

## Explaining Choice and Share of Category Requirements of Biologic Meat

Peter C. Verhoef and Kristine Vlagsma

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BIBLIOGRAPHIC DATA AND CLASSIFICATIONS		
Abstract	<p>In this paper we examine factors determining choice and consumption of biologic or organic meat. In our model explaining choice and share of category requirements, we consider economic/marketing variables (quality, price, and distribution), emotions (fear, empathy, and guilt), social norms, environmental variables (environmental concern, green behavior, and perceived consumer effectiveness) as main antecedents of the choice and share of category requirements of bio-meat. We also control for the effect of socio-demographics. Using a sample of 269 Dutch consumers we estimate a Tobit (2) model explaining choice and share of category requirements. Our results show that the choice for biologic meat is mainly affected by perceived quality of bio meat, in addition to the price-perception and fear of the health consequences of eating regular meat. Price perceptions and fear are also important determinants of share of category requirements, but beyond these factors empathy and social norms are also determinants of share of category requirements. Theoretical and policy implications of our results are discussed.</p>	
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# **Explaining Choice and Share of Category Requirements of Biologic Meat**

Peter C. Verhoef<sup>1 2</sup>

Erasmus University Rotterdam

School of Economics

Department of Marketing and Organization

Kristine Vlagsma

European Union

Brussels

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<sup>1</sup> Address for Correspondence: Peter C. Verhoef, Erasmus University Rotterdam, School of Economics, Department of Marketing and Organization, P.O. Box 1738, NL-3000 DR Rotterdam, The Netherlands. Tel. +31 10 408 2809; Fax +31 10 408 9169; E-mail: [verhoef@few.eur.nl](mailto:verhoef@few.eur.nl).

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## **Abstract**

In this paper we examine factors determining choice and consumption of biologic or organic meat. In our model explaining choice and share of category requirements, we consider economic/marketing variables (quality, price, and distribution), emotions (fear, empathy, and guilt), social norms, environmental variables (environmental concern, green behavior, and perceived consumer effectiveness) as main antecedents of the choice and share of category requirements of bio-meat. We also control for the effect of socio-demographics. Using a sample of 269 Dutch consumers we estimate a Tobit(2) model explaining choice and share of category requirements. Our results show that the choice for biologic meat is mainly affected by perceived quality of bio meat, in addition to the price-perception and fear of the health consequences of eating regular meat. Price perceptions and fear are also important determinants of share of category requirements, but beyond these factors empathy and social norms are also determinants of share of category requirements. Theoretical and policy implications of our results are discussed.

## **1. Introduction**

Recently, the sales volume of biologic or organic products has increased substantially in Europe and the US. For example, in 2002 the Dutch sales of biologic products increased 9% to a volume of 375 M Euro (EKO Monitor 2002, 2003; Hartman Group, 2003; Willer, Lünzer and Youssefi, 2003). Market figures show that a substantial part of these sales come from fruit, vegetables and dairy products. However, it has been reported that the sales of biologic meat also increases substantially (EKO Monitor 2002, 2003). This might partially be caused by recent crises due to animal diseases, such as BSE (mad cow disease) and foot and mouth disease, in the meat industry in Europe (Pennings, Wansink and Meulenberg, 2002). These crises have led to an awareness among some groups of consumers that the way animals are treated by the majority of firms in the meat industry is not only harmful for the animal, but may finally also be harmful for the consumer eating the meat (McIntyre, 1998; Schifferstein and Oude Ophuis, 1998). Other factors may also explain the increasing sales of biologic meat. A number of leading supermarket chains (i.e., Albert Heijn, Tesco, and Sainsbury) have responded to customer needs for organic meat and have included biologic meat in their assortment, which might have further enhanced sales (Reibstein and Farris, 1995). Retailers might expect to gain a competitive advantage with such an environmentally oriented category strategy (Menon and Menon, 1997; Banerjee, Iyer and Kashyap, 2003). Despite the increased market share of biologic meat, a substantial group of consumers do not purchase biologic meat and a majority of biologic meat purchasers do not purchase it on a regular basis.

Since the 1960's/1970's, there has been an increasing awareness of environmental issues in Western society. As a consequence, there has emerged a large stream of research in different scientific disciplines - such as (environmental) psychology, sociology, education, and marketing - examining environmentally conscious consumer behavior, such as energy saving, recycling,

organic food consumption, and so forth (e.g., Fransson and Gärling, 1999; Grunert and Juhl, 1995; Hines et al., 1987, Osterhuis, 1997; Stern, 2000). Within this research stream researchers have suggested several models to explain environmentally friendly behavior. Values and environmental concern are among the factors examined by these researchers (e.g., Stern and Dietz, 1994; Grunert and Juhl, 1995; Roberts, 1996). While recently researchers have pointed to emotions, such as empathy (Lee and Holden, 1999), others have claimed the importance of personal and social norms (Osterhuis, 1997), personal costs and benefits of environmentally friendly behavior (Osterhuis, 1997), and socio-demographics (e.g., Diamantopolous, Schlegelmilch, Sinkovics and Bohlen, 2003).

A common approach in these studies is to consider a single group of variables explaining a consumers' environmental behavior. Although some meta-analytic studies suggested some general models (e.g., Hines et al., 1987; Fransson and Gärlin, 1999), there are no empirical studies that come up with a model incorporating the majority of these antecedents. Moreover, most studies investigate the occurrence of environmental behavior, but do not decompose or deconstruct this behavior. Recent insights suggest that behaving in an environmentally friendly way goes through different stages (Dahlstrand and Biel, 1997). Hence, choosing to buy biologic meat might be a different decision than replacing regular meat with biologic meat for the majority of the meat purchases. We examine meat consumption consisting of two though related behaviors: (1) choice and (2) share of category requirements of biologic meat. This distinction can be compared with the distinction between brand choice and purchase quantity in the brand choice literature (Gupta, 1988) and retention and customer share in the customer loyalty literature (Verhoef, 2003).

The objectives of our study are therefore twofold. First, we aim to develop and test a theoretically based model that includes several of the antecedents prior literature suggests that

may explain choice and share of category requirements of biologic meat. Second, we investigate whether the antecedents of choice and share of category requirements are different. We address these two objectives using data of 269 Dutch consumers. Aside from the two objectives, which are in themselves contributions to the literature, we offer the following additional contributions. First, we test the effect of two emotions, fear and guilt, that have not yet been related empirically to environmentally friendly behavior. Second, although some studies on environmental behavior have appeared in marketing (related) journals, no studies explicitly test the importance of marketing variables, such as quality, price and distribution.

The outline of this paper is as follows. In the next two sections we present and discuss our model and the underlying hypotheses. Subsequently, we describe our research methodology. The empirical results are presented in the next section. We end with a theoretical discussion, managerial and policy implications, research limitations, and issues for further research.

## **2. Conceptual model**

In our conceptual model we consider two dependent variables: (1) choice of biologic meat and (2) share of category requirements of biologic meat. Choice of biologic meat (BM) is defined as a recent purchase of BM by the consumer. Share of category requirements (SCR) of BM is the ratio of the number of bio-meat purchases in the meat category by a consumer over the total purchases of meat. SCR is a commonly used metric to assess customer loyalty in the consumer package goods industry (e.g., Bowman and Narayandas, 2001). In our model we assume that a consumer first decides whether to buy or not to buy BM, and subsequently decides on the SCR. Thus, SCR occurs conditional to the choice of BM. As such, we use a two-step approach, where we first model the effect of our antecedents on choice of BM and subsequently model the effect

of these antecedents on SCR for consumers choosing BM. The use of this approach allows us to assess whether the antecedents of choice and SCR are different.

In our model (see Figure 1) we incorporate four clusters of antecedents: (1) economic or marketing variables, (2) emotions, (3) social norms, and (4) environmental variables. We include socio-demographics as control variables in our model, because several researchers have shown that environmental behavior is correlated with socio-demographics (e.g., Diamantopolous et al., 2003).

In this model it is assumed that the theoretically considered antecedents can impact choice and/or SCR. However, there might be reasons to assume that the impact of these factors differs between choice and SCR. For example, as noted recently by some biologic associations after the huge initial attention for BM during the crises in the meat industry, sales of BM has declined recently ([www.platformbiologica.nl](http://www.platformbiologica.nl)). This might suggest that emotions, such as fear, are more important for choice, while they are less important for SCR. Moreover, Dahl and Biel (1997) suggest that specific beliefs about the environmental behavior are especially relevant in turning the environmental behavior into a habit (increase SCR BM), while attention to and awareness of the environmental problems are more important in the pre-habit phase (choice BM). Despite these rationales for different effects of the considered antecedents on choice and SCR, we do not explicitly put forward hypotheses on these differential effects. We only discuss these differences in our hypotheses section if we have theoretical and/or anecdotic reasons that they might be present. In our empirical section, we will examine in an exploratory fashion whether these differences are indeed present.

