fresh groups of participants with either the hedonic good or the utilitarian alternative used in Experiment 1. In addition they either received information which was focused on their endowment or the alternative, or received a writing task about one of the two types of food products to focus their attention on their endowment or the alternative. After finishing the writing task or receiving the information, participants were asked for their willingness to exchange their endowment for the other good which was handed out in the classroom.

5.4.1 Method

In the first of these two experiments a group of 594 pupils from Dutch secondary schools received either a hedonic good (Mars bar) or a utilitarian good (apple) and received information about one of the two goods. In this 2 (information: utilitarian/hedonic good) \times 2 (endowment: hedonic/utilitarian) \times 2 (focus: endowment/alternative) factorial design participants indicated whether they preferred to keep the good in their endowment or exchange it for the alternative. Both messages were formulated in terms of attributes as well as goals, in which the information about the apple was positively formulated, whereas the information about the Mars bar was negatively formulated. The goal was formulated in terms of feeling more healthy which could be reached by choosing an apple or by not choosing the Mars bar. See Appendix 2 for examples of the framing messages.

In the second experiment, another group of 1064 pupils from Dutch secondary schools in different cities in the Netherlands received one of the same two goods used in the other

experiments together with a different questionnaire. In this 3 (framing: no framing/attribute framing/goal framing) \times 2 (type: positive/negative) \times 2 (endowment: apple/Mars bar) \times 2 (focus: endowment/alternative) factorial design participants were first asked to write down in terms of attributes or goals why it was better to avoid a Mars bar or to include an apple in one's food pattern. When their attention was focused by this task the participants could indicate whether they preferred to keep the good in their endowment or exchange it for the alternative. The control condition consisted of one part of the group who were not asked to write down something about one of the two goods. The questionnaire continued with questions about the utilitarian and hedonic qualities of both goods and two questions about their hypothetical performance on a food choice task. We varied the structure of the questionnaires in different versions to avoid order effects.

5.4.2 Results

Table 5.5 shows food product choices in each of the four framing conditions when information was provided. The outcomes indicated that pupils' food product choices differed significantly depending on the given endowment suggesting an endowment effect. However, there were no significant differences between pupils' choices to keep the good in their endowment when the message was focused on either their endowment or the alternative, or when the message was focused on the utilitarian or the hedonic food product.

Table 5.5 Choices between apples and Mars bars in endowment and framing conditions

Initial situation	Product choice		Total
	Apple	Mars bar	
Apple focus			
Endowment apple	58.9% ^a	41.1%	151
Endowment Mars	22.7% ^b	77.3%	150
Mars bar focus			
Endowment apple	55.0% ^a	45.0%	149
Endowment Mars	23.6% ^b	76.4%	144

^{a,b} Figures with the same superscripts were not significantly different, figures with different superscripts were significantly different ($p < .05$)

The pupils who were first asked to focus their attention by the writing task, were also asked to judge both goods on their utilitarian and hedonic quality. Table 5.6 shows that these attitude judgments were significantly different across the two types of goods. The apple was perceived as more utilitarian, whereas the Mars bar was judged more positively on hedonic quality.

Table 5.6 Average product judgments, and t-values for product attitude differences

Attributes	Apple	Mars bar	t-value
Utilitarian quality	6.27	2.52	63.09 **
Hedonic quality	4.45	6.28	-28.75 **

** $p < .01$

These judgments did not differ significantly across the goods in endowment. However, we found two significant differences between framing condition and judgments of the utility of the Mars bar (not reported here). Participants in the ‘goals to reach when avoiding a Mars framing’ scored the utility of the Mars significantly lower compared to participants in the ‘no framing’ or ‘goals to reach when an apple is included framing’ ($p < .05$). In addition, we found two significant order differences concerning the judgment of the hedonic quality of the apple. Participants who were first asked to judge the food products on their hedonic and utilitarian qualities scored higher on the hedonic value of the apple compared to participants who first answered the hypothetical food choice questions in which they received information about the apple and Mars bar. The other significant order difference was between two groups for whom the order of the questions after the judgments on utilitarian and hedonic quality differed ($p < .05$). Because we systematically varied the order, order effects were unlikely to explain the results.

Table 5.7 shows the participants’ food product choices in each of the experimental conditions of the writing task. The outcomes indicated that especially the choices for a Mars bar varied in each of the framing conditions compared to the no-framing condition. When participants in their writing task focused on ‘including an apple in their food consumption pattern’ either concerning goals or attributes, or on ‘avoiding a Mars bar in their consumption pattern,’ their preference for a Mars bar decreased. However, the only significant difference in the choice to keep a Mars bar was between a Mars focus goal type of framing and an apple focus goal type of framing ($p < .05$). We found no order effects in food product choices.

Table 5.7 Choices between apples and Mars bars in endowment and framing conditions

Initial situation	Product choice		Total
	Apple	Mars bar	
Apple focus attribute framing			
Endowment apple	52.3%	47.7%	109
Endowment Mars	28.8%	71.2%	104
Apple focus goal framing			
Endowment apple	53.2%	46.8%	109
Endowment Mars	30.3%	69.7% ^a	109
Mars focus attribute framing			
Endowment apple	51.5%	48.5%	103
Endowment Mars	27.6%	72.4%	105
Mars focus goal framing			
Endowment apple	57.3%	42.7%	103
Endowment Mars	18.5%	81.5% ^a	108
No framing			
Endowment apple	54.0%	46.0%	100
Endowment Mars	19.3%	80.7%	109

^a Same superscripts were significantly different ($p < .05$)

Finally, we asked participants to judge their performance on two hypothetical food choice tasks (Appendix 3). One was about changing a couple of Mars bar choices into apple

choices in one week. The other question was about a change into a healthier consumption pattern. Both questions were more positively answered for the participants who either decided to keep their apple or exchanged their Mars bar for an apple than for participants who ended up with a Mars bar, however this difference was not significant (not reported here).

Table 5.8 Average performance judgments by food choice task

Framing	Food choice	Consumption pattern
Apple goal	5.83 ^a	6.05 ^a
Mars goal	5.83 ^a	5.46 ^b
Apple attribute	5.80 ^a	6.06 ^a
Mars attribute	5.76 ^a	5.10 ^c
No framing	5.64 ^a	5.95 ^a

^{a,b,c} Within each column, same superscripts are not significantly different, different superscripts are significantly different ($p < .05$)

Table 5.8 shows that for the food product choice question we did not find any significant differences across the framing conditions. For the consumption pattern question we found that participants in both the framing condition focused on the apple and in the no-framing condition, judged their performance as significantly better compared to participants asked to focus on the Mars bar.

In addition, we found two order effects (not reported here). Participants whose first question in the questionnaire was to judge their performance on the food choice task judged their performance on the food consumption task as significantly better compared to participants who were first asked to judge the goods on their utilitarian and hedonic quality and made a food choice ($p < .01$). In addition, these participants judged their performance as significantly better compared to participants who were first asked to judge their performance on the consumption pattern and then on the food choice task performance ($p < .05$). So, participants' performance judgments differed in a few cases according to which of the two tasks was judged first. Since no significant differences were found between participants on the food choice task, these order effects were considered negligible.

5.4.3 Discussion

In this experiment we related the focus of attention to the influence of framing type on the endowment effect of hedonic food products. When participants were provided with information about the goods, no significant differences were found across the different focus and framing conditions. However, again a significant difference could be found when comparing the framing effects with the no-framing condition reported in Experiment 1 which was in line with the results reported in the first experiment. When participants were asked to retrieve information about the goods from their own memory, the effect on product choice was relatively strong. These results are in agreement with the findings by Biehal and Chakravarti (1986) and Dhar and Simonson (1992). Especially preferences to keep a Mars bar in one's endowment decreased when the focus of attention was on including an apple in one's consumption pattern. Houston and Sherman (1995) also reported the importance of unique

positive features on the attractiveness of the alternative. In addition, focusing on the apple resulted in participants feeling better about their performance on a hypothetical consumption pattern task. In agreement with the outcomes of Experiment 1 these results suggest that information about the food products influenced the endowment effect of hedonic goods. The outcomes of Experiment 2 add to these findings that focusing on the healthier alternative was most effective in increasing one's preference for it, but only when information was retrieved from the consumer's own memory.

5.5 Conclusions and recommendations

Short-term preferences may induce choices of relatively unhealthy hedonic food (e.g., snacks), the consumption of which then becomes susceptible to loss aversion, resulting in unhealthy food habits which are difficult to change. With respect to the issue of overweight, it is desirable to acquire a good understanding of the factors that may sustain or change consumer food habits. Several studies showed the influence of framing effects on consumer choices. Attribute framing experiments in the literature showed that positive framing of attributes leads to more favorable evaluations of the object or event than negative framing in case of low involvement (Levin & Gaeth, 1988; Maheswaran & Meyers-Levy, 1990). For goal framing, studies indicated that the effectiveness of using positively or negatively framed messages was depending on the type of behaviour which was being promoted (Meyerowitz & Chaiken, 1987; Rothman et al., 1993).

The outcomes of the first experiment showed that message framing was effective in influencing consumer choices. All different types of framing significantly reduced the endowment effect for the hedonic food product. No significant differences in food choices or appreciation of both goods were found across the different types of framing. Other studies showed that individuals assigned disproportionate weight to negatively rather than positively framed information and were more easily persuaded by it under high involvement conditions whereas the reverse was true under low involvement (Maheswaran & Meyers-Levy, 1990). Different studies found that people frequently are overly optimistic in assessing their susceptibility to health risks (Burger & Burns, 1988; Perloff & Fetzer, 1986; Weinstein, 1980). Therefore, they may rather be low-involved than high-involved in health related issues. These findings suggest that positive framing would be most effective in our study. The outcomes of Experiment 1 suggest the strongest effect in reducing the endowment effect for hedonic food in the positive goal framing condition. However, outcomes of Experiment 2 showed a significantly stronger effect in reducing the endowment effect of the Mars bar in the apple focus goal framing compared to the Mars focus goal framing. These two framing types can also be judged as a positive (apple focus) versus a negative (Mars focus) type of framing, suggesting that consumers were indeed low involved with their food choices. Influencing unhealthy consumer food choices can be categorized as health prevention behaviour which would also call for a positive formulation of the goal framing message according to Rothman et al. (1993). Our outcomes are in line with the findings of Rothman et al. (1993).

