MSc Thesis Marketing and Consumer Behaviour

Effect of product categories location on consumers' choices

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This thesis is dedicated to my parents and my sister.

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Abstract

This study examines the effect of products category location on consumers' choices and evaluation of the store. Based on the theory that the act of making choices depletes the resources needed for exerting self-control and leads to ego-depletion, it was hypothesized that there would be differences concerning the choices that take place at the beginning of the shopping trip versus those that happen at the end. Firstly, the effect of ego-depletion was tested through a pilot study which confirmed that choice making results in ego-depletion. Afterwards, it was examined how different locations of unhealthy product categories would affect consumers' choices towards unhealthy and healthy products. The results gained from this study suggest that there is an effect of product locations on consumers' choices. Moreover, the personality traits of self-control and health goal relevance were taken into account as they were expected to have moderating role in the decision making progress. However, it was found that they do not to play a role in the choice decision for this study. Finally, consumers' evaluation for the stores was measured and found not to be affected by the different location of unhealthy product categories. All in all, the results indicate that there is a connection between ego-depletion and unhealthy product's choices.

Chapter 1: Introduction

When you enter a supermarket you do not see all product categories immediately. If you try to remember the point where you see delicious biscuits, savory potato chips and a variety of yummy chocolates you will realize that they are usually located somewhere in the middle of the supermarket or near the cash registers. Imagine now that you enter the supermarket and you meet all these delicious unhealthy products just in the beginning of your shopping trip. Would your attitude and buying intentions towards these products be different? In other words, would you be more able to resist or would you buy these products more easily?

Choosing food products is one of the most common activities that consumers practise during the day. Food choice decisions for consumers determine what they will eat (Wansink, 2004), and what they will purchase. It is not surprising that consumer choice is one of the most studied fields in the marketing literature (Dhar & Simonson, 1999). Environmental factors which influence food choices, such as variety, smell, lighting, the presence of other people, have been researched (Wansink, 2004; Stroebele & De Castro, 2004). However, questions about how product categories location influences consumers' choices have not attracted that much research.

In the retail environment product categories of healthy and unhealthy products compete for consumers' attention and preferences. In supermarkets, there are many factors that trigger the consumption of unhealthy snack products such as promotions of unhealthy snack products and disposition of unhealthy snack products at checkouts. In a recent study examining the proportion of shelf space devoted to fresh products and snacks in 419 stores in Louisiana and Los Angeles, it was found that supermarkets devoted the biggest amount of space to unhealthy snack items (Farley et al., 2009). Buying occasionally snack products does not cause any harm, but consuming them in a regular base can be a threat for health (Verplanken et al., 2007). Unhealthy snacking can cause a serious risk, especially for young people (Zizza et al., 2001). In Western societies, people tend to consume around 2.5 snacks per day (Stroebele et al., 2009). Moreover, snacks have increased in energy density, frequency of consumption, and contribution to daily energy intake in the U.S. since the 1970s (Marchiori et al., 2011). Ovaskainen et al., (2006) in their research in Finland found a tendency for higher contribution of energy intake from snacks compared with previous years.

This study will focus on the location of unhealthy snack products in supermarkets as an influencing factor on purchase choice. Product categories do not attract consumers in isolation but as a part of the whole store assortment. Location of product categories is a key element as it moderates how appealing categories are for the consumers (Campo et al., 2000). In scientific literature there is strong evidence which supports that the way healthy and unhealthy food is presented determines individuals' choices and quantity of healthy food consumed (Finkelstein & Fishbach, 2010; Wilcox, 2009).

1.2 Problem statement

As the epidemic of obesity has increased in parallel with the rise of snacking habits, the hypothesis that snacking could be a major factor in the development of obesity has developed (Bes-Rastrollo et al., 2009). Astrup et al. (2006) claim that the "increased consumption of energy-dense food with high levels of fat, sugar and refined carbohydrates combined with reduced physical activity is seen as the main cause of the obesity epidemic" (p.303). Moreover, Gregori et al. (2011) mention that the majority of commercially available snack, including sweets, chocolate and savory snacks, are more energetically dense than most foods and therefore they consist the major contributors to calorie and saturated fat intake relative to the average of the overall diet. Therefore, it seems justified the attention given to unhealthy snacks as contributors to obesity.

Imagine a consumer standing in a supermarket willing to buy some healthy food and then coming across attractive unhealthy products. A dilemma arises; both consumer's enjoyment gained from unhealthy tasty products and nutrition benefits from healthy options. In this way, self-control dilemmas are activated due to conflicting personal goals (Fishbach & Zhang, 2008). Consumers have to resolve these conflicts by focusing on a centric/high priority personal goal and restrict the salience of the goals which are in conflict (Fishbach et al., 2003). Fishbach and Zhang (2008) give two dynamics of goals in their research; the highlighting and the balancing. According to the dynamic of highlighting consumers make choices which are congruent with the most important goal. Contrary, in the balancing dynamic consumers tend to balance and indulge in temptations. So, their decisions fluctuate between choices which are congruent with the high and the low goal in sequential choices. Imagine now a consumer who is not really health conscious and has no specific health goals. For him/her choosing unhealthy snacks will happen without further concerns.