-- Insert Figure 1 about here --



### **3. Hypotheses**

#### *3.1 Economic / Marketing variables*

We have two rationales for including economic / marketing variables in our model. First, there is a general notion in the literature that behaving in an environmentally friendly fashion can be seen as an economic decision on a consideration of his or her perceived personal costs and rewards (Osterhuis, 1997). Second, the marketing literature suggests that factors such as price and quality are very important in shaping consumer's choice behavior (Tellis, 1988, Zeithaml, 1988; Steenkamp, 1989).

#### Quality

In this study we focus on the perceptions of the quality of BM (Zeithaml, 1988). We do not consider the actual quality of the meat in terms of the fat-content, for example. Rather we consider how consumers perceive that the quality of BM is better than that of ordinary meat. This better quality can be considered as a personal reward of buying BM. Osterhuis (1997) shows that larger personal rewards have a positive effect on environmentally friendly behavior. In many studies it is shown that this perceived quality is important for creating consumer choice. Thus, we expect perceived quality of BM to have a positive effect on choice of BM.

Quality can also be seen as a necessary condition for consumers to consider a product or brand. Thus, quality motivates the consumer to choose BM, while the decision to purchase more BM is probably not affected by perceived quality as much (Bolton, Lemon and Verhoef, 2002). However, Bowman and Narayandas (2001) suggest that CSR is affected by satisfaction as a consequence of quality. Dahl and Biel (1997) suggest that specific beliefs (i.e. quality of the product) become more important in the phase when consumers decide whether or not to continue

their environmentally friendly behavior. Thus, despite some question marks around the effect of quality on SCR, there are both theoretical and empirical reasons to assume that quality has a positive effect on SCR. We hypothesize:

*H<sub>1</sub>: Perceived quality of BM positively affects (a) the choice of BM and (b) the SCR of BM.*

### Price

As with quality, our study focuses on the perceived price level of BM. This is also referred to as payment equity (Bolton and Lemon, 1999). We do not consider the actual price level, which can be rather large compared to ordinary meat. For example, percentile price differences between BM and ordinary meat vary: 43% for beef and 126% for poultry in The Netherlands (Eko-monitor, 2002). The price can be considered as a factor representing the personal costs of buying BM. If these costs are perceived to be high, consumers will be less willing to buy BM and will consume less of it (Bolton and Lemon, 1999; Osterhuis, 1987). Hence, we hypothesize as follows:

*H<sub>2</sub>: Perceived price level of BM negatively affects (a) the choice of BM and (b) SCR of BM.*

### Distribution

We focus on the perceived distribution of BM. Distribution is a multi-faceted construct. First, it concerns whether a retailer offers BM in its meat assortment. Second, it concerns the breadth and depth of the offered BM assortment. The non-availability of BM in the frequently visited store will create more transaction costs for most consumers to buy BM (Campo, Gijbrecchts and Nisol, 2000), leading to a lower purchase probability of BM. A small assortment of BM will make the BM category less attractive for the consumer. This will essentially hold for consumers who like to have variety in their meat consumption. Having a small BM assortment

will thus increase the purchase probability of ordinary meat, for which a large assortment of different types and flavors is usually available. Hence, we hypothesize the following:

*H<sub>3</sub>: Perceived distribution of BM positively affects (a) choice of BM and (b) CSR of BM.*

### *3.1 Emotions*

Emotions are generally defined as a valenced affective reaction to perception situations, and they are posited to have important implications for behavior, in the sense of providing impulses to action (e.g., Plutchik, 1980). Emotion theorists distinguish between goal-directed emotions and self-conscious emotions. Goal-directed emotions or anticipatory emotions may be elicited by the prospects of goal success and/or goal failure. These anticipatory emotions should finally lead to goal-directed behaviors (e.g., Bagozzi, Baumgartner and Pieters, 1998; Brown, Cron and Slocum Jr., 1997). Self-conscious emotions are innate emotions that provide information about one's own behavior and that serve to prepare and motivate the individual for appropriate action (Kugler and Jones, 1992). Thus, both types of emotions function in directing a consumer's behavior. Although, these two types of emotions are different, they are both self-oriented. The psychological literature therefore also distinguishes between self-oriented and other-oriented emotions. Other-oriented emotional responses are elicited by and congruent with the perceived welfare of someone (Batson and Coke, 1981). The most prominent other-oriented emotion is empathy. In our model, we assume that one goal-directed emotion (fear), one self-conscious emotion (guilt), and one other-oriented emotion (empathy) might impact the choice and SCR of BM. The rationales for including these emotions are provided in our discussion of the specific hypotheses below.

## Fear

Rogers (1975, p. 95) states that fear has been conceptualized as an affective state protecting one against danger or a motivational state leading one away from something. He also states that fear has been characterized as an intervening variable, inferred from stimulus conditions and response variables, that motivates an organism to escape or avoid a noxious event. Both definitions clearly emphasize the fact that fear should have an impact on behavior, while the latter definition stresses the fact that fear should be based on something (i.e., stimulus). This impact on fear has been shown by numerous studies (Sutton, 1982). For example, Birkimer and Bledshoe (1999) show that fear of consequences of unhealthy behavior is positively related to healthy behavior.

The central question is why fear should be related to the consumption of BM. Schultz (2001) specifically shows that concern for oneself may be an important determinant of environmental behavior. Bagozzi and Dabholkar (1994) find that health/avoid sickness-related goals are related to environmentally friendly behavior. More specifically Schifferstein and Oude Ophuis (1998) show that the consumption of organic foods can be explained by health-related determinants. Moreover, the recent disease crises in the meat industry have revealed that consumers may feel that their health and even their lives are at risk when consuming ordinary meat (Pennings et al., 2001). For example, mad cow disease is believed to cause the life-threatening Creutzfeld-Jacob disease in humans (Abbot, 2001). Although the probability of occurrence of such disease seems very small, consumers may feel they should protect themselves against this danger. Other associations with ordinary meat, such as the use of hormones for feeding animals, may result in worries about the health consequences of eating ordinary meat. Due to the alternative production process of BM, consumers may believe that the risk of health

problems from BM is lower. Hence, when fearing the consequences of eating ordinary meat, they will be probably more inclined to buy BM. Thus, we hypothesize:

*H4: Fear of health consequences of eating ordinary meat will positively affect (a) choice of BM and (b) CSR of BM.*

### Guilt

Guilt is defined as the dysphonic feeling associated with the recognition that one has violated a personally relevant moral or social standard (Kugler and Jones, 1992, p. 318). As such, guilt is considered a moral emotion (Eisenberg, 2000). According to Kugler and Jones (1992), at least two types of guilt can be identified: (1) trait guilt and (2) state guilt. Trait guilt is defined as a continuing sense of guilt beyond immediate circumstances (i.e, guilt that is a continuing part of one's life). State guilt is a present guilt feeling that is based on current transgressions. This guilt type is associated with words like regret. In this study we focus on state guilt, because this refers to specific actions of an individual consumer. We specifically focus on the guilt a consumer feels when he has consumed ordinary meat instead of BM. It has been reported that guilt motivates restitution, confession, and apologizing rather than avoidance (Eisenberg, 2000). Thus, feeling guilty in a typical situation does not necessarily lead to changing one's behavior. However, Batson's (1987) flowchart of egoistic and altruistic paths to pro-social behavior seems to suggest that the distressful emotion guilt may lead to pro-social behavior. Tangney (1992) shows that guilt is positively related to altruistic feelings. In the same fashion, Lee and Holden (1999) show that distress is positively related to environmentally conscious behavior. However, there is still no strong evidence as to whether guilt affects moral behavior, and Eisenberg (2000, p. 671) states this a salient issue that needs to be addressed. One of the reasons for the absence of this effect is given by Batson (1987). He describes that there is one particular reaction that may result in an

absence of an effect: escape from the problem (Batson 1987). To summarize, theoretically there are both reasons for an effect of guilt and for the absence of an effect of guilt on pro-environmental behavior.

Aside from the theoretical reasons why guilt might affect the consumption of BM, there is one particular rationale for why guilt is relevant to the consumption of BM. Personal norms have been associated with pro-environmental behavior (e.g., Thøgersen, 1999; Oosterhuis, 1997). As guilt arises because one violated that personal norm (i.e., being good to animals), guilt might have a positive effect on BM consumption. As already noted, there are some rationales for the absence of an effect of guilt. In the case of BM, there is one particular reason. Consumers might ask themselves whether they are indeed responsible for the well-being of animals. In that sense, they may attribute the responsibility to other persons or instances, such as the government and agricultural companies (e.g., Pieters, Bijmolt, van Raaij en de Kruijk, 1998). As a result, the effect of guilt might be less prominent. Despite this however we hypothesize a positive effect of guilt.