Negative attribute framing resulted in the most negative appreciation of the Mars bar, which was in contrast to what we expected to find. As a consequence, a more negative

appreciation resulted in a strong decrease of the endowment effect for the Mars bar, also described by the probit regression. It might be that in this case a negative formulation is more effective than a positive formulation, because the goal of the message is to decrease the endowment effect for the more unhealthy food product in possession. Levin et al. (1998) explain that consumers' attention in cases of attribute framing in negative and positive frames is "pushed" in opposite directions. Effective "pushes" in this case might be the less favourable responses to the more hedonic unhealthy food product in endowment, which may be more easily induced by a negative framing condition.

The framing message in the first experiment focused on both goods, but especially led to different appreciations of the Mars bar, suggesting the message to be most effective for the good in endowment. The messages in the second experiment were either focused on the food product in endowment or on the alternative and both goods were provided in the classrooms to further improve our understanding of the effectiveness of framing messages. Information retrieved from memory rather than information provided resulted in significant differences in the decrease of the endowment effect for the hedonic good, especially when the focus was on the healthier alternative in agreement with our second hypothesis. Earlier studies by Biehal and Chakravarti (1986) or Dhar and Simonson (1992) also found information retrieved from memory to be more effective than information provided.

Earlier studies showed that interventions aimed at changing attitudes by knowledge transfer have been not very successful (Brug & Van Lenthe, 2005). The results in this chapter showed that changing behaviour is difficult, but that forcing consumers to focus on healthier alternatives by retrieving information from their own memory may eventually result in healthier food consumption patterns. Providing information is still important for consumers to be able to retrieve any information from memory, but according to earlier studies might be not so effective in directly changing consumer consumption patterns. In addition, the outcomes showed that focusing on the healthier alternative resulted in more positive judgments of the participants' performance in a hypothetical food choice. So, a focus on the apple leads to more positive evaluations of one's performance, and might therefore also lead to more healthy food choices.

APPENDIX 1

Apple/Mars positive attribute frame

- An apple does not contain fat in contrast to a Mars bar
- An apple contains Vitamin C in contrast to a Mars bar
- An apple contains flavonoids in contrast to a Mars bar, flavonoids reduce the risk of cardiovascular diseases, and long cancer

Apple/Mars negative attribute frame

- A Mars bar contains fat in contrast to an apple
- A Mars bar does not contain Vitamin C in contrast to an apple
- A Mars bar does not contain flavonoids in contrast to an apple, flavonoids reduce the risk of cardiovascular diseases, and long cancer

Apple/Mars positive goal frame

Choosing more often an apple instead of a Mars bar will make you feel more healthy. An apple provides you with energy without fattening you and improves your resistance. A normal weight and good resistance will lower your risk to become ill and you will feel fit.

Apple/Mars negative goal frame

Choosing more often a Mars bar instead of an apple will not make you feel healthy. A Mars provides you with energy which fattens you and not improves your resistance. A normal weight and good resistance will lower your risk to become ill and you will feel fit.

APPENDIX 2

Apple frame

An apple does not contain fat, but contains Vitamin C and flavonoids, which reduce the risk of cardiovascular diseases, and long cancer. Choosing more often an apple will make you feel more healthy. An apple provides you with energy without fattening you and improves your resistance. A normal weight and good resistance will lower your risk to become ill and you will feel fit.

Mars frame

A Mars bar does not contains Vitamin C, but contains sugar and fat. Taking too much of these nutrients will increase your risk of chronically diseases like cardiovascular diseases, diabetes and types of cancer. Choosing more often a Mars bar will not make you feel healthy. A Mars provides you with energy which fattens you and not improves your resistance. A normal weight and good resistance will lower your risk to become ill and you will feel fit.

APPENDIX 3*Food choice task*

You just decided to eat a piece of fruit each day. You realized that you would feel healthier by eating a piece of fruit every day. Your goal is to eat a piece of fruit on 6 days of the coming week. After a week it appears that you fulfilled your task. Indicate how you evaluate your performance on the following scale.

very bad very good
 -3 0 +3

Food consumption pattern task

You just started a WeightWatchers programme. You are allowed to consume food for a total of 1000 points to reach your ideal weight. Your goal is to stick to these limits for at least 6 days a week in the coming weeks. At the end of your first week you notice that you fulfilled this goal. Indicate how you evaluate your performance on the following scale.

very bad very good
 -3 0 +3

DISCUSSION AND CONCLUSIONS

In this final chapter some concluding remarks will be made with regard to the findings of the different experiments described in this thesis. The outcomes of this study will be discussed in relation to the societal issue of influencing consumers' food choices leading to a more healthy food consumption pattern. In addition, some issues which were raised in the introduction, but not yet mentioned in the previous chapters, will be discussed to further improve our understanding of reference effects in the area of consumer food choices. The first section provides an overview of the findings presented in the previous chapters in relation to the literature study described in the introduction chapter. Section 6.2 will discuss the findings of an additional experiment in which endowment effects for functional food products were studied in relation to regular food. In Chapter 3 several outcomes were presented about the impact of cognitive constraints on loss aversion concerning functional food products. Some additional information about endowment effects for these types of goods in the case of unconstrained cognitive capacity will be provided, especially in relation to influencing consumer food preferences into more healthier food choices.

The findings presented in Chapter 5 indicated that reference effects could be of interest to influence endowment effects for hedonic food products. The first chapter of this thesis mentioned the impact of differentiating between loss and gain frames to find the most effective way of influencing behaviour. In Section 6.3 some additional results will be presented on the impact of loss or gain framing in influencing consumer food choices. To relate endowment effects for food products to food consumption patterns, it is interesting to focus a bit more on food portfolios. In Section 6.4 some additional results in which endowment effects are related to product bundles will be reported. The chapter concludes with some final remarks in Section 6.5.

6.1 Endowment effects and consumer food choices

The outcomes of the experiments discussed in the previous chapters indicated that consumer food choices were influenced by reference effects. This seems to be in agreement with other studies which stated that conscious decision processes were not a very strong predictor of consumer food choices (Albarracín & Wyer Jr., 2000; Betsch et al., 2004; Brug et al., 2006). A rational decision process was easily overruled by an intuitive type of reasoning, leading to the use of heuristics and biases to decide between several choice options. Loss aversion was

assumed to be one of these biases leading to strong preferences for goods in possession (Kahneman, 2003). This is explained by the value function of Prospect Theory in which the loss of utility when giving up on a good is perceived as greater compared to the utility gain when receiving the same good (Kahneman et al., 1990; Knetsch, 1995, 2001). As a consequence food habits may be explained by a preference for the status quo type of food intake (Samuelson & Zeckhauser, 1988). By conducting several experiments our findings provided some support for this statement.

Results of the first experiment showed that endowment effects were stronger for hedonic than for utilitarian food products. This outcome was in agreement with our expectations and related to different types of decision processes for the two types of food products. The outcome also was consistent with the findings of Dhar and Wertenbroch (2000). They made a distinction between ‘shoulds’ as reasoned preferences and ‘wants’ as affective preferences. Their findings indicated that forfeiture choices increased the impact of hedonic aspects, resulting in a stronger preference for hedonic goods in loss choices compared to acquisition choices. They explained this finding by the more spontaneous reaction in a forfeiture choice which fits hedonic goods more than utilitarian goods, compared to an acquisition choice which needs more justification and fits a reasoned type of decision making more. The outcomes of the experiments described in Chapter 2 add to the findings by Dhar and Wertenbroch (2000) that this theory also applies to different types of food products which were perceived as either hedonic or utilitarian. In addition, it was found that correcting for the differences in hedonic perception diminished the significant difference in endowment effects of the two types of goods suggesting that hedonic quality was important in causing the stronger endowment effect for a certain food product.

To further explore the impact of type of decision process on endowment effects for certain types of food products, Chapter 3 focused on the impact of cognitive constraints. According to dual processing theories, consumers decide by using either an intuitive or an analytic type of reasoning (Cantin & Dube, 1999; Chaiken, 1980; Chaiken & Trope, 1999). Insofar as loss aversion relates to a more intuitive type of reasoning, and cognitive constraints induce a more intuitive type of reasoning, endowment effects are expected to be relatively strong in a situation of limited cognitive capacity. Here, we found that endowment effects increased in case of experiencing cognitive constraints. This effect was even stronger in case of giving up on hedonic food in one’s endowment. These findings are in agreement with the findings of Shiv and Fedorikhin (1999) showing that experiencing cognitive constraints resulted in more impulsive decisions.

The strong endowment effects in this study might be due to the fact that a good was provided to the participants rather than chosen by themselves, which provides a good excuse for keeping it, particularly in the case of hedonic goods (Giner-Sorolla, 1999). Participants in the experiments described in Chapter 3 were asked some additional questions about their feelings of control over the choice they made, including a question concerning this excuse factor. The results indicated that especially participants who received a hedonic food product judged the excuse factor as significantly more important in their decision making compared to the group who received a utilitarian food product. Although there was a significant difference, scores on this question were not very high for both groups. Providing an excuse may be more

important in hedonic choices but is, according to these lower scores, probably not the most significant factor. An additional probit analysis (not reported here) also indicated that the judgment of the excuse question was not a significant factor in the choice for a hedonic good.

Another interesting aspect to mention in relation to the strong endowment effects are transaction costs. Because of transaction costs consumers might be reluctant to exchange their endowment, leading to strong consumer preferences to keep goods in their possession. In the different experiments presented in this study transaction costs were not taken into account. However, several earlier studies investigated the impact of transaction costs on endowment effects and loss aversion. Findings of these studies showed that when a financial compensation was provided for transaction costs, endowment effects were still strong (Kahneman et al., 1990; Knetsch, 1995).

The distinction between reasoned and intuitive decisions is also important in interpreting the findings of Chapter 4. According to earlier studies, type of decision making is also influenced by gender. Boys and girls generally use different types of decision making for specific tasks (Meyers-Levy, 1989). These studies found that males more often than females use an intuitive type of reasoning, whereas females more often rely on a more detailed type of reasoning (Kempf et al., 1997; Meyers-Levy, 1987, 1989; Meyers-Levy & Maheswaran, 1991). The findings in this chapter confirmed that boys used an intuitive type of decision making in case of food choices, resulting in a stronger preference for hedonic goods. Especially girls felt constrained by the cognitive manipulation because of their more analytic type of reasoning, resulting in a stronger endowment effect when reasoning was constrained, especially for hedonic food. Although it seems very difficult to find the best way of approaching consumers in influencing their health behaviour, gender differences might provide part of the explanation why health campaigns do not always reach their intended objectives. In addition to the general impact of endowment effects in consumer food preferences, the outcomes of the experiments described in Chapter 4 indicated that endowment effects differed across genders. If the outcomes of this study were applied to influence consumer food choices and consumption patterns, different approaches would need to be developed to be effective on either males or females. Boys seem to be more sensitive to heuristics and biases in food decisions, whereas girls in general combine their intuitive and analytic decision processes and are therefore less vulnerable to reference effects. Providing information might be more useful to influence girls' food choices. However, distractions in daily life may overrule their analytic decision processes leading to more intuitive and hedonic food choices.