All in all, consumers and even those consumers who are motivated to achieve their goals, sometimes make choices that are not beneficial for them. These problematic consumers' choices arise from the availability of too many choices (choice overload), self-control problems and the limits of cognitive capacity. However, the design of simple interventions could help consumers make beneficial choices (Ratner et al., 2008) by organizing the context where people make their choices (Thaler & Sunstein, 2009).

Nudging is a strategy to help people improve their lives and reach their own goals. Small changes in supermarkets' environmental conditions can have major impacts on people's choices in a way that they will be helped to make better choices without feeling pressed or upset. Using nudging in the food domain can help people to eat healthier without restricting them, as all product choices will be still available to them. A striking example of how nudging could have beneficial outcomes for consumers was apparent in a recent study conducted by Fox et al. (2005) when they found that organizing the unhealthy foods (cookies and crackers) in a menu into one group and separating healthy foods (fruits and vegetables) into separate groups led to more healthy consumption than the opposite arrangement. People's tendency to seek variety over the subsets of options and the salience of the physical arrangement of the three distinct categories, can lead to distribution of choices (Fox et al., 2005). By gaining knowledge on consumers' choices, useful suggestions about nudging people in the direction to choose what is best for them can be given. Thus, by manipulating the location of unhealthy snacks, it will be attempted to help consumers to decrease unhealthy snacks' consumption in order to enhance their own welfare while they still have the freedom of choice.

1.3 Aim of the study

In this study it will be examined how different locations of unhealthy snacks will affect consumers' choices towards unhealthy and healthy snacks. Moreover, consumers' evaluation for the stores where unhealthy snacks are located in different locations will be measured. Furthermore, it will be explored when the choice of unhealthy snacks consists replacement of healthy snacks or additional snacks.

These effects have to be examined in terms of individual characteristics, as individuals' traits play a very important role. Individuals' level of self-control and consumers' tendency to buy impulsively differ between individuals and it is important to examine to what extent location influence consumers' choices and evaluations towards stores for people with differences in these personality characteristics. Furthermore, of big interest is to research the role of having health goals as moderator. Thus, the above effects will be examined for people who hold chronic health goals.

1.4 Research questions

Therefore, the central research question can be formulated as following:

"How does the different location of unhealthy food products in the supermarket influence consumers' choices towards them and their evaluation for the supermarket?"

In order to answer the above research question, the following sub-questions should be answered first:

- How does the different location of unhealthy products influence the choices towards these products for consumers with high or low self-control?
- How does the different location of unhealthy products influence the choices towards these products for consumers with chronic health related goals?
- How does the different location of unhealthy products influence consumers' evaluation towards the supermarket?
- How does the choice of unhealthy products influence the amount of healthy products that consumers will choose?

1.5 Relevance of the thesis

The theoretical relevance of this thesis is to shed light on an issue that has not been studied in depth so far. Even though different factors that influence consumers' decisions have been studied; there is less literature on different locations of products categories in the supermarket, and their influence on healthiness of consumers' choices. Therefore, the results of this research will offer an interesting input for the academic field.

The present study has also practical relevance for consumers' organizations. The results of this thesis will indicate which a good strategy is to be followed by retailers for consumers' welfare. Thus, consumers' organizations can try to persuade retailers to rearrange their assortment of snacks in order to nudge consumers to make healthier choices. Gaining knowledge on the location of unhealthy snacks which assist consumers to make healthier choices, will help individuals in cases where self-control attempts may fail. At the same time, retailers will also benefit from this change of snacks' location as their stores will create a trustworthy environment for consumers who will not feel trapped to purchase unhealthy food. So, while healthy foods have lower profit margins than unhealthy foods (Caraher & Cowburn, 2005) the fact that consumers will be satisfied with the supermarket and their choices is a strong indicator that they will choose the specific store for their future shopping. So, in long-terms this could be a benefit for retailers whose primary concern is to generate revenue.

1.6 Structure of the study

The remaining of the thesis is structured as follows: In the second chapter it will be discussed the theoretical framework with all the theories and concepts that will be used. In the third chapter it will be developed the conceptual framework by integrating the theory and the purpose of the study. The fourth chapter will describe the methodology that will be used followed by chapter fifth with the results. Finally, chapter six will contain the discussion and conclusion of the study.

Chapter 2: Theoretical framework

2.1 Location of product categories in store

The placement of products in stores is the most significant flexible factor of sales (Cohen et al., 2012). There has been a considerable number of studies on products' space