*H<sub>5</sub>: Perceived guilt of eating ordinary meat will positively affect (a) choice of BM and (b) CSR of BM.*

### Empathy

Although environmentally friendly behavior can be considered altruistic behavior, it can be induced by both egoistic and purely altruistic factors. In the latter case, the ultimate objective of one's behavior is to increase another's welfare (Batson, 1987). Although there is an ongoing discussion of whether pro-social behavior can really be truly altruistic (e.g., Khalil, 2003), there is an important stream in the social psychological literature that argues in favor of the appearance of truly altruistic behavior (e.g., Batson, 1987). This purely altruistic motivation should in theory

start with awareness of a living creature in need. The internal response to this awareness is empathy. Empathy is a more other-oriented emotional response elicited by and congruent with the welfare of some other living creature (Batson, 1987). Empathy is also called “the tender emotion”.

One important issue is whether consumers can feel empathetic responses to non-humans, such as animals. The magnitude of the empathetic emotion is affected by factors, such as the magnitude of the perceived need of the other and the strength of the attachment with the other (Batson, 1987; Mikulincer et al, 2001). Cialdini, Brown, Lewis, Luce, and Neuberg (1997) discuss the concept of oneness or the extent to which humans are able to feel at one with the other, because they perceive more of themselves in the other. For consumers, it might be difficult to apprehend or comprehend the emotional state of a non-human. Therefore one might question the consumers’ felt attachment with living animals in the meat industry. However, with sufficient perspective taking empathetic responses are indeed apparent (Schultz, 2001). Thus, there seems evidence for the appearance of empathetic responses towards animals.

As previously noted, psychological theory suggests that empathy should lead to pro-social behavior. Several studies support this view. For example, Bagozzi and Moore (1994) show that empathic reactions to public ads designed to reduce the incidence of child abuse leads to the decision to help. Lee and Holden (1999) find a positive relationship between empathy and environmentally conscious behavior. Thus, there is substantial evidence that empathy has a positive effect on choice and SCR of BM. We hypothesize:

*H<sub>6</sub>: Perceived empathy with animals in the ordinary meat industry will positively affect (a) choice of BM and (b) CSR of BM.*

### 3.3. Social norms

Social norms are characterized by perceptions about the nature and content of prevailing sentiments (Osterhuis, 1997). In this study, we focus mainly on norms that arise from reference groups or groups in which consumers participate, and not those norms that are prevalent at the macro level (i.e. one's nation). Norms in reference groups are shown to have an important impact on consumer behavior (e.g., Childers and Rao, 1992). Individuals who comply with norms can expect to create a good impression or receive praise for their actions, whereas those who do not can anticipate negative verbal or visual expressions of disappointment (Fisher and Ackerman, 1998). Thus, when there are strong norms on the consumption of BM, one might expect social norms to affect choice and CSR of BM. However, Fisher and Ackerman (1998) argue that the likelihood of undertaking environmentally friendly actions depends on the visibility of these actions. As the ecological nature of meat is not visible during consumption, one might dispute the visible positive aspects of eating BM. This might suggest that consumers will be less susceptible to norms in the reference group.

Thus, in general theory suggests an effect of social norms on choice and SCR, because consumers have some tendency to behave in congruence with the norms in the social group. However, due to the low visibility of this behavior, the effect of social norms might be less present than for other environmentally friendly behaviors. Given the strong evidence in the consumer behavior literature on the effect of social norms on consumer behavior, we still hypothesize:

*H<sub>7</sub>: Social norms will positively affect (a) choice of BM and (b) CSR of BM.*



### 3.4 Environmental variables

Within the literature on environmentally friendly behavior, researchers have proposed a number of factors that are typically related to environmentally friendly behavior. In our model, we consider environmental concern, green behavior, and perceived consumer effectiveness.

#### Environmental concern

The importance of environmental concern in explaining consumer environmental behavior has been raised by Dunlap and Van Liere (1978). Since then, many researchers have found that environmental concern is related to environmentally conscious behaviors in general as well as to specifically environmental behaviors, such as the consumption of organic foods (e.g., Grunert and Juhl, 1995; Roberts, 1996). Despite this empirical support, Schifferstein and Oude Ophuis (1998) report that environmental concern is not a very salient buying motive for organic products. Moreover, due to the fact that most studies only focus on a limited number of variables when explaining environmentally friendly behavior, the found effects of environmental concern might be due to omitted variables. Despite this we hypothesize:

*H<sub>8</sub>: Environmental concern will positively affect (a) choice of BM and (b) CSR of BM.*

#### Green behavior

Consumers might consistently behave in an environmentally friendly manner in different types of situations. Thorgensen (1998) refers to this as spillover effects. He in particular argues that a consumer's experience with an environmentally friendly behavior may lead to learning about the environmental consequences of other consumer behaviors, which may finally lead to behavior changes in other instances. In his empirical study, he shows that recycling and waste

reduction are indeed positively related. Thus, there is a reason to assume that a consumer's green behavior in other instances positively affects choice and SCR of BM. We hypothesize:

*H<sub>9</sub>: Green behavior will positively affect (a) choice of BM and (b) CSR of BM.*

#### Perceived consumer effectiveness

Perceived consumer effectiveness represents an evaluation of the self in the context of the issue. For example, an individual may feel very concerned about an issue. At the same time s/he may feel totally helpless to have an impact on the issue through his or her own behavior (Berger and Corbin, 1992, p. 80). If the consumer perceives this ability to be low, he or she will be less likely to behave in an environmentally friendly manner (Lee and Holden, 1999; Opatow and Weiss, 2000; Pieters et al., 1999; Roberts, 1996). Thus, we hypothesize:

*H<sub>10</sub>: Perceived consumer effectiveness will positively affect (a) choice of BM and (b) CSR of BM.*

## **4. Research Methodology**

### *4.1 Data collection*

Data were collected by means of a questionnaire, which was mailed to a randomly-selected sample of 2000 Dutch households in October 2002. We asked the person in the household that usually does the daily grocery-shopping fill in the questionnaire. To increase the response rate of our questionnaire, we used the following methods. First, we offered the respondents the choice to either participate in a lottery for a gift voucher of 50 euros each or to have 1 euro donated to selected well-known charity organizations. Second, respondents could send the filled-in questionnaire back using a post-free envelope. Third, we assured the anonymity

of the respondents and the confidentiality of the answers of the respondents. This resulted in a response of 309 customers, which implies a response rate of approximately 15.5%.

#### *4.2 Sample*

Out of our initial sample of 309 customers, 17 respondents did not eat meat. As we focused on the purchase of meat, we excluded these respondents from our sample. Subsequently, we examined the remaining sample to see whether the questionnaire was filled in completely. Based on this examination, we excluded another 23 respondents with too many missing values, leaving a usable sample of 269 respondents. The majority of the respondents were female (66.5%). Other sample characteristics are provided in Table 1.

-- Insert Table 1 about here --

We checked for non-response bias using the approach of Armstrong and Overton (1978). Using t-tests we compared the means of the socio-demographics and answers on the variables in our model, between the early respondents (first quartile) and the late respondents (fourth quartile). The t-test did not reveal any significant differences between the early and late respondents ( $p > 0.05$ ). Thus, we conclude that there is no non-response bias.

### *4.3 Measurement*

#### Measurement Choice and Share of Bio-meat

To measure choice of BM, we asked the respondent whether s/he recently purchased BM. If so, respondents were asked in how many of ten purchases they purchase BM. This question was used to measure SCR of BM (Bowman and Narayandas, 2001). To check the validity of these questions, we also asked some questions about purchase intentions and recency of the last purchase of BM. Both choice and SCR of BM were significantly correlated with intentions and purchase recency. Hence, we conclude that our measures are valid.

#### Measurement of Independent Variables

For the measurement of our independent variables, we first did literature research to find measurement scales that could be used in our study. As our study focuses on one particular product with its own typical characteristics, measures from the literature should be adapted. Based on this literature research we came up with a number of items for the different constructs. The resulting items were provided to four marketing academics, who were asked to assess the clarity of the wording and the construct validity of these items. Subsequently, we tested the resulting items among a convenience sample of 30 consumers to again assess the clarity of wording.

We used the scale of Karkoankar and Mochis (1982) to measure perceived quality of BM. For the measurement of price-perceptions we adapted items from the payment equity scale used by Bolton and Lemon (1999). The distribution of BM was measured with two new items. Each of these items focuses on the perceived availability (presence and breadth of assortment) of bio-products in nearby and visited stores or supermarkets.