All experiments described in the previous chapters focused on either utilitarian or hedonic food products in characterizing the type of food. In addition, the experiments described in Chapter 3 about the impact of cognitive constraints were also related to the distinction between functional and regular food products. Functional food products might be an important product category in reaching a healthier food intake in the population, because of their health benefits (Black & Campbell, 2006; Blades, 2000; Hasler, 2000; Yeung et al., 2006). The next section focuses on the impact of loss aversion on these types of goods. Functional food products might be less vulnerable to the endowment effect, because of their strong association with the more reasoned type of decision making. However, if they become preferred food choices this might easily contribute to a healthier food consumption style.

6.2 Endowment effects for functional and regular food products

This section will briefly describe the impact of loss aversion on functional food products. One experiment was designed to test the assumption that endowment effects were stronger for a regular food product than for a functional food product. Utilitarian aspects of the functional foods may lead to a more deliberate decision process, whereas regular food is probably more appreciated for its hedonic aspects. The outcomes of the experiment described in Chapter 3 showed that endowment effects of functional food products were not influenced by cognitive constraints, whereas endowment effects of regular food products increased in case of experiencing cognitive load indicating indeed a more deliberate type of reasoning for functional foods and a more intuitive type of reasoning for regular foods. Next, we describe the endowment experiment on functional food.

Consistent with the other experiments described in this thesis, secondary school pupils in a classroom setting were provided with either a regular or a functional food product. They indicated their willingness to keep or trade their endowment by filling out a questionnaire. See Appendix 4 for further details on the method and products that were used in this experimental setting. The tables which are also reported in Appendix 4 provide details on the outcomes of the experiment. First, Table 6.1 shows the outcomes of the manipulation check in which both types of goods indeed differed in their judgements on hedonic and utilitarian product attributes. These results indicated that for orange juice, the enriched food product was indeed perceived as more healthy, and more functional, whereas the regular food product was perceived as more tasty and attractive. Because the manipulation check was only successful for orange juice, further analyses were solely based on this pair of goods.

Table 6.2 shows the choice percentages in the different endowment conditions. The outcomes showed that without product endowment there was a stronger preference for the regular food product. For both types of goods we found stronger preferences to keep the good in endowment compared to what could be expected based on the choice condition indicating an endowment effect for regular food products as well as for functional food products. A probit analysis (Table 6.3) showed a significant effect of the constant term indicating that preference for the regular good in the choice condition was significantly stronger compared to preference for the functional good. In addition, choice percentages for both types of goods in endowment conditions differed significantly from the choice condition, indicating endowment effects for both types of goods. A comparison of the log likelihood of this model with the log likelihood of a model in which the endowment parameters for both types of goods were set equal could indicate whether one of the endowment effects was significantly stronger than the other one. The two log likelihoods were significantly different ($\chi^2 = 5.62, p < .05$) indicating a stronger endowment effect for the functional food product. Another probit regression (Table 6.4) showed the impact of product attributes on the preference to keep the functional food product in endowment. A pooled across-all-conditions principal component analyses, similar as described in Chapter 2, was conducted to reduce the amount of information. The relevant statistics showed that the attributes could be attributed to three orthogonal components rather similar to the ones found in Chapter 2, (1) Utilitarian quality, (2) Hedonic quality, and (3) Physical well-being. Both utilitarian and hedonic quality were significant in explaining the

choice for a functional food product. However, the hedonic quality seemed a much more important factor.

According to our assumptions, these findings were contradictory to what we expected to find. Since the regular food product was significantly more positively evaluated for its hedonic quality, endowment effects were expected to be stronger for the regular food product than for the functional food product. Consequently, other aspects of the functional good probably play an important role in the strong endowment effect. The outcomes of the second probit regression showed that both utilitarian and hedonic quality were important in the choice of a functional food product. However, correcting for these aspects did not influence the endowment effect much for both types of goods, like it was found in Chapter 2. Apparently it is rather difficult to find what exactly caused the relatively strong endowment effect of the functional food. Findings by Black and Campbell (2006) showed that the presence of specific nutrients in functional food products can be an important reason for choosing these types of goods. Results of the experiment described here suggest that they may also cause loss aversion and status quo bias and therefore strong endowment effects for functional food products in possession. Our findings indicated that focusing on the functionality might also help in stimulating healthy food consumption. Further research should focus on the specific aspects which cause loss aversion apart from hedonic value to get a more in-depth understanding of possible solutions to change consumers' unhealthy food preferences.

In addition to the type of food, the reference point of evaluation is important in constituting choice preferences. One of the chapters in this thesis focused on framing effects influencing consumer preferences. In the introduction of this thesis, the importance of judging changes in the loss or the gain domain of the value function was mentioned. In the next section some additional experiments on gain and loss framing are discussed to further understand the impact of framing on reference effects in consumer food choices.

6.3 Message framing to influence endowment effects

Chapter 5 focused on influences of framing on endowment effects for food products. Several studies summarized in Table 5.1 showed the importance of the way messages are formulated in changing consumer behaviour. Our findings in this chapter also indicated that message framing influenced the status quo bias for a hedonic food product leading to a healthier food choice, but no specific type of framing was significantly more effective than one of the other types. Results of the other two experiments showed that the reference point of evaluation was important in preference construction. Participants who were asked to retrieve information about especially the healthier alternative from memory significantly more often chose a healthier alternative than participants who were asked to focus on the hedonic alternative or who responded to information provided. Earlier studies also indicated the stronger effect of retrieving information from memory compared to providing information (Biehal & Chakravarti, 1986; Dhar & Simonson, 1992). Focusing on the healthier alternative can either be experienced as a gain choice or a reduction of a loss choice. Until now we did not differentiate between a gain or a loss formulation. In the first chapter of this thesis the importance of this distinction was mentioned. According to the reference point of evaluation,

gains and losses can also be evaluated as foregone gains or reduction of losses, when evaluated from a different perspective. Because losses are evaluated in the steeper part of the value function (according to Prospect Theory), positive changes experienced as a reduction of a loss might be judged more positively than positive changes experienced as a gain (Knetsch, 2001). A change of reference point may result in changes being evaluated as foregone gains or reduction of losses depending on the domain of the value function they are evaluated in, relative to the reference point.

In a few additional experiments we tested the assumption that loss framing was more effective in influencing the endowment effect for hedonic food products than gain framing. Participants were asked to evaluate their performance on two different food choice tasks which were formulated in either a gain-, loss-, or neutral frame. In Appendix 5 the method used in the experiments is described further in detail and tables with outcomes are presented. In one of the experiments we compared a gain formulation with either a reduction of a loss formulation and a non-loss formulation. The outcomes described in Table 6.7 showed that only the difference in performance evaluation of the food choice task between the two loss-related framing conditions was significant. A non-loss frame resulted in the least positive performance judgments in agreement with our expectations. A reduction of a loss frame resulted in the most positive performance evaluation, however not significantly more positive compared to the gain frame. The results of the second experiment showed the effect of formulation on an additional choice task related to a consumption pattern. Contrary to what we found in the first experiment, in these two performance tasks a gain frame was evaluated more positively than a reduction of a loss frame (Tables 6.8 en 6.9). Differences were significant only in the food consumption pattern task and not in the food choice task, but not in agreement with our assumptions. In the consumption pattern task, a reduction of a loss frame was also more negatively judged than a neutral frame.

The results of these experiments showed no clear results of the most effective type of gain or loss framing in influencing performance judgments in reaching a fictitious health objective. Focusing on the reduction of a loss was most effective in one of the experiments in agreement with our expectations, but least effective in another experimental condition. A possible explanation for the differences in evaluation might be the different information provided in the two experiments. In the first experiment, the performance evaluation in the reduction of a loss frame was specifically most positively evaluated compared to the gain frame, when information was provided in a negative attribute or positive goal frame. In the second experiment pupils received either information formulated in terms of attributes or goals, but both the gain and loss group received the same information about the two goods which was positively as well as negatively formulated. The differences in information provided may have had a strong influence on the performance judgments. Again the outcomes showed that formulating a framing message needs very careful consideration.

Because endowment effects and loss aversion in the previous chapters were only related to single food choices, it might be interesting to consider these effects in relation to more than one good to be able to link the outcomes with a food consumption pattern. Loss aversion in relation to more than one good in endowment might be considered more as giving

up on a food portfolio. The next section considers endowment effects for food product bundles.

6.4 Endowment effects in relation to food portfolios

A final additional experiment was conducted to relate endowment effects for single food products to consumer food habits. As described in Chapter 1, consumers were expected to be more reluctant to exchange two hedonic goods in their endowment than to exchange only one of them for a utilitarian food. In this experiment participants received a combination of two food products and were given different exchange options to test for their influence on the endowment effect of food products. The methods and tables describing the outcomes are presented in Appendix 6.

Table 6.10 shows that in both endowment conditions we found a strong preference to keep both goods in endowment when participants could only choose between keeping or exchanging both goods. There was no significant difference between preferences for the two endowment groups who received either two Mars bars or a Mars bar and potato crisps. The introduction of an extra choice option significantly decreased the number of participants who preferred to keep the two food products in both endowment conditions ($p < .01$). However, in the two Mars bars condition significantly more participants indicated to be willing to exchange one of their two goods in endowment compared to the Mars bar and potato crisps condition ($p < .01$). The extra choice option also significantly decreased the number of participants who preferred to exchange both goods ($p < .01$). For both 3-options conditions this decrease in participants preferring to exchange both goods was almost similar.

In addition, participants were asked to indicate in which way they made their choice in keeping or exchanging one or two goods on bi-polar 7-point scales. Table 6.11 shows the participants' judgments of these aspects. The results indicated that participants in the two-options condition were more driven by their emotions or heart compared to participants in the three-options condition. In the Mars bar/potato crisps condition we found the largest difference between 2-options and 3-options conditions ($p < .05$). In addition, we found that participants in the 2-options condition who received a Mars bar and potato crisps indicated their choice was more driven by their feelings and desires compared to the participants who received two Mars bars ($p < .05$). In other words, these results indicated that giving up only one good in possession requires less willpower compared to giving up on two goods, especially in the case of a mixed endowment. This is interesting in the light of influencing consumption patterns and in agreement with the findings by Heath et al. (1999) who reported that focusing on sub goals was more helpful in changing behaviour than focusing only on the ultimate goal.