The measurement of emotions is a difficult exercise in this particular study for several reasons. First, the study concerns a low-involvement product. Second, the emotions relate to the well-being of animals. Third, the considered emotions might not be present when filling in the questionnaire, because they might only occur when the respondent behaves in a particular way (i.e., purchase of normal meat). To overcome these problems, we first described a particular situation and then asked to rate whether certain emotional feelings were present on a 7-point scale (1 = to a very low extent; 7 = to a very high extent) (Richins, 1997; Verbeke and Bagozzi, 2003). We focused on the health consequences of eating regular meat in our situation description for the measurement of fear. The fear descriptors were based on Richins (1997). In our situation description for the measurement of (state) guilt, we focused on the purchase of ordinary meat in the supermarket, which one has planned to eat later on. The described guilt feelings were based on the scale content of Kugler and Jones (1992). Empathy is very closely related with the well-being of animals. We therefore asked the respondent to imagine the well-being of animals for the production of ordinary meat. In our empathy measurement, we asked whether certain empathetic feelings were present on a 7-point scale. The content of empathetic feelings were based on the descriptors provided by Batson (1987, p. 98), who argues that empathy is measured with feelings, such as “moved”, “compassionate” and “tender”.

The scale for measuring social norms was adapted from Park and Parker Lessig (1977). For the measurement of environmental concern, we adapted the scales used by Dunlap and Van Lier (1978), Noe and Snow (1990), and Roberts (1996). For the measurement of perceived consumer effectiveness of the consumption of BM, we adapted three items of Roberts (1996). Finally, we measured the general green behavior by asking whether respondents participated in some other pro-environmental types of behavior, such as the purchase of green energy or garbage

separation (0=no; 1=yes). Counting the participation in each of these behaviors formed the greenness measure.

An overview of the scales is provided in the Appendix. If not explicitly described, we used a 7-point agree-disagree scale for the non-emotional constructs (-3 totally disagree and +3 totally agree). Most of the items were randomly presented to the respondent in order to overcome carry-over effects (Bickart, 1993).

#### *4.4 Measurement Validation*

In our validation of the different multi-item constructs, we followed the approach of Anderson and Gerbing (1988). We first computed inter-item-correlations and coefficient alphas. Items with low inter-item-correlations resulting in low coefficient alphas were removed. The resulting coefficient alphas were all above the recommended 0.7 level (see appendix), with the two-item scale of perceived distribution of bio-products as an exception with a coefficient alpha of 0.61. Subsequently, we used exploratory factor analysis to check the one-dimensionality of the scales. The results of this analysis revealed that all scales were one-dimensional. Next, all remaining items were taken into the confirmatory factor analysis using Lisrel83. This confirmatory factor analysis was executed per block of variables in accordance with our conceptual model. The model fit statistics per block of variables are provided in Table 2. The resulting statistics are all in line with the recommended values in the literature (e.g., Bagozzi and Yi, 1988; Baumgartner and Homburg, 1996). The factor-loadings were all very significant, which proves the convergent validity of our scales. We also performed chi-squared difference tests in which a correlation between pairs of constructs is freely estimated and then set equal to one to check for the discriminant validity of our scales. (Anderson and Gerbing, 1988). All these difference tests were significant, indicating the discriminant validity of our measures. Using the

estimations from our confirmatory factor analyses we also computed composite reliabilities (see Appendix). These composite reliabilities vary between 0.59 and 0.97. Together with the coefficient alpha values, these composite reliabilities indicate sufficient reliability of our constructs (Bagozzi and Yi, 1988). Hence, we calculated averages for the items of each construct per respondent and used these averages in our analysis. The resulting means, standard deviations, and the correlations between the constructs are reported in Table 3.

-- Insert Table 2 and 3 about here --

#### *4.5 Statistical Model*

We use the Tobit(2)-model to estimate the effects of our considered antecedents on choice and SCR of BM. This model consists of two steps. First, a probit model explaining choice of BM is estimated. Second, an OLS model is estimated explaining SCR of BM for consumers purchasing bio-meat. In this model, the so-called inverse-mill ratio is included to correct for the selection of BM purchasers. This ratio is computed based on the estimations of the probit model explaining choice (for a comprehensive discussion on this model we refer to Franses and Paap (2001)). The Tobit-2 model is estimated in Limdep 7.0 (Greene, 1998). In line with Bowman and Narayandas (2001), we take the log of SCR as the dependent variable in the OLS regression. Using the log of bio-share, the distribution of bio-share becomes less skewed to the left.

In our conceptual model, we also control for the effect of socio-demographics. In order to have a parsimonious model, we only include these demographics in our model when the respective p-value is below 0.25.

## 5. Empirical Results

### 5.1. Choice and SCR of BM

In our sample 54% of the respondents indicated that they purchased BM recently. This percentage is rather high and it might be caused by some sample selection bias. Note, however that a large advantage of this high percentage is, that we have enough consumers in our sample to estimate the probit model. Moreover, overrepresentation of one of the values of the binary variable still leads to efficient and consistent parameters in the probit model (Donkers, Franses and Verhoef, 2003). In figure 2 we report the histogram of SCR for all respondents. Note that this graph also includes the respondents not buying BM. According to this distribution, most of the people buy BM very irregularly (64% of the BM buyers purchase BM 3 or less times out of 10 times). According to our figures, the low market share of BM is not only caused by the fact that people do not buy it, but it is also caused by a majority of BM consumers who most often buy ordinary meat.

### 5.2 Estimation results

The estimation results of the Tobit(2) model are reported in Table 4. In the second two columns of the table, we report the coefficients and the respective standard errors of the probit model explaining choice of BM. In the last two columns, the estimated (unstandardized) coefficients of the OLS model explaining SCR are provided.

#### Choice of BM

The probit model for choice is highly significant ( $p < 0.01$ ). For five of the ten included variables for which we explicitly hypothesized an effect, we find coefficients with significance



levels below 10%. As hypothesized in H<sub>1a</sub>, we find that perceived quality has a significant positive effect (p=0.00) on choice of BM. A very significant negative coefficient (p=0.00) is found for the effect of price perceptions. This provides support for H<sub>2a</sub>. Although our results show a positive coefficient for the perceived distribution of BM, no support is provided for H<sub>3a</sub> because the coefficient is not significant (p=0.14). We find that fear has a significant positive effect (p=0.02). Thus, our results confirm H<sub>4a</sub>, which hypothesized that consumers perceiving more fear about the health consequence of BM are more likely to choose BM. No significant effects of guilt and empathy on choice are found (p=0.31; p=0.10). Hence, we do not find support for H<sub>5a</sub> and H<sub>6a</sub>. We also do not find that social norms have a significant effect (p=0.31). Thus, no support is provided for H<sub>7a</sub>. In contrast with a number of other studies and our own hypothesis H<sub>8a</sub>, we also do not find that environmental concern has a significant positive effect (p=0.42). However, in line with H<sub>9a</sub> we find that green behavior in other instances has a significant positive effect (p=0.02). Our results reveal that perceived consumer effectiveness has a marginal significant positive effect (p=0.06), which provides some support to H<sub>10a</sub>. Finally, with respect to the socio-demographic variables, we only find that education has a positive effect (p=0.11). This latter finding is in line with prior research, which suggests that education level is positively related with environmentally friendly behavior (e.g., Diamantopolous et al., 2003). Summarizing our results, we find that quality perceptions, price perceptions, fear, green behavior, and perceived consumer effectiveness significantly affect choice of BM. Of these variables, the effects of quality perceptions and price perceptions are particularly strong.

### SCR of BM

The model explaining SCR of BM is also significant (p=0.00). This model explains approximately 27% of the variance. In this model, four out of the ten included variables for which

we hypothesized an effect on SCR are significant. Our model does not reveal that quality perceptions have a significant positive effect ( $p=0.13$ ). Thus, we find no support for  $H_{1b}$ . However, we find that price perceptions have a strong and significant negative effect ( $p=0.00$ ), which supports  $H_{2b}$ . No significant effect of distribution is found ( $p=0.20$ ). Thus,  $H_{3b}$  is not confirmed. Fear of health consequences of ordinary meat positively affects SCR ( $p=0.01$ ). The latter result supports  $H_{4b}$ . Although the coefficient of guilt has the right positive sign, it is not significant ( $p=0.22$ ). Thus,  $H_{5b}$  is not supported. Empathy has, however, a significant positive effect on SCR ( $p=0.04$ ). Hence, our results provide support for  $H_{6b}$ . Social norms also have a significant positive effect ( $p=0.02$ ), which confirms  $H_{7b}$ . Likewise with our results in the choice model, we do not find that environmental concern has a significant positive effect on SCR ( $p=0.33$ ). Hence, we cannot find support for  $H_{8b}$ . The positive effect of green behavior in other categories is not significant ( $p=0.20$ ). Perceived consumer effectiveness has a marginal significant effect on SCR ( $p=0.07$ ). Thus, our results provide no support for  $H_{9b}$ , while it provides some support for  $H_{10b}$ . The effect of education level is not significant ( $p=0.23$ ). Finally, our model shows that the inverse mills ratio is marginally significant ( $p=0.08$ ). The latter effect shows that the use of the Tobit(2) model is required.

To summarize, we find that price perceptions, fear, empathy, and perceived consumer effectiveness significantly affect SCR of BM. Likewise with the estimation results in the choice model, especially, price has a strong effect.

## **6. Discussion**

In this research, we investigated the impact of economic / marketing variables, emotions, and environmental variables on both choice and SCR of BM. We also examined whether the

impact of these variables differs between choice and SCR. Before discussing the findings of our study, we first give a brief summary of our results.

### *6.1 Summary of findings*

In table 5, we summarize the empirical findings of our study. Our research supported nine of the twenty expected effects of our included variables on choice and SCR of BM. Our findings also show that the antecedents of choice and SCR of BM are clearly different. Some antecedents have an effect on both behaviors: price perceptions, fear, and perceived consumer effectiveness. Other variables only have an effect on one of the two behaviors. Quality and green behavior in other instances only affect choice. Empathy and social norms only have an effect on SCR. Thus, our results support our claim in the conceptual model that choice and SCR should be considered as different behaviors. As such, we extend prior literature on environmental behavior that does usually not make this empirical distinction. Furthermore, we provide further support for notions in other literature streams in marketing (i.e., brand choice and customer loyalty literature) that different variables impact different types of consumer behavior (e.g., Bolton et al., 2001).

-- Insert Table 5 about here --

### *6.2. Theoretical discussion*

#### Economic /Marketing Variables

As noted in the introduction, the effect of economic/marketing variables on environmental behavior has not been studied often. Our results, however, clearly indicate that these variables are essential to explain the choice of BM. Both perceived quality and price perceptions have a strong

effect on choice, while price has a strong effect on SCR. If we compare the strength of these effects with the other included variables, they seem to be the most important determinants of choice of BM. This stresses the notion that environmental behavior is merely based on an evaluation of the costs (price) and benefits (quality) involved with this behavior. From a marketing perspective this finding implies that eco-products, which have not an equal or higher perceived quality than normal products and/or are priced above the normal products, are likely to get a very small market share. We do not find that perceived distribution affects both choice and SCR. One explanation for this finding is that BM is now widely available for most consumers. Thus, limited distribution is no longer a barrier to buy BM.

### Emotions

We find that fear affects both choice and SCR. This confirms earlier findings in the psychological literature that fear is a powerful emotion for explaining perceived healthy behavior. It also confirms findings of Schifferstein and Oude Ophuis (1998) that health related issues are important determinants of the consumption of organic products. The absence of guilt effects on both choice and SCR confirms remarks in the literature that the relationship between guilt and moral behavior has still not been established. One issue that may be at stake is that guilt may lead to escape from the related behavior. Thus, instead stopping the behavior according to one's personal norms, one may suppress their guilty feelings in their decision process (Eisenberg, 2000). Certainly, more research on this issue is needed. Especially since other researchers have suggested that guilt on other aspects on a consumers' behavior (i.e. smoking cigarettes, drinking alcohol), is related to reduced consumption (e.g., Birkimer, Johnston and Berry, 1993). One explanation for this discrepancy is that guilt about one's consumption behavior that really affects one's well-being changes one's behavior. However, guilt on behavior affecting an others' well-

being is not changing behavior. Our results show that empathy positively affects SCR. This confirms findings of psychologists like Batson and the study of Lee and Holden (1997). It also shows that some consumers can identify themselves to some extent with the living situation of animals in the ordinary meat industry, which subsequently leads to empathic feelings and results in consuming BM.

### Environmental variables

We do not strong effects of environmental concern. This finding contrasts with many studies in the environmental literature that stress the effect of environmental concern or consciousness on environmental behavior. There are several reasons for our finding. First, we included several other explanatory variables in our model. Prior significant findings may occur due to omitted variable problems. Second, the considered behavior is perhaps rather specific, which may reduce the explanatory power of the more general construct environmental concern. Third, instead of a factor driving behavior, one might also think of environmental concern affecting perceptions and emotions surrounding that behavior. Indeed, our correlation matrix between the several constructs (Table 3) reveals some moderate correlations between environmental concern and factors, such as quality perceptions and empathy. However, it is important to note that, according to our results, the importance of environmental concern for explaining a consumers' environmental (purchase) behavior has to some extent been exaggerated. In this sense, we agree with Schifferstein and Oude Ophuis' (1998) remarks that the importance of environmental concern for buying of organic food is marginal. We do find a that green behavior has a positive effect on choice of BM. This confirms findings of Thorgensen (1999) that environmental behaviors may be related. The finding of a significant effect of perceived consumer effectiveness on both choice and SCR confirms earlier studies claiming the importance

of this variable (e.g., Pieters et al., 1999). We note, however, that this effect is not as strong as might be expected. In that sense, our result is in line with Lee and Holden (1999), who report that perceived consumer effectiveness has no effect on low-cost consumer behavior. Note, however, that they do not control for economic variables in their model.

### Socio-demographics

Although we did not explicitly theorize on the effect of socio-demographics, we have controlled for these consumer characteristics in our model. Our results only reveal that education has a rather small and non-significant effect. Recently, Diamantopolous et al. (2003) and Roberts (1996) demonstrated that these variables still matter. However, they looked at general environmental behavior. Moreover, Diamantopolous et al. (2003) do not control for the effects of other variables. Our results show that, if we include these other variables, socio-demographics have almost no effect. This result is pretty much in line with findings in other areas of marketing and consumer behavior. For example, Ailawadi, Neslin and Gedenk (2001) show that socio-demographics only marginally explain buying of store brands and deal proneness, when they include the effect of several psychographics. They conclude that socio-demographics affect psychographics, which subsequently affect consumer behavior. This mediating role of psychographics might also be relevant for explaining environmental behavior. However, as this was not the focus of this research, future research could investigate this mediating role.

### Differences between choice and SCR

As previously noted, our research reveals several differences between the antecedents of choice and SCR. First, perceived quality only affects choice. Thus, perceived quality of BM does not lead to higher SCRs. One explanation for this differential effect is that quality functions as a

qualifier for buying BM. For the extension of purchases of BM, quality is no longer that important. One other likely explanation, which is rather relevant for the consumption of BM, is that the reported high price levels of BM are perceived to be so high that they prevent consumers from buying more BM, despite the fact that they think it is actually better than ordinary meat. Second, our results indicate that empathy only affects SCR. Thus, empathy is not a main antecedent of choice of BM. We did not have any preliminary expectations that this differential effect might appear. One implication of this finding is that purely altruistic motives are not important in the choice stage. Given our findings it is apparent that this stage is dominated by economic personal motives and more egoistic emotional motives (i.e., fear). When consumers are deciding whether or not to extend their buying of BM, altruistic motives are indeed important. In that decision phase, the altruistic motives can counter-balance the high perceived prices of BM. Our results also show that social norms only affect SCR. This result contrasts with our preliminary expectations, in which we expected the exact opposite. One possible explanation is that as with our reasoning on empathy the presence of social norms may counter-balance the high perceived costs of buying more BM. Thus, the presence of social norms may be a reason to pay the additional required price premium of BM. If these norms are not existent, consumers will be less likely to do that. Finally, our results indicate that green behavior only affects choice. Thus, consumers are likely to behave in a consistently environmentally friendly manner in different situations. However, this behavioral consistency does not lead to an increased number of BM purchases.

### *6.3 Managerial and policy implications*

Our findings are relevant for firms offering organic products and BM in particular (i.e., retailers and manufacturers) and governments and/or public institutions stimulating the consumption of organic food and BM in particular.

For firms offering BM our study have the following implications. To enhance sales volumes, two strategies can be used. First, firms can try to enhance the number of consumers buying BM (increase penetration). Second, firms can try to increase SCR of consumers buying BM. To enhance the number consumers buying BM, firms should aim to further enhance quality perceptions of BM and to reduce the price perceptions of BM by decreasing prices. Regular sales promotions can also be used to temporarily make BM more attractive. Anecdotic evidence in the Netherlands suggests that price reductions are rather useful. If main retailers in the Netherlands have organic products on promotion, the sales volume of organic products increases substantially. Another way to increase penetration is to further communicate that organic production methods lead to healthier products. Finally, one can attract more consumers by using promotional strategies, who also behave in an environmentally friendly way in other instances. Retailers can also enhance earnings from BM buyers by organizing cross-promotions with, for example, green energy providers. These cross-promotions aim to sell green energy to BM buyers. To increase the SCRs of consumers buying BM, price perceptions should again be enhanced. Among these groups of consumers, one can again stress the health consequences of BM and one can also try to communicate in such a way that consumers feel more empathy for animals in the ordinary meat industry. Finally, one could stress in advertising that eating BM really can change the meat industry.

Governments have several instruments at their disposal to increase the consumption of BM. Organic production costs are much higher than the costs of for non-organic production.