Finally, participants were also asked to indicate in what way they agreed with several propositions about their need for variety on bi-polar 7-point scales ranging from "not agree at all" to "agree totally."³ Two relevant statistics of a pooled across-all-conditions principal component analysis showed the feasibility of reducing these items into a single variable 'desire for variety' (Bartlett's test was significant, Kaiser-Meyer-Olkin measure equaled .889, Alpha .85). This desire for variety may have influenced the decision to keep both goods in the two

³ Based on Van Trijp & Steenkamp (1992)

different endowment conditions. We found a stronger, but not significant difference in desire for variety for participants who indicated to keep both goods in the Mars bar/potato crisps condition compared to the participants in the two Mars bars condition. Also, participants who indicated to keep one good and exchange one good had a stronger desire for variety when they were endowed with a Mars bar and potato crisps compared to the group who received two Mars bars. But again this difference was not significant. We conducted a probit regression analysis to find out what was important in the decision to keep both goods in endowment. To reduce the number of variables indicating the way of decision making (reported in Table 6.11), a pooled across-all- conditions principal component analysis was conducted to reduce the number of variables. The relevant statistics showed the feasibility of principal component analysis to reduce the number of aspects into one component (Bartlett's test was significant, Kaiser-Meyer-Olkin measure equaled .750, Alpha .74). We computed a factor score indicating the component. Table 6.12 shows that the need for variety was not important in pupils' decision to keep both goods in endowment. However, the more decisions were made by emotions or feelings instead of thoughts or the rational self, the more participants preferred to keep both goods in endowment ($p < .01$).

The results of this experiment showed that endowment effects significantly decreased when an extra choice option was introduced to keep one of the two goods and exchange the other item, confirming our hypothesis. This effect was less strong when the initial endowment contained two different goods. However, this could not be explained by the difference in participants' desire for variety in both groups. The outcomes did not show a significantly stronger desire for variety for participants who kept one Mars bar and exchanged one compared to the group who indicated to exchange one good in the Mars bar and potato crisps endowment condition.

There is some literature on the endowment effect for single food products (Antonides et al., 2006; Dhar & Wertenbroch, 2000) and there is some on the effectiveness of product bundles in a marketing perspective (Stremersch & Tellis, 2002). In this experiment the two concepts were combined to study endowment effects for food product bundles. The results indicated very strong endowment effects for product bundles of food products, but which were influenced remarkably easy by different choice options. Willingness to keep both goods in endowment decreased significantly when an extra option was provided to exchange one hedonic food product in endowment for one utilitarian food product which could not be ascribed to their desire for variety. The more participants indicated their choice was driven by their emotions and heart, the stronger their willingness to keep both food products in endowment. This finding is in agreement with earlier studies on the endowment effect. Dhar & Wertenbroch (2000) explained the preference to keep hedonic goods in forfeiture tasks by the impulsiveness of the decision. A choice which is more driven by emotions indicates impulsiveness and may therefore lead to a stronger endowment effect for the two goods.

6.5 Final remarks

The results of the different experiments described in the previous chapters of this thesis and the extra findings presented in this final chapter indicated that reference effects play a significant role in consumer food choices.

Although many aspects related to reference effects and consumer food choice are worthwhile to investigate further, the outcomes of this thesis might already be useful in attempts to influence consumers' unhealthy food consumption patterns. Endowment effects may be important in establishing a status quo bias for an unhealthy food consumption pattern. A more intuitive type of reasoning leads to stronger endowment effects for especially hedonic goods. Distractions in everyday life may lead to more intuitive decision processes, and therefore lead to these unhealthy food habits. Earlier studies reported difficulties to influence consumer attitudes and motivation through knowledge transfer or by influencing factors in the environment (Brug & Van Lenthe, 2005). Findings of this thesis suggest that it might be useful to focus on unconscious processes such as reference effects in changing consumer preferences. In addition, it might be interesting to focus on the magnitude of the change. The outcomes showed consumers' willingness to give up on part of their endowment and that giving up on only one good required less willpower compared to giving up on two goods in one's endowment. If we consider endowment effects to be caused by food habits, there might be possibilities to change part of a food habit and be able to slightly influence consumers' unhealthy food lifestyle. In addition, framing of messages causing a change of reference point might be helpful in inducing this change. Our results indicated that focusing on the healthier alternative was more effective than focusing on the hedonic alternative. However our results on goal versus attribute framing, and gain versus loss framing were not so clear and need further examination.

A final remark should be made to the specific group of consumers who participated in the experiments described in this thesis. A very small fraction of the participants were university students, the other participants were all secondary school pupils. Because all the participants were aged between 16 and 20 years old, this may have implications for generalization of the results to the general Dutch population. Some extra studies including different participants may provide insights in the impact of endowment effects of food products on other types of consumers. Chapter 4 already mentioned the differences in time preferences between males and females which were opposite to the findings in a study by Read and Van Leeuwen (1998) which might have been caused by the different age groups considered in both studies. However, preferences which are constructed at a younger age, might last for a lifetime (Savage et al., 2007). In case results of this thesis do not apply the same to other consumers, these results are still interesting, because at this age it might be easier to still influence food preferences. In addition, other endowment experiments were conducted with very different groups of people and all showed endowment effects independent of the participating type of consumer. A final aspect to mention is the duration of the endowment effect. Especially with snack food which is consumed rather fast, one might assume that the impact of the endowment effect is less strong. Strahilevitz and Loewenstein (1998) found that

object evaluation increased with duration of ownership. However, many of the endowment studies, including both durable and less durable goods showed strong endowment effects.

To conclude, changing consumer food choices is difficult to accomplish, but findings presented in this thesis indicated that reference effects might be helpful in this process. However, as consumer food habits are to a large extent considered unconsciously, it would be really helpful if 'want' preferences could be influenced in that what we want is more rational, cognitive and thoughtful (Bazerman et al., 1998). Attempts at making the healthy alternative more hedonic, so diminishing the differences between both types of goods, and therefore reducing the relatively strong endowment effect for hedonic goods, might influence food choices into a more healthy direction.

APPENDIX 4

Description of method

We provided pupils aged 16-18 years old at different secondary schools in the Netherlands in a between-subjects design with either a regular or a functional food product. In one experimental condition 214 pupils received either a Hero B'tween or a Liga Continue. Both products are a kind of cookie/muesli bar, but the Liga Continue was enriched with extra grains and minerals. In another condition 316 pupils received either regular orange juice or orange juice with extra vitamins and minerals. Both food products of one pair were randomly distributed in a classroom. In addition to the food product, pupils in a classroom all received the same questionnaire. The questionnaire dealt with several aspects, related to both goods, serving as a manipulation check concerning healthiness, hedonic and utilitarian product attributes. All pupils had to evaluate both goods in private by answering all questions. The final question concerned the choice to keep the food product which was given to them or to exchange it for the other good which was handed out in the classroom. Immediately after all pupils completed the questionnaire the exchange of products was carried out for those who did not want to keep the food product given to them. In the control condition a comparable but different sample of 410 pupils filled out the questionnaire and made a simple choice between one of the two food products pairs without prior endowment, and also received the food product of their choice.

Outcome tables

Table 6.1 Mean product attitudes in the choice condition

Attributes	Hero B'tween	Liga Continue	Orange juice	
			Regular	Functional
Taste	3.07 ^a	3.81 ^a	5.28 ^a	4.64 ^a
Appearance	3.28 ^a	3.70 ^a	5.42 ^a	4.95 ^a
Satisfying effect	3.43	3.48	4.98 ^a	4.64 ^a
Healthiness	3.69 ^a	3.44 ^a	5.75 ^a	5.99 ^a
Not fattening	3.26 ^b	3.12 ^b	5.14	5.19
Gives energy	3.85 ^a	3.67 ^a	4.88 ^b	4.97 ^b
Improves resistance	3.05	3.01	5.32 ^a	5.59 ^a
Improves bones/teeth			4.16 ^a	4.57 ^a
Improves performance	3.30	3.26	4.58 ^b	4.69 ^b
Functionality			5.25 ^b	5.42 ^b
Hedonic value			4.66	4.52

^a difference between goods, within experimental condition, $p < .01$

^b difference between goods, within experimental condition, $p < .05$

Note: Evaluations for Hero/Liga on a 5-point scale, for the orange juices on a 7-point scale

Hero B'tween was perceived as more healthy, whereas the more functional food product, Liga Continue, was more positively evaluated on hedonic aspects as 'taste' and 'appearance.' For all perceptions concerning healthiness of the orange juices, i.e., 'healthiness,' 'improves resistance,' 'improves bones/teeth,' and 'improves performance,' the attitude

towards the enriched orange juice was significantly more positive than for the regular orange juice. The perception of hedonic value was not significantly different between the two goods, but the attitude towards ‘taste,’ ‘appearance,’ and ‘satisfying effect’ aspects was more positively evaluated for the regular orange juice. Apparently, the enriched orange juice was perceived as more healthy, and more functional, whereas the regular orange juice was perceived as more tasty and attractive which suggests that for this food product pair the manipulation check was successful.

Table 6.2 Choices between regular and enriched orange juice in endowment and choice conditions

Initial situation	Product choice		Total
	regular orange juice	enriched orange juice	
Endowment regular orange juice	78.5%	21.5%	163
Endowment enriched orange juice	28.8%	71.2%	153
Choice condition	65.6%	34.4%	189

For regular good, $\chi^2 = 7.18, p < .01$

For functional good, $\chi^2 = 45.94, p < .01$

Table 6.3 Probit regression of choosing functional orange juice instead of regular orange juice

	Regression coefficient	Coefficient / standard error
Constant	-.40	-4.28 **
Endowment regular product	-.39	-2.68 **
Endowment functional product	.96	6.75 **

** $p < .01$

Table 6.4 Probit regression of choosing functional orange juice instead of regular orange juice

	Regression coefficient	Coefficient / standard error
Constant	-.51	-4.56 **
Endowment regular product	-.37	-2.20 *
Endowment functional product	1.09	6.43 **
Utilitarian quality difference	.31	3.68 **
Hedonic quality difference	.91	8.76 **
Healthiness difference	.04	.44

* $p < .05$, ** $p < .01$

APPENDIX 5

Description of method

Two different experiments were conducted to investigate the impact of gain or loss framing concerning food choices. The first experiment was conducted among a group of 753 pupils from Dutch secondary schools. All pupils received information about the healthy aspects of a utilitarian food product (apple) versus a hedonic food product (Mars bar) which was formulated in terms of either goals or attributes and either positively or negatively framed. In addition, they received information about a certain objective that they had reached fictitiously. The objective was related to a single healthy food choice each day in the coming 10 days, formulated as a gain, a nonloss or a reduction of a loss. Participants were asked to indicate how they evaluated their hypothetical performance in reaching the objective on a scale from -3 (very bad) to $+3$ (very good). The ‘gain’ frame focused on eating two more healthy food products as compared with the number stated in the objective, the ‘non-loss’ frame focused on failing only one time in eating a healthy food where three failures were allowed, and the ‘reduction of a loss’ frame focused on reaching the objective of replacing a hedonic good by a healthy food product. A few examples of the framing message are presented below. All possible framing formulations are described in Table 6.5, examples are limited to three possible options.

Table 6.5. Framing options

Type of framing	Gain	Non-loss	Reduction of a loss
Goal positive	Example 1		
Goal negative		Example 2	
Attribute positive			Example 3
Attribute negative			

Example 1:

Positive goal framing, gain formulation

You receive the following information:

Choosing more often for an apple instead of a Mars bar will make you feel healthy. An apple provides you with energy without fattening you and improves your resistance. A healthy weight and improved resistance will lower your risk to become ill and you will feel healthy.

You just decided to eat one piece of fruit everyday. You realised that you would feel healthier by eating fruit every day. Your goal is to eat at least 7 days one piece of fruit the coming 10 days. After 10 days it turned out that you not only reached your goal, but that you ate an apple for two extra days.

Indicate how you evaluate your performance on the following scale.

very bad *very good*
 -3 0 $+3$

Example 2:**Negative goal framing, non-loss formulation**

You receive the following information:

Choosing more often for a Mars bar instead of an apple will not make you feel healthy. A Mars bar provides you with energy which fattens you and not improves your resistance. A healthy weight and improved resistance will lower your risk to become ill and you will feel healthy.

You just decided to eat one piece of fruit everyday. You realised that you would feel healthier by eating fruit every day. Your goal is to eat one piece of fruit the coming 10 days where 3 failures are allowed. After 10 days it turned out that you only failed for one day.

Example 3:**Positive attribute framing, reduction of a loss formulation**

You receive the following information:

- ✓ *An apple contains no fat in contrast to a Mars bar*
- ✓ *An apple contains much vitamin C in contrast to a Mars bar*
- ✓ *An apple contains flavonoids in contrast to a Mars bar, flavonoids lowers the risk on cardio vascular diseases and some types of cancers.*

You never eat fruit, but always take a Mars bar in between meals, because you really like Mars bars. You realise now that this habit leads to a negative situation for you and you decide to give up on your Mars bar and plan to eat one piece of fruit each day. After 10 days it turned out that you succeeded in changing your bad habit, because you gave up on your Mars bar and ate an apple on 9 out of 10 days.

In the second experiment 1060 secondary school pupils were asked to evaluate their performance on both the hypothetical food choice task and an additional hypothetical consumption pattern for one week. So, in addition to the food choice task they received information about their hypothetical performance in a additional health objective they reached which was related to reaching a healthier consumption pattern and not just change preference for a single food product. All participants evaluated both hypothetical performance tasks, either in a gain frame, a reduction of a loss frame, or a neutral frame. All participants had to judge both questions in each of the framing conditions. A few examples of these framing message are presented below. All possible framing formulations are described in Table 6.6.

Table 6.6. Framing options for both hypothetical performance tasks

Type of framing	Gain	Reduction of a loss	Neutral
Attribute framing	Example 1/2		Example 4/5
Goal framing		Example 3	not used

Example 1:**Food choices task: Attribute framing, gain formulation**

You receive the following information:

- ✓ *An apple contains much vitamin C in contrast to a Mars bar*

- ✓ *An apple contains flavonoids in contrast to a Mars bar, flavonoids lowers the risk on cardio vascular diseases and some types of cancers.*
- ✓ *A Mars bar contains fat in contrast to an apple*

You just decided to eat one piece of fruit everyday. You realised that you would feel healthier by eating fruit every day. Your goal is to eat on at least 5 days one piece of fruit in the coming week. After this week it turned out that you not only reached your goal, but that you ate an apple for one extra day.

Indicate how you evaluate your performance on the following scale.

<i>very bad</i>	○	○	○	○	○	○	○	<i>very good</i>
	-3			0			+3	

Example 2:

Food consumption pattern task: Attribute framing, gain formulation

You receive the following information:

- ✓ *Food products contain healthy and less healthy nutrients*
- ✓ *A healthy food consumption pattern consist of a recommended amount of the different nutrients*
- ✓ *A healthy way of living can be reached by a healthy and varied consumption pattern and a sufficient amount of exercise each day*

You just started a Weight Watchers program. You are allowed to consume food products for 1000 credits each day to reach your ideal weight. Your goal is to not exceed this limit of 1000 credits on at least 5 days in the coming week. After your first week it turned out that you not only reached your goal, but that you did not exceed the limit for 6 days of the week.

Example 3:

Food consumption pattern task: Goal framing, reduction of a loss formulation

You receive the following information:

Food products contain various nutrients in different amounts. By making a specific varied choice for the food products you consume, your intake of all nutrients you need will be sufficient. A healthy food consumption pattern in addition to a sufficient amount of exercise will lead to a healthy weight and will lower your risk to develop cardio vascular diseases and some types of cancers.

You just started a Weight Watchers program. You are allowed to consume food products for 1000 credits each day to reach your ideal weight. In the first week you exceeded your limit each day. Your goal is to not exceed this limit of 1000 credits this week. At the end of this week it turned out that you failed for only one day and that you did not exceed the limit for 6 days of this week.

Example 4:

Food choices task: Neutral frame

You receive the following information:

- ✓ *An apple contains much vitamin C in contrast to a Mars bar*
- ✓ *An apple contains flavonoids in contrast to a Mars bar, flavonoids lowers the risk on cardio vascular diseases and some types of cancers.*
- ✓ *A Mars bar contains fat in contrast to an apple*

You just decided to eat one piece of fruit every day. You realised that you would feel healthier by eating fruit every day. Your goal is to eat one piece of fruit for at least 6 days in the coming week. After this week it turned out that you reached your goal.

Example 5:

Food consumption pattern task: neutral frame

You receive the following information:

- ✓ *Food products contain healthy and less healthy nutrients*
- ✓ *A healthy food consumption pattern consist of a recommended amount of the different nutrients*
- ✓ *A healthy way of living can be reached by an healthy and varied consumption pattern and sufficient exercise*

You just started a Weight Watchers program. You are allowed to consume food products for 1000 credits each day to reach your ideal weight. Your goal is to not exceed these 1000 credits for at least 6 days in the coming week. After your first week it turned out that you reached your goal.

The order of the questions differed to take care of order effects. Performance judgements for both food choice tasks did not differ significantly in the different orders for all three framing conditions (not reported here).

Outcome tables

Table 6.7 Mean performance evaluations on hypothetical food choice task by framing type

Framing condition	Mean	Std. deviation
Gain	1.96	1.08
Non-loss	1.76 ^a	1.42
Reduction of a loss	2.11 ^a	1.08

^a same superscripts are significantly different ($p < .01$)

Table 6.8 Mean performance judgments food choice task by framing type

Framing condition	Mean	Std. deviation
Gain	1.82	1.03
Reduction of a loss	1.79	1.19
Neutral	1.64	1.15

Table 6.9 Mean performance judgments food consumption pattern by framing type

Framing condition	Mean	Std. deviation
Gain	2.05 ^a	.96
Reduction of a loss	1.28 ^b	1.40
Neutral	1.95 ^a	1.11

^{a,b} same superscripts are not significantly different, different superscripts are significantly different ($p < .01$)

APPENDIX 6

Description of method

We provided 842 pupils and first year students, aged 16-20 years old, at 16 different secondary schools and one university in different cities in the Netherlands in a between-subjects design with either two Mars bars or a Mars bar and a bag of potato crisps (hedonic food). Different classes were randomly distributed across conditions. When all participants in a classroom possessed two goods, they received either one of two different questionnaires. The first question in both questionnaires concerned the choice to keep the two food products which were given to them or to exchange them for two other food products. Participants who received two Mars bar were given the choice to exchange their endowment for two apples, whereas participants who received a Mars bar in combination with potato crisps were given the choice to exchange these two goods for a mandarin and an apple (utilitarian). Half of the participants received an extra choice to keep one good and exchange it for one other good. In case of an endowment of two different goods, both the endowment to give up and the alternative to receive were randomly chosen. The questionnaire continued with a couple of questions about the way in which they made their choice, about their need for variety and ended with some questions on the utilitarian and hedonic quality of both goods, serving as a manipulation check concerning hedonic and utilitarian value of the goods. All participants were asked to evaluate both the hedonic and utilitarian goods by answering all questions in private. When all participants completed the questionnaire the exchange of goods was carried out for those who did not want to keep one or two of the goods they received.

Outcome tables

Table 6.10 Choices between keeping or exchanging goods in endowment by experimental condition

Experimental condition	Decision concerning product in endowment			Total
	keep both products	keep 1 product and exchange 1 product	exchange both products	
Mars/Mars, two options	81.9%	-	18.1%	210
Mars/Mars, three options	52.1%	41.8%	6.1%	196
Mars/Crisps, two options	86.4%	-	13.6%	214
Mars/Crisps, three options	74.8%	20.3%	4.9%	222

Table 6.11 Mean way of decision making by gender

Choice was driven by...	Mars bar/Mars bar		Mars bar/Potato crisps	
	2 options	3 options	2 options	3 options
my thoughts/feelings	3.65 ^c	3.52	4.22 ^{a,c}	3.60 ^a
my willpower/desire	5.01 ^d	4.73 ^d	5.32 ^d	5.05 ^d
my prudent/impulsive self	4.66 ^b	4.28 ^b	4.81 ^a	4.06 ^a
my rational/emotional self	3.87	3.55	4.05 ^b	3.68 ^b
my head/heart	3.21 ^c	3.27	3.79 ^{b,c}	3.41 ^b

^a difference between both choice options, $p < .01$

^b difference between both choice options, $p < .05$

^c difference between endowment conditions within 2 or 3 options condition, $p < .01$

^d difference between endowment conditions within 2 or 3 options condition, $p < .05$

Table 6.12 Probit regression of keeping two goods in endowment instead of exchanging one or two

	Regression coefficient	Coefficient / standard error
Constant	.85	14.50 **
Desire for variety	-.09	-1.55 **
Decision making by emotions ^a	.61	9.59

** $p < .01$

^a Reference category: by ratio

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SUMMARY

In general, people prefer their current situation, even if they would be better off in another situation. In other words, they stick to what they habitually do or what they have now and are reluctant to change. This concept is relevant to brand loyalty and the acceptance of product innovations. However, it is also relevant to public policy aimed at changing food habits into healthier food intake in the population. The increasing prevalence of citizens in industrialized countries being overweight or obese in the last 25 years has direct consequences on development of cardiovascular diseases, diabetes and some cancers (WHO, 2000). This is often caused by an unbalanced energy management which can be attributed to changed patterns of food consumption and a more sedentary lifestyle. Because of their repetitive nature, unhealthy food choices can be characterized as habits. A conscious decision process is therefore less likely to occur and past behaviour is often a strong predictor of current choices (Albarracín & Wyer Jr., 2000; Betsch, Haberstroh, Molter, & Glöckner, 2004; Brug, De Vet, De Nooijer, & Verplanken, 2006). The popularity of unhealthy food products is commonly ascribed to the hedonic aspects of these goods. The intrinsic appeal of hedonic goods might cause difficulties in attempts to change preferences for unhealthy food. This thesis focuses on reference effects to relate unconscious processes to consumer decision making for food products.