Hence, prices of organic products are usually higher. Government can subsidize organic production methods. This may decrease production costs and finally lead to lower prices for consumers. Another strategy is to tax non-organic production methods and/or products, which would lead to higher prices for non-organic products. Another strategy is the development of a communication campaign with the central message is that the consumption of organic products has a significant positive impact on the environment. However, given the dominance of price, the effectiveness of these types of campaigns should be questioned.

#### *6.4 Research limitations and future research*

This research has several limitations. First, we studied only one single category (meat) in only one country, which raises questions about the external validity of our findings. Do our findings also hold for other food categories? And even less specific, do the findings also hold for other environmental behaviors? Our contention is that price and quality remain important in other food categories. The role of emotions may differ. The role of empathy may especially be less important. However, fear of health consequences seems to remain an important determinant in other categories as well. With respect to other environmental behaviors, our findings stress the importance of personal benefits and costs. This is important in other behaviors as well. For example, financial service organizations offering green financial services claim that they have equal or almost equal rents as ordinary banks. The absent effect of environmental concern may also hold for other behaviors as well, when researchers control for the effect of other variables. Future research could do this. Second, the measurement of distribution perception was done with only two items. Future research could develop a more extended scale. Third, we measured emotions in questionnaires using an often-used approach. However, one might still discuss whether these emotions become really prevalent when respondents fill in a questionnaire, that

isn't directly related to their consumption behavior. Fourth, we used cross-sectional data. Future research could try to use longitudinal data on the purchase behavior of organic products. With these data one could perhaps relate consumer characteristics and/or data on marketing instruments to actual buying behavior of organic products in one or multiple categories over time.

We also acknowledge some other issues for further research. First, researchers could develop more extended models that also consider the antecedents of our included explanatory variables. This way we get a more complete picture of how firms and government can impact these variables. Second, researchers could consider possible moderators of our included variables. For example, psychologists propose that feelings of closeness may moderate the effect of empathy. Also important consumer behavior factors, such as price consciousness and values, may moderate the effect of some of our included antecedents. Researchers could also study whether our included variables mediate the effects of socio-demographics. Third, future research could specifically focus on the role of guilt. Intuitively, guilt is an important variable, but the question is how it is related to environmentally friendly behavior has not yet been answered.

Table 1:

Sample Characteristics (n=269)

Age	Percentage	Education	Percentage
< 31 year	21.3%	No – Very Low Education	4.5%
31 – 45 year	34.3%	Low Education	16.8%
46- 60 year	31.7%	Middle Education	38.4%
> 60 year	12.7%	High Education	40.3%
Household Size	Percentage	Income	Percentage
1 person	23.5%	Below Medium	16.2%
2 persons	35.8%	Approximately Medium	35.4%
3 persons	14.2%	Medium – two times Medium	33.2%
> 4 persons	26.5%	Above two times medium	15.3%

Table 2

Model fit measurement models

<b>Block</b>	<b><math>\chi^2/\text{d.f.}</math></b>	<b>GFI</b>	<b>AGFI</b>	<b>CFI</b>	<b>RMSEA</b>
Marketing variables	1.75 (p>0.05)	0.94	0.90	0.95	0.06
Emotions	2.26 (p>0.05)	0.92	0.88	0.98	0.08
Social norms and Environmental variables	2.53 (p>0.05)	0.93	0.88	0.92	0.08

Table 3

Means, standard deviations (s.d.) and correlations between antecedents of choice and SCR of BM (n=269)

<b>Variables</b>	<b>Mean</b>	<b>S.d.</b>	<b>QP</b>	<b>PP</b>	<b>DP</b>	<b>FR</b>	<b>GLT</b>	<b>EMP</b>	<b>SN</b>	<b>ENV</b>	<b>GR</b>	<b>PCE</b>
Quality perception ( <b>QP</b> )	3.34	0.49	1.00									
Price perception bio ( <b>PP</b> )	3.09	0.67	-0.28	1.00								
Distribution perception ( <b>DP</b> )	0.23	1.42	-0.05	0.00	1.00							
Fear ( <b>FR</b> )	1.86	1.30	0.29	-0.12	-0.03	1.00						
Guilt ( <b>GLT</b> )	1.80	1.28	0.21	-0.25	-0.04	0.55	1.00					
Empathy ( <b>EMP</b> )	2.80	1.90	0.33	-0.19	-0.14	0.51	0.60	1.00				
Social norms ( <b>SN</b> )	-1.00	1.08	0.09	-0.23	0.02	0.11	0.07	0.13	1.00			
Environmental concern ( <b>ENV</b> )	1.15	1.12	0.23	-0.18	-0.03	0.22	0.26	0.34	-0.03	1.00		
Greenness ( <b>GR</b> )	1.47	0.66	0.09	-0.11	-0.07	0.10	0.18	0.21	0.13	0.18	1.00	
Perceived Consumer Effectiveness ( <b>PCE</b> )	0.89	1.36	0.32	-0.29	0.01	0.27	0.33	0.39	0.14	0.29	0.16	1.00

Table 4

Estimation results of Tobit(2) model explaining choice and SCR of BM (n=269)

Variable (expected sign)	<i>Choice</i>		<i>SCR</i>	
	Coefficient*	Standard error	Coefficient*	Standard error
Constant	-1.05	0.96	0.17	1.18
QP (+)	0.56 <sup>a</sup>	0.22	0.27	0.23
PP (-)	-0.64 <sup>a</sup>	0.14	-0.69 <sup>a</sup>	0.27
DP (+)	0.07	0.07	0.05	0.06
FR (+)	0.15 <sup>b</sup>	0.07	0.17 <sup>b</sup>	0.08
GLT (+)	-0.02	0.03	-0.01	0.02
EMP (+)	0.01	0.008	0.02 <sup>b</sup>	0.01
SOCN (+)	0.04	0.08	0.18 <sup>b</sup>	0.08
ENV (+)	-0.01	0.09	0.04	0.08
GR (+)	0.29 <sup>b</sup>	0.14	0.13	0.16
PCE (+)	0.11 <sup>c</sup>	0.07	0.13 <sup>c</sup>	0.09
Education	0.18 <sup>c</sup>	0.11	0.15	0.13
Inverse mills ratio	-	-	1.21 <sup>c</sup>	0.70
Model statistics	Log likelihood = -146.04		R <sup>2</sup> =0.27; Adj. R <sup>2</sup> =0.20;	
	$\chi^2 = 78.84^a$		F-value = 4.01 <sup>a</sup>	

\* Level of significance: <sup>a</sup> 0.01; <sup>b</sup> 0.05; <sup>c</sup> 0.10; one-sided significance level reported when a coefficient sign is expected on forehand.

Table 5

Summary of Findings

Variable	Hypothesis	Hypothesized Effect	Effect on Choice	Effect on SCR
Perceived quality	1a,b	+	+	0
Price perception	2a,b	-	-	-
Perceived distribution	3a,b	+	0	0
Fear	4a,b	+	+	+
Guilt	5a,b	+	0	0
Empathy	6a,b	+	0	+
Social norm	7a,b	+	0	+
Environmental concern	8a,b	+	0	0
Green behavior	9a,b	+	+	0
Perceived consumer effectiveness	10a,b	+	+	+