In an intuitive type of reasoning, a person might be more vulnerable to the use of heuristics and biases in a choice situation (Kahneman, 2003). One of these biases is loss aversion which is explained by Prospect Theory (Kahneman & Tversky, 1979). According to Prospect Theory, the loss of utility associated with giving up a good is perceived as greater than the utility gain associated with receiving the good, causing a preference for one's current endowments and resulting in consumers who rather stick to their status quo than switch to an alternative (Kahneman, Knetsch, & Thaler, 1990; Kahneman & Tversky, 1979; Knetsch, 1995). Even if an alternative would objectively provide higher utility, consumers seem to prefer their current state when given the opportunity to exchange it for an alternative. Little research has focused on reference effects in consumer food choices, although part of consumer food habits may be explained by it. A broader perspective on loss aversion or the endowment effect may lead to consumer food habits being considered as a preference for the status quo type of food intake (Samuelson & Zeckhauser, 1988). This may lead to the prevalence of a lifestyle which is then difficult to change.

Chapter 2 describes several experiments to understand the impact of reference effects in consumer decision making with respect to hedonic versus utilitarian food products. To explain the magnitude of reference effects from product type we need to make a distinction between two basic consumption effects: (1) consummatory affective (hedonic) gratification from sensory attributes, and (2) instrumental, utilitarian functions or consequences of consumption (Batra & Hoyer, 1991; Dhar & Wertenbroch, 2000; Hirschman & Holbrook, 1982). This suggests that some types of food choices might also be more susceptible to loss aversion or status quo effects than other types. Dhar and Wertenbroch (2000) found that

forfeiture choices increased the impact of hedonic aspects in overall evaluation resulting in a relative preference for hedonic over utilitarian goods as compared to acquisition choices. In classroom settings, participants (16-18 years old) received either a hedonic or utilitarian type of food product and made a decision between keeping their endowment or exchanging it for the other type of food. The outcomes of the experiments showed that the endowment effect was significantly stronger for hedonic than for utilitarian food products. Although the largest differences in attribute judgments concerned utilitarian aspects, a probit regression analysis showed the strong influence of the hedonic value difference in the choice of hedonic food products which was consistent with our assumption predicting different endowment effects for the two goods. The results of additional probit analyses confirmed the stronger endowment effect for hedonic food products, but in addition, showed that correcting for the differences in hedonic perception of both goods reduced the significant difference in endowment effects of the two types of goods.

The general preference of consumers for status quo alternatives might be further explained by different types of decision processes that take place in product evaluation, such as dual processing (Cantin & Dube, 1999; Chaiken, 1980; Chaiken & Trope, 1999; Petty & Cacioppo, 1986; Shiv & Fedorikhin, 1999). Basically, there are two different ways in which consumers can make decisions: by reasoning and by using emotions or cues. **Chapter 3** focuses on the effects of cognitive constraints on food choices. Cognitive constraints tend to reduce consumers' attention to the food choice process such as in the process of a food habit. Shiv and Fedorikhin (1999) found that a reduction of the consumer's cognitive capacity has led to simplified decision processes and preference for hedonic types of food. The outcomes of two experiments showed that the endowment effect was significantly stronger under cognitive constraint than without constraint, which was consistent with our assumption. In addition, the influence of cognitive constraints on consumer choices was significantly stronger for hedonic than for utilitarian food items. Overall results showed that, due to a decrease in participants' feeling of control in decision making when experiencing cognitive constraints, more pupils preferred to keep their good in endowment. Being forced to rely on a more intuitive type of decision making increased the endowment effect of food products.

Although there is some agreement on the influence of gender in different consumer decision domains like verbal or analytic skills, consumption or investments, there is still much unknown about the meaning of gender differences in consumer food choices. In **Chapter 4** endowment effects for food products across genders are studied which presumably may be related to food habits. Several studies showed gender differences in information processing. Males more often than females use the intuitive mode of processing, whereas females on the other hand, are more likely to use a detailed analytic processing mode (Kempf, Palan, & Laczniak, 1997; Meyers-Levy, 1989; Meyers-Levy & Maheswaran, 1991). Consequently, gender-biased decision making is expected in the context of loss aversion, with cognitive constraints differentially affecting the genders. The outcomes of the experiments showed that our cognitive constraints manipulation was successful especially for girls, in line with our expectations. Comparisons across the cognitive load conditions showed that girls' endowment effects, independent of product type and in case of a hedonic good in endowment, were significantly stronger when they experienced cognitive constraints, compared to the

unconstrained case. A stronger preference for hedonic goods in the choice condition, in addition to the finding that cognitive constraints did not influence the endowment effects for boys suggests that a heuristic processing style seemed indeed most appropriate for boys' food choices. The results could not confirm our assumption that boys were more likely to keep their good in endowment independent of product type.

Because losses are considered as more painful than the same gain provides pleasure, choice preferences may change subject to whether they are experienced in the loss or gain domain of the value function (Knetsch, 2001). Providing information about positive or negative aspects of choice alternatives may result in a change of the reference point of evaluation resulting in preference reversals and leading to for example less strong 'want' preferences. The research described in **Chapter 5** is a first attempt to show the impact of message framing on the status quo bias associated with hedonic food choices. The effectiveness of persuasive messages in changing consumer intentions strongly depends on the type and way of framing (Tykocinski, Higgins, & Chaiken, 1994). Even in a specific area like health behaviour different aspects of the message, but also of the target behaviour, influence the effect of the message (Rothman, Salovey, Antone, Keough, & Martin, 1993). In addition, focusing on the alternative instead of the status quo in choice situations may increase the attractiveness of the alternative and consequently lead to preference reversals for both goods (Tversky & Kahneman, 1991). The results of the experiments showed that message framing influenced the status quo bias for a hedonic food product leading to a healthier food choice. However, none of the different framing types was significantly more effective than the other types, which was not in agreement with our assumptions. However, when participants were asked to retrieve information about the goods from their own memory, the effect on product choice was relatively strong. These results are in agreement with the findings by Biehal and Chakravarti (1986) and Dhar and Simonson (1992). Especially preferences to keep a Mars bar in endowment decreased when the focus of attention was on including an apple in one's consumption pattern.

An additional experiment in **Chapter 6** focused on the impact of loss aversion on functional food products. Functional food products might be an important product category in reaching a healthier food intake in the population, because of their health benefit claims (Black & Campbell, 2006; Blades, 2000; Hasler, 2000; Yeung, Hobbs & Kerr, 2006). In contradiction with our assumptions, endowment effects were significantly stronger for the functional food product than for their regular equivalent. Findings by Black and Campbell (2006) showed that the presence of specific nutrients in functional food products can be an important reason for choosing these type of goods. Results of the experiment described here suggest that they may also cause loss aversion and therefore strong endowment effects for functional food products in possession. A final study described in Chapter 6 was designed to test the endowment effect on food product bundles to relate endowment effects of single food products to food portfolios and food consumption patterns. The results showed that endowment effects significantly decreased when an extra choice option was introduced to keep one of the two goods and exchange the other item confirming our assumptions. In addition, giving up on only one good required less willpower compared to giving up on two goods. A probit regression analysis showed that when participants indicated that their choice was driven by their emotions

and heart they were more inclined to keep both goods in endowment, whereas desire for variety did not significantly influenced their choice. This finding is in agreement with earlier studies on the endowment effect. Dhar & Wertenbroch (2000) explained the preference to keep hedonic goods in forfeiture tasks by the impulsiveness of the decision. A choice which is more driven by emotions indicates impulsiveness and may therefore lead to a stronger endowment effect for the two goods.

Although many aspects related to reference effects and consumer food choice are worthwhile to further investigate, the outcomes of this thesis might already be useful in attempts to influence consumers' unhealthy food choices. Endowment effects may be important in establishing a status quo bias for an unhealthy food consumption pattern. A more intuitive type of reasoning leads to stronger endowment effects for especially hedonic goods. Distractions in everyday life may lead to more intuitive decision processes. Outcomes of several experiments suggested that it might be useful to take unconscious processes such as reference effects into account when changing consumer preferences. In addition it might be interesting to focus on the magnitude of the change. Changing consumer food choices is difficult, but findings presented in this thesis indicated that reference effects might be useful to include in this process.

SAMENVATTING

Over het algemeen geven mensen de voorkeur aan hun huidige situatie, zelfs als ze beter af zouden zijn in een andere situatie. Met andere woorden, ze blijven vasthouden aan wat ze gewoonlijk doen of wat ze nu hebben en zijn terughoudend ten opzichte van verandering. Dit concept is relevant voor loyaliteit aan een merk en de acceptatie van productinnovaties. Het is echter ook relevant voor het overheidsbeleid gericht op het beïnvloeden van voedingsgewoonten in de richting van een gezonder voedingspatroon in de samenleving. In de afgelopen 25 jaar heeft de steeds grotere aanwezigheid van overgewicht en obesitas in geïndustrialiseerde landen directe gevolgen gehad op de ontwikkeling van hart- en vaatziekten, diabetes en bepaalde vormen van kanker (WHO, 2000). Overgewicht wordt vaak veroorzaakt door een positieve energiebalans die kan worden toegeschreven aan gewijzigde voedingspatronen en een meer passieve levensstijl. Aangezien er sprake is van herhaling, kunnen ongezonde voedingskeuzes gezien worden als gewoonten. Een bewuste keuze is dan ook minder waarschijnlijk, en gedrag in het verleden is vaak een goede voorspeller van de huidige keuzes (Albarracín & Wyer Jr., 2000; Betsch, Haberstroh, Molter, & Glöckner, 2004; Brug, De Vet, De Nooijer, & Verplanken, 2006). De populariteit van ongezonde voedingsmiddelen wordt vaak toegeschreven aan de hedonistische aspecten van deze producten. De intrinsieke aantrekkingskracht van hedonistische producten zou kunnen leiden tot problemen bij het beïnvloeden van de voorkeur voor ongezonde voedingsmiddelen. Dit proefschrift richt zich op referentie-effecten om onbewuste processen te betrekken bij beslissingsprocessen van consumenten voor voedingsmiddelen.