**Figure 1:**

Conceptual model explaining choice and SCR of BM

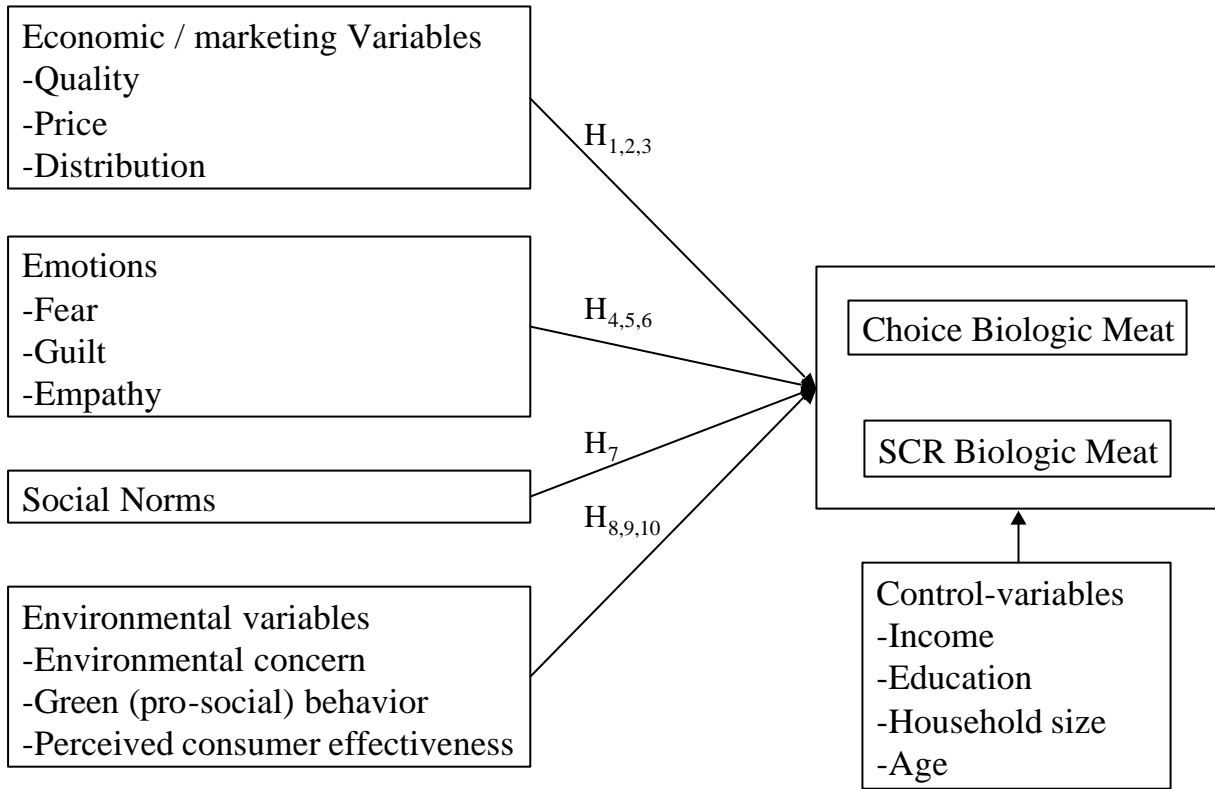
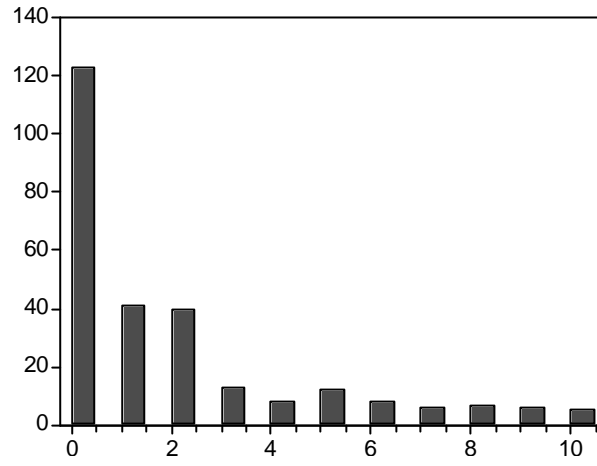




Figure 2

Frequency distribution of SCR BM (n=269)

(Mean = 1.87; standard deviation = 2.81)



## Appendix

### **Description of Scales (coefficient alphas ( $\alpha$ ), composite reliabilities (CR))**

#### **Perceived quality of bio-meat ( $\alpha=0.81$ ; CR=0.80)**

How do you think of the attributes of bio-meat in comparison with the attributes of ordinary meat? Are these attributes much worse, worse, as good as, better or much better than those of ordinary meat?

- Taste
- Smell
- Succulence
- Outside
- Freshness

#### **Price perception of bio-meat ( $\alpha=0.75$ ; CR=0.79)**

What do you think of the price of bio-meat? (1= very high, 5 = very low) (r)

I think the price of bio-meat is much too high (-3 is totally disagree, +3 totally agree)

The price of bio-meat is no barrier to purchase it (-3 is totally disagree, +3 totally agree) (r)

#### **Distribution of bio products ( $\alpha=0.61$ ; CR=0.59)**

In my neighborhood there are sufficient stores selling biologic products.

The supermarket that I visit sells sufficient biologic products.

#### **Fear ( $\alpha=0.94$ ; CR =0.93)**

Imagine the following situation: You just have purchased ordinary meat at your local supermarket. You have planned to consume this meat this evening. Then you start thinking about the health consequences of eating ordinary meat. To which extent are the following feelings present after purchasing the ordinary meat (1 = to a very low extent; 7 = to a very high extent)

- Worried
- Scared
- Afraid

#### **Guilt ( $\alpha=0.95$ ; CR =0.94)**

Imagine the following situation: You have just purchased ordinary meat at your supermarket.

You are planning to eat it tonight. To which extent are the following feelings present after purchasing the ordinary meat (1 = to a very low extent; 7 = to a very high extent)

- Troubled mind
- Guilty
- Unpleasant
- Regret

**Empathy** ( $\alpha=0.97$ ; CR =0.97)

To what extent are the following feelings present, when you think of the well-being of animals in ordinary farms? (1 = to a very low extent; 7 = to a very high extent)

- hurt
- helpless
- pitiful
- compassion
- broken-hearted

**Perceived Consumer Effectiveness** ( $\alpha=0.80$ ; CR= 0.83)

Every consumer can improve the well-being of animals in farming by eating bio-meat.

For a consumer it is impossible to improve the well-being of animals by eating bio-meat. (r)

Eating bio-meat has a positive effect on the well-being of animals in farming.

**Social Norms** ( $\alpha=0.70$ ; CR=0.73)

For my friends and acquaintances the consumption of bio-meat is important.

Many of my acquaintances also purchase bio-meat.

My friends reject the fact that I would purchase ordinary meat.

My acquaintances do not urge me to purchase bio-meat. (r)<sup>a</sup>

**Environmental concern** ( $\alpha=0.71$ ; CR = 0.68)

Humans have the right to modify the natural environment to suit their needs.

Humans need not to adapt to the natural environment because they can remake it to suit their needs.

Humans are placed above the nature.

Plants and animals primarily exist to be used by humans

Humans must live in harmony with nature in order to survive (r)

**Green behavior**

Do you purchase green energy? (yes/no)

Do you separate garbage? (yes/no)

Do you save or invest green? (yes/no)

**Notes:**

<sup>a</sup> Item deleted because of low inter-item correlation.

## References:

- Abbott, A. (2001, January). BSE fallout sends shock waves through Germany. *Nature*, 409, 275
- Aillawadi, K.L., Neslin, S.A. & Gedenk, K. (2001). Pursuing the value-conscious consumer: Store brands versus national brand promotions. *Journal of Marketing*, 65 (1), 71-89
- Anderson, J.C. & Gerbing, D.W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103 (3), 411-423
- Armstrong, J.S. & Overton, T.S. (1977). Estimating non-response bias in mail surveys. *Journal of Marketing Research*, 14 (3), 396-402
- Bagozzi, R.P., Baumgartner, H. & Pieters, R. (1998). Goal-directed emotions. *Cognition and Emotion*, 12 (1), 1-26
- Bagozzi, R.P. & Dabholkar, P.A. (1994). Consumer recycling goals and their effect on decisions to recycle: A means-end chain analysis. *Psychology & Marketing*, 11 (4), 313-34
- Bagozzi, R.P. & Moore, D.J. (1994). Public service advertisements: Emotions and empathy guide prosocial behavior. *Journal of Marketing*, 58 (1), 56-70
- Bagozzi, R.P. & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*. 16 (1), 74-94
- Banerjee, S.B., Iyer, E.S. & Kashyap, R. (2003). Corporate environmentalism: antecedents and influence of industry type. *Journal of Marketing*, 67 (2), 106-122
- Batson, C.D. & Coke, J.S. (1981). Empathy: A source of altruistic motivation for helping? In J.P. Rushton & R.M. Sorrentino (Eds.), *Altruism and helping behavior: Social, personality, and development perspectives* (pp. 167-187). Hillsdales, N.J.: Erlbaum
- Batson, C.D. (1987). Prosocial motivation: is it ever truly altruistic. *Advances in Experimental Social Psychology*, 20, 65-122

- Baumgartner, H. & Homburg, C. (1996). Applications of structural equation modeling in marketing and consumer research. *International Journal of Research in Marketing*, 13 (2), 139-161
- Berger, I.E. & Corbin, R.M. (1992). Perceived consumer effectiveness and faith in others as moderators of environmental responsible behaviors. *Journal of Public Policy & Marketing*, 11 (2), 79-88
- Bickart, B.A. (1993). Carry-over and backfire effects in marketing research. *Journal of Marketing Research*, 30 (1), 52-62
- Birkimer, J.C., Johnston, J.C. & Berry M.M. (1993). Guilt and help from friends: Variables related to healthy behavior. *Journal of Social Psychology*, 133 (5), 683-692
- Birkimer, J.C. & Belshoe, L.K. (1999). Covert self-reinforces, fear of consequences, and health behavior. *Journal of Social Psychology*, 139 (5), 654-664
- Bolton, R.N. & Lemon, K.N. (1999), A dynamic model of customers' usage of services: usage as an antecedent and consequence of satisfaction, *Journal of Marketing Research*, 36, 171-186
- Bolton, R.N., Lemon, K.N. & Verhoef, P.C. (2001). The theoretical underpinnings of customer asset management: A framework and propositions for further research. *Working paper*, Erasmus Research Institute in Management
- Bowman, D. & Narayandas, D. (2001). Managing customer-initiated contacts with manufacturers: the impact on share of category requirements and word-of-mouth behavior. *Journal of Marketing Research*, 38 (3), 281-297
- Brown, S.P., Cron, W.L. & Slocum Jr., J.W. (1997). Effects of goal-directed emotions on salesperson volitions, behavior, and performance: a longitudinal study. *Journal of Marketing*, 61 (1), 39-50

- Campo, K., Gijsbrechts, E. & Nisol, P. (2000). Towards understanding consumer response to stockouts. *Journal of Retailing*, 76 (2), 219-242.
- Chialdini, R.B., Brown, S.L., Lewis, B.P., Luce, C. & Neuberg, S.L. (1997). Reinterpreting the empathy – altruism relationship: When one into one equals oneness. *Journal of Personality and Social Psychology*, 73 (3), 481-494
- Childers, T.L. & Rao, A.R. (1992). The influence of familial and peer-based reference groups on consumer decisions. *Journal of Consumer Research*, 19 (3), 198-211
- Dahlstrand, U. & Biel, A. (1997). Pro-environmental habits: Propensity levels in behavioral change. *Journal of Applied Social Psychology*. 27 (7). 588-601
- Diamantopolous, A., Schlegelmilch, B.B., Sinkovics, R.R. & Bohlen, G.M. (2003). Can socio-demographics still play a role in profiling green consumers? A review of the evidence and an empirical investigation. *Journal of Business Research*, 56, 465-480
- Dunlap, R.E. & Van Liere, K.D. (1978). The “new environmental paradigm”: A proposed measuring instrument and preliminary results. *Journal of Environmental Education*, 9, 10-19
- Donkers, B., Franses, P.H. & Verhoef, P.C. (2003). Selective sampling for binary choice models. *Journal of Marketing Research*, 40 (4), forthcoming
- Eisenberg, N. (2000). Emotion, regulation, and moral development. *Annual Review of Psychology*, 51, 665-697
- Eko Monitor (2003), Eko monitor cijfer en trends jaarraport 2002 (Eco monitor figures and trend year report 2002), Biologica (downloadable at [www.platformbiologica.nl](http://www.platformbiologica.nl)).
- Fisher, R.J. & Ackerman, D. (1998). The effects of recognition and group need on volunteerism: A social norm perspective. *Journal of Consumer Research*, 25 (4), 262-275

- Franses, P.H. & Paap, R. (2001). *Quantitative models in marketing research*. Cambridge University Press: Cambridge
- Fransons, N. & Gärling, T. (1999). Environmental concern: conceptual definitions, measurement, and research findings. *Journal of Environmental Psychology*, 19 (4), 369-382
- Greene, W. H. (1998). *LIMDEP Version 7.0 User's Manual Revised Edition*. Econometric Software: New York
- Grunert, S.C. & Juhl, H.J. (1995). Values, environmental attitudes, and buying of organic foods. *Journal of Economic Psychology*, 16 (1), 39-62
- Gupta, S. (1988). Impact of sales promotions on when, what, and how much to buy. *Journal of Marketing Research*, 25 (4), 342-356
- Hartman Group (2003), Organic consumer evolution 2003: Understanding consumer lifestyles in organics, Report Hartman Group, Washington
- Hines, J.M., Hungerford, H.R. & Tomera, A.N. (1987). Analysis and synthesis of research and responsible environmental behavior: a meta-analysis. *Journal of Environmental Education*, 23, 36-41
- Kahlil, E.L. (2003), What is altruism?. *Journal of Economic Psychology*, forthcoming
- Karkoankar, P.K. & Mochis, G.P. (1982). An experimental study of cognitive dissonance, product involvement, expectations, performance and consumer judgment of product performance. *Journal of Advertising*, 11 (3), 32-44
- Kugler, K. & Jones, W.H. (1992). On conceptualizing and assessing guilt. *Journal of Personality and Social Psychology*, 62 (2), 318-327
- Lee, J.A. & Holden, S.J. (1999). Understanding the determinants of environmentally conscious behavior. *Psychology & Marketing*, 16 (5), 373-392

- McIntyre, B. (1998) Young people's attitude to meat, Paper presented at NCPR Dissemination Workshop, UCC
- Menon, A. & Menon A. (1997). Enviropreneurial marketing strategy: The emergence of corporate environmentalism as market strategy. *Journal of Marketing*, 61 (1), 51-67\
- Mikulincer, O.G., Halevy, V., Avihou, N., Avidan, S. & Eshkoli, N. (2001). Attachment theory of reactions to others' needs: Evidence that activation of the sense attachment security promotes empathic response. *Journal of Personality and Social Psychology*, 81 (6), 1205-1224
- Noe, F.P. & Snow R. (1990). The new environment paradigm and further scale analysis. *Journal of Environmental Education*, 21 (4), 20-26
- Opatow, S. & Weiss, L. (2000). Denial and the process of moral exclusion in environmental conflict. *Journal of Social Issues*, 56 (3), 475-490
- Osterhuis, T.L. (1997). Pro-social consumer influence strategies: when and how do they work?. *Journal of Marketing*, 61 (3), 16-29
- Park, C.W. & Parker Lessig, V. (1977). Students and housewives: Differences in susceptibility of reference group influence. *Journal of Consumer Research*, 4, 102-110
- Pennings, J. M.E., Wansink, B. & Meulenberg, M.T.G. (2002). A note on consumer reactions to a crisis: the case of the mad cow disease. *International Journal of Research in Marketing*, 19 (1), 91-100
- Pieters, R., Bijmolt, T., Raaij van, F. & Kruijk de, M. (1998). Consumers' attributions of proenvironmental behavior, motivation, and ability to self and others. *Journal of Public Policy & Marketing*, 17 (2), 215-225
- Plutchik, R. (1980). *Emotions: A psychoevolutionary hypothesis*. New York: Harper & Row



- Reibstein, D.J. & Farris P.W. (1995). Market share and distribution – a generalization, a speculation, and some implications. *Marketing Science*, 14 (3), G190-G202
- Richins, M.L. (1997). Measuring emotions in the consumption experience. *Journal of Consumer Research*, 24 (3), 127-146
- Roberts, J.A. (1996). Green consumers in the 1990s: Profile and implications for advertising. *Journal of Business Research*. 36 (3), 217-23
- Rogers, R.W. (1975). A protection motivation theory of fear appeals and attitude change. *Journal of Psychology*, 91, 93-114
- Schifferstein, H.N.J. & Oude Ophuis, P.A.M. (1998). Health related determinants of organic food consumption in The Netherlands. *Food Quality and Preference*, 9 (3), 119-133
- Schultz, P.W. (2001). The structure of environmental concern: concern for self, *Journal of Environmental Psychology*, 21, 327-339
- Schultz, P.W. (2000). Empathizing with nature: The effects of perspective taking or concern for environmental issues. *Journal of Social Issues*, 56 (3), 391-406
- Steenkamp, J.B.E.M. (1989), Product quality: An investigation into the concept and how it is perceived by consumers, Van Gorcum, Assen
- Stern, P.C. (2000). Toward a coherent theory of environmentally significant behavior. *Journal of Social Issues*, 56 (3), 407-424
- Stern, P.C. & Dietz, T. (1994). The value basis of environmental concern. *Journal of Social Issues*, 50 (3), 65-84
- Sutton, S.R. (1982). Fear-arousing communications: A critical examination of theory and Research, In *Social Psychology and Behavioral Medicine* (pp. 303-337), J.R. Eiser (ed), New York: John Wiley & Sons

- Tangney, J.P. (1992). Situational determinants of shame and guilt in young adulthood. *Personality and Social Psychology Bulletin*, 18, 199-206
- Thorgersen, J. (1999), Spillover processes in the development of a sustainable consumption pattern. *Journal of Economic Psychology*, 20, 53-81
- Tellis, G.J. (1988). The price elasticity of selective demand – a meta-analysis of econometric models of sales. *Journal of Marketing Research*, 25 (4), 331-341
- Verbeke, W. & Bagozzi, R.P. (2003). Exploring the role of self- and customer-provoked embarrassment in personal selling. *International Journal of Research in Marketing*, 20 (3), 233-259
- Verhoef, P.C. (2003). Understanding the effect of customer relationship management efforts on customer retention and customer share development. *Journal of Marketing*, 67 (4), 30-45
- Willer, H., Lünzer, I. & Yussefi, M. (2003). Öko-Landbau in Deutschland. (Eko Agriculture in Germany) (downloadable at [www.soel.de/oekolandbau/deutschalnd\\_ueber.html](http://www.soel.de/oekolandbau/deutschalnd_ueber.html))
- Zeithaml, V.A. (1988). Consumer perceptions of price, quality and value – a means-end model and synthesis of evidence. *Journal of Marketing*, 52 (3), 2-22

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