In een intuïtieve manier van redeneren zou iemand meer gevoelig kunnen zijn voor het gebruik van heuristiek en vertekeningen in een keuzesituatie (Kahneman, 2003). Een van deze vertekeningen is verliesaversie die wordt verklaard door Prospect Theory (Kahneman & Tversky, 1979). Volgens Prospect Theory wordt het verlies bij het opgeven van een goed als pijnlijker ervaren, dan het plezier bij het krijgen van een goed als prettig ervaren wordt. Hierdoor ontstaat een voorkeur voor huidige bezittingen en houden consumenten liever vast aan hun status-quo dan dat zij deze ruilen voor een alternatief (Kahneman, Knetsch, & Thaler, 1990; Kahneman & Tversky, 1979; Knetsch, 1995). Zelfs als een alternatief, objectief gezien, een hoger nut zou bieden, geven consumenten de voorkeur aan hun huidige situatie als zij de gelegenheid krijgen om te ruilen voor een alternatief. Er is nog maar weinig onderzoek dat zich richt op referentie-effecten in voedingskeuzes van consumenten, hoewel een deel van hun voedingsgewoonten er mogelijk door verklaard zou kunnen worden. In een breder perspectief van verliesaversie of bezitsneiging kunnen voedingsgewoonten van consumenten worden beschouwd als een voorkeur voor een status-quo type voedingskeuze (Samuelson & Zeckhauser, 1988). Dit kan leiden tot een levensstijl die vervolgens moeilijk te beïnvloeden is.

Hoofdstuk 2 beschrijft een aantal experimenten om de invloed van referentie-effecten bij de keuze van consumenten voor hedonistische versus utilitaristische voedingsmiddelen te bestuderen. Om de omvang van de referentie-effecten voor het type product te verklaren,

moet een onderscheid gemaakt worden tussen twee consumptie-effecten: (1) affectieve (hedonistische) voldoening door sensorische kenmerken, en (2) instrumentale, utilitaristische functies of gevolgen van consumptie (Batra & Ahtola, 1991; Dhar & Wertenbroch, 2000; Hirschman & Holbrook, 1982). Dit wijst erop dat sommige type voedingskeuzes misschien ook gevoeliger zijn voor verliesaversie of status-quo effecten dan andere types. Bevindingen van Dhar en Wertenbroch (2000) toonden aan dat wanneer een keuze gemaakt moest worden tussen het opgeven van twee producten, de invloed van hedonistische aspecten in de algehele beoordeling belangrijker werd. Dit leidde tot een relatieve voorkeur voor hedonistische ten opzichte van utilitaristische producten, in vergelijking tot een keuze in het verkrijgen van een van beide producten. In een klassikale opstelling ontvingen deelnemers (16-18 jaar) een hedonistisch of een utilitaristisch voedingsmiddel en werd hen gevraagd een keuze te maken tussen het behouden van hun product of het ruilen ervan voor het andere type product. De uitkomsten van de experimenten lieten zien dat het effect van bezitsneiging significant sterker was voor hedonistische dan voor utilitaristische voedingsmiddelen. Hoewel de grootste verschillen tussen de productbeoordelingen betrekking hadden op de utilitaristische aspecten van de producten, toonde een probit regressie-analyse de sterke invloed aan van de verschillen in de hedonistische aspecten in de keuze voor een hedonistisch voedingsmiddel. Dit was in overeenstemming met onze hypothese waarin een verschillend effect van bezitsneiging voor de twee type producten verwacht was. De resultaten van extra probit analyses bevestigden het sterkere effect van bezitsneiging voor hedonistische voedingsmiddelen, maar toonden bovendien aan dat een correctie op de verschillen in hedonistische perceptie van beide producten het significante verschil in bezitsneiging van de twee type voedingsmiddelen verminderde.

De algemene voorkeur van consumenten voor de status-quo kan verder worden verklaard door verschillende type beslissingsprocessen die plaatsvinden in productevaluatie, zoals 'dual processing' (Cantin & Dube, 1999; Chaiken, 1980; Chaiken & Troop, 1999; Petty & Cacioppo, 1986; Shiv & Fedorikhin, 1999). In principe zijn er twee verschillende manieren waarop de consument beslissingen kan nemen: door redeneren en door gebruik te maken van emoties of cues. **Hoofdstuk 3** kijkt naar de effecten van cognitieve beperkingen op voedingskeuzes. Cognitieve beperkingen zorgen voor een vermindering van aandacht die consumenten beschikbaar hebben voor hun voedingskeuzes, zoals bij een gewoonte. Shiv en Fedorikhin (1999) toonden aan dat een beperking op de cognitieve capaciteiten van een consument leidde tot vereenvoudigde beslissingsprocessen en een voorkeur voor hedonistische voedingsmiddelen. De resultaten van twee experimenten lieten zien dat bezitsneiging aanzienlijk sterker was bij een cognitieve beperking dan zonder beperking, wat in overeenstemming was met onze hypothese. Bovendien was de invloed van een cognitieve beperking op de keuzes van consumenten aanzienlijk sterker voor hedonistische dan voor utilitaristische voedingsmiddelen. Algemene resultaten toonden aan dat, als gevolg van een verminderde controle in de besluitvorming wanneer cognitieve beperkingen opgelegd werden, meer deelnemers de voorkeur hadden om hun product te behouden. Gedwongen worden om een beroep te doen op een meer intuïtief beslissingsproces versterkte het effect van bezitsneiging bij deze voedingsmiddelen.

Hoewel er sprake is van enige overeenstemming over de invloed van sekse in verschillende domeinen van consument beslissingsprocessen, zoals verbale of analytische vaardigheden, consumptie of investeringen, is er nog weinig bekend over de betekenis hiervan in voedingskeuzes van consumenten. In **hoofdstuk 4** worden de verschillen tussen de effecten van bezitsneiging voor voedingsmiddelen bestudeerd tussen meisjes en jongens, die verband kunnen houden met voedingsgewoonten. Verschillende studies toonden seksespecifieke verschillen aan in de manier waarop informatie verwerkt wordt. Mannen maken vaker gebruik van de intuïtieve wijze van verwerking dan vrouwen, terwijl vrouwen meer geneigd zijn gebruik te maken van een gedetailleerde analytische verwerking (Kempf, Palan, & Laczniak, 1997; Meyers-Levy, 1989; Meyers-Levy & Maheswaran, 1991). Als gevolg hiervan kunnen, in de context van verliesaversie, ook verschillen in besluitvorming worden verwacht tussen jongens en meisjes, waarbij cognitieve beperkingen een verschillend effect op beide groepen zullen hebben. Uit de uitkomsten van de experimenten is gebleken dat de manipulatie voor cognitieve beperking met name succesvol was voor meisjes, wat in overeenstemming was met onze verwachtingen. Vergelijkingen tussen de condities met en zonder cognitieve beperking lieten zien dat bezitsneiging bij meisjes, onafhankelijk van het type product, en in geval van een hedonistisch product in bezit, significant sterker was wanneer zij cognitief beperkt waren, in vergelijking met de conditie waarin geen cognitieve beperkingen waren opgelegd. Een sterkere voorkeur voor hedonistische producten in de keuzeconditie, in aanvulling op de bevinding dat cognitieve beperkingen nauwelijks invloed hadden op bezitsneiging bij jongens suggereert dat een intuïtief beslissingsproces inderdaad het meest geschikt lijkt voor de voedingskeuze van jongens. De resultaten konden de hypothese dat jongens, onafhankelijk van het type product, meer geneigd waren hun product in bezit te behouden, niet bevestigen.

Omdat een verlies als pijnlijker beschouwd wordt dan eenzelfde winst plezier geeft, kunnen voorkeuren veranderen afhankelijk van de vraag of zij ervaren worden in het verlies- of winstdomein van de waardefunctie (Knetsch, 2001). Het verstrekken van informatie over positieve of negatieve aspecten van de keuzealternatieven kan resulteren in een ander referentiepunt wat kan leiden tot een verandering van voorkeuren; bijvoorbeeld minder sterke 'want' voorkeuren. Het onderzoek beschreven in **hoofdstuk 5** is een eerste poging om het effect van 'framing' aan te tonen in de status-quo effecten bij de keuze van een hedonistisch product. Het effect van informatie op het beïnvloeden van intenties van consumenten is sterk afhankelijk van het type en de wijze van 'framing' (Tykocinski, Higgins, & Chaiken, 1994). Zelfs in een specifiek gebied zoals gezond gedrag, beïnvloeden verschillende aspecten van de boodschap, maar ook van het te beïnvloeden gedrag, het effect van de boodschap (Rothman, Salovey, Antone, Keough, & Martin, 1993). Door de nadruk te leggen op het alternatief in plaats van op de status-quo in keuzesituaties kan bovendien de aantrekkelijkheid van het alternatief vergroot worden wat veranderingen in de voorkeur voor beide producten tot gevolg kan hebben (Tversky & Kahneman, 1991). Uit de resultaten van de experimenten bleek dat 'framing' van de informatie het status-quo effect van een hedonistisch voedingsmiddel beïnvloedde en leidde tot een gezondere voedingskeuze. Echter, geen van de verschillende soorten 'framing' was significant effectiever dan de andere soorten, wat niet in overeenstemming was met onze hypothese. Echter, wanneer de leerlingen gevraagd werd om zelf positieve of negatieve aspecten van de producten te bedenken was het effect op de

productkeuze relatief sterk. Deze resultaten zijn in overeenstemming met de bevindingen van Biehal en Chakravarti (1986) en Dhar en Simonson (1992). Vooral de voorkeur om een Mars-reep te behouden verminderde wanneer de aandacht werd geconcentreerd op het opnemen van een appel in een consumptiepatroon.

Een extra experiment in **hoofdstuk 6** beschrijft het effect van verliesaversie op functionele voedingsproducten. Functionele voedingsmiddelen kunnen, vanwege hun gezondheidsvoordelen, een belangrijke productcategorie zijn om een gezonder voedingspatroon te bereiken in de samenleving (Black & Campbell, 2006; Blades, 2000; Hasler, 2000; Yeung, Hobbs & Kerr, 2006). In tegenspraak met onze hypothese was het effect van bezitsneiging significant sterker voor functionele voedingsmiddelen dan voor reguliere voedingsmiddelen. Uit bevindingen van Black en Campbell (2006) bleek dat de aanwezigheid van specifieke nutriënten in functionele voedingsproducten een belangrijke reden kan zijn voor de keuze voor dit type producten. Resultaten van het experiment in hoofdstuk 6 suggereerden dat zij ook kunnen leiden tot verliesaversie en daardoor een sterk effect van bezitsneiging op functionele voedingsmiddelen. Een laatste studie beschreven in hoofdstuk 6 was opgezet om het effect van bezitsneiging op meerdere voedingsmiddelen in bezit te testen, zodat bezitsneiging van een enkel voedingsmiddel in verband gebracht kon worden met consumptiepatronen. De resultaten toonden aan dat bezitsneiging significant verminderde wanneer een extra keuzemogelijkheid werd toegevoegd waarbij het mogelijk was om een van de twee producten in bezit te ruilen voor een ander product, in overeenstemming met onze hypothese. Daarnaast was er minder wilskracht vereist om een product op te geven in vergelijking tot het opgeven van twee producten. Een probit regressie-analyse toonde aan dat wanneer de leerlingen aangaven dat hun keuze werd gedreven door emoties, zij meer geneigd waren om beide producten in bezit te houden, terwijl het verlangen naar variëteit niet significant hun keuze beïnvloedde. Deze bevinding is in overeenstemming met eerdere studies naar het effect van bezitsneiging. Dhar & Wertenbroch (2000) toonden aan dat de voorkeur om hedonistische producten te behouden in een keuze om een product af te staan gedreven werd door de impulsiviteit van de beslissing. Een keuze die meer gedreven is door emoties leidt tot meer impulsiviteit en kan daarom leiden tot een sterkere bezitsneiging voor de beide producten.

Hoewel veel aspecten van referentie-effecten in relatie tot de voedingskeuze van consumenten de moeite waard zijn om verder te onderzoeken, geven de resultaten van dit proefschrift wellicht al waardevolle informatie om invloed uit te oefenen op de ongezonde voedingskeuzes van consumenten. Bezitsneiging kan belangrijk zijn bij de totstandkoming van een status-quo effect voor een ongezond voedingspatroon. Een meer intuïtief beslissingsproces leidt tot sterkere effecten van bezitsneiging voor met name hedonistische producten. Afleidingen in het dagelijks leven kunnen leiden tot meer intuïtieve beslissingsprocessen. De uitkomsten van verschillende experimenten suggereren dat het nuttig kan zijn om onbewuste processen zoals referentie-effecten te betrekken bij het beïnvloeden van voorkeuren van consumenten. Daarnaast is het wellicht interessant te concentreren op de omvang van de verandering. Het beïnvloeden van voedingskeuzes van consumenten is moeilijk, maar de bevindingen gepresenteerd in dit proefschrift geven aan dat referentie-effecten wellicht van belang kunnen zijn in dit proces.

TO CONCLUDE...



ACKNOWLEDGEMENTS



According to a Dutch saying *tears come with trading* which is actually the most perfect description of the outcomes of my research described in this thesis. Participants didn't like to give up on goods in their possession, which was completely in agreement with the Dutch saying, especially in case of sensory attractive foods like chocolate bars.

For completing my thesis I first would like to thank Gerrit Antonides, my promoter, for all the effort he put in the supervision of my project. The many revisions of my papers really encouraged me to professionalize my work. In addition I would like to thank the other colleagues at the Economics of Consumers and Household Group with whom I spend 4 years in the office. I shared my room with several foreign PhDs, but most of the office time I spent with Hirut from Ethiopia and Nami from Ivory Coast. Thank you both for the interesting talks, all I learned from you about your culture and the encouragements to keep on working. "This book is not going to finish by itself, so just sit down and write another paragraph." Annelies and Margaret, thanks for your secretarial support and thanks to the other members of the group for your company, I enjoyed the interesting discussion during coffee- and lunch breaks. I also would like to mention Jack Knetsch, Ravi Dhar, Reint-Jan Renes and Peter Todd for their interesting thoughts on the project and comments on my papers. Ivo van der Lans, Pierre van Mouche and Evert-Jan Bakker thanks for your methodological assistance. Members of the thesis committee (Jack Knetsch, Fred van Raaij, Reint-Jan Renes, and Hans van Trijp) I really appreciate your willingness to participate in the opposition and to review my thesis. I am also grateful to the "Mobile Experiment" project, which is a promotional activity for Wageningen University, for the opportunity they provided me to conduct all my experiments at the participating secondary schools. In particular Door and Liesbeth for their assistance during the preparations of each period. Also, I really appreciated the work of the student assistants in conducting all the experiments, and the secondary schools and pupils for their great participation. I also would like to thank the staff members of Mansholt Graduate School (Arie Kuyvenhoven, Eveline Vaane, Irina Bezlepkina, Dries Heggens and Marcella Haan) for their assistance during my PhD project. From the other colleagues in the building I would like to mention Dinie for her assistance in the finalization of the layout of this thesis, Siet, Natasha and Geerte for the nice walks and talks we had during lunchtime. Two colleagues need special attention, my paranymphs Jantine and Marleen. Jantine, I already met you during the PhD introduction course, but since the month we spent together at a summer school in Jena we spent more time during coffee and lunch breaks in Wageningen too. I really liked getting to know you and spending time with you. My other paranymf is Marleen, who joined our group about two years ago. It was great to have your company around to discuss all 'very irrelevant but so important' PhD stuff. Also, I would like to thank all the board members of the Mansholt PhD Council, Wageningen PhD Council and Dutch national PhD-candidates network with whom I worked with to find solutions for all the different issues PhDs in the

Netherlands encountered. I had a great time with you all. Finally, I really would like to thank my parents, you were always very proud of my work here and that felt great, and Albert, it was really helpful to have someone around who actually knows me better than I know myself!

A little over 4 years ago I could not imagine finishing a PhD thesis, but I did. I am glad I could, because I am happy with the result and I really enjoyed doing this research. Even if I respond just like my participants and the Dutch saying and this feeling is just the effect of getting attached to my own PhD project and the need to say good-bye to it...

ABOUT THE AUTHOR

Leonie Cramer was born in Zutphen, the Netherlands, on April 29, 1979. She finished her secondary education at Revis in Deventer in 1997 and in the same year started a Bachelor study in Food and Business at the HAN (higher professional education) in Nijmegen. When she graduated in 2001, she started a second study in Business Administration at Nijmegen University which she finished with a Master of Science degree in Marketing and Consumer behaviour in the same faculty. The process of writing and finishing her MSc thesis about choice behaviour of young people in school cafeterias confirmed her strong interest in consumer food choices. After her studies she worked for four months as a member of the health care team of Unilever consumer care center. Here she provided answers to consumer questions about the company's food products and in addition improved the understanding of consumer interaction with food products at the marketing department. A PhD project at Wageningen University was the perfect opportunity to combine her knowledge and her interests in food products and consumer behaviour research. She worked on this project at the Economics of Consumers and Household group in Wageningen. The results of this work are described in this thesis.

During her PhD project she was involved in teaching activities in the Bachelor course Consumer and Market. She assisted students in their practical work in which they could prepare exercises to get more familiar with the theory. She also presented her work at several international conferences in the area of economic psychology and behavioural economics or behavioural nutrition and physical activity. Already during her BSc and MSc studies Leonie was active in organizing career events and a research project in India. During her PhD she continued being active in different networks as a representative of PhDs. In her first year she participated in the PhD Council of the Mansholt Graduate School. In two years time she organised two PhD Science days, part of the bi-annually introduction courses, participated in different committees on for example educational issues and informed the PhDs on all important issues by newsletters together with two other members. The final two years of her PhD she was a member of the board of the Dutch national PhD-candidates network to represent all Dutch PhDs on a national level. As a member of this board she discussed with the ministry of education, members of the parliament and the Association of Universities in the Netherlands. In cooperation with an intermediary organisation the whole board also organised PhD Days to bring PhDs and employers or fund organisations together for future career development of the PhD candidates. Within the Economics of Consumers and Households group she assisted in organising a three-day international colloquium in Wageningen on financial capability.

After her PhD project she started working on a project about young people and their lifestyles and beliefs in relation to their food choices at LEI-Wageningen UR, Agricultural Economics Research Institute.

COMPLETED TRAINING AND SUPERVISION PLAN

Leonie Cramer
Mansholt Graduate School of Social Sciences (MG3S)

Description	Institute	Year	ECTS*
Courses			
Mansholt Introduction Course	MG3S	2005	1.0
PhD Competence Assessment	WGS	2005	0.3
Behavioural Economics	MG3S	2005	3.0
Masterclass Nutrition Communication: Challenges and Opportunities	VLAG	2005	1.0
Food Perception and Food Preference	VLAG	2005	1.0
Quantitative Research Methods	MG3S	2005	4.0
Techniques for Writing and Presenting a Scientific Paper	WGS	2006	1.2
Food Risk Analysis: An integrated approach combining insights from the natural and social sciences	MG3S	2006	3.0
Perspectives on Psychological Health Research	USSBS	2006	7.5
Philosophy and Ethics of Food Science and Technology	VLAG	2007	1.5
Summer School 'Adapting Behavior in a Fundamentally Uncertain World'	IMPRS	2007	12.0
Long-term Dynamics of Food and Human Development	WGS	2008	0.6
Experiment! A Workshop on Experimental Methods in Social Science and Interdisciplinary Research	WGS	2009	1.5
			37.6
Oral presentations at (international) conferences and other activities:			
IAREP-SABE Joint Conference in Paris, France		2006	1.0
Mansholt Multidisciplinary Seminar, PhD Day, Wageningen		2007	1.0
ISBNPA Annual Conference in Oslo, Norway		2007	1.0
IAREP-SABE World Meeting in Rome, Italy		2008	1.0
Teaching Practicals of Consumer & Market course, ECH		2008–2009	1.0
Mansholt PhD Council		2005–2007	2.0
Wageningen PhD Council		2006–2008	1.0
			8.0
Total (minimum 30 ECTS)			45.6

*One ECTS on average is equivalent to 28 hours of course work

MG3S stands for Mansholt Graduate School of Social Sciences

WGS stands for Wageningen Graduate Schools

VLAG stands for Graduate School for Nutrition, Food Technology, Agro-Biotechnology and Health Sciences

USSBS stands for Utrecht Graduate School of Social and Behavioural Sciences

IMPRS stands for International Max Planck Research School

ECH stands for Economics of Consumers and Households chair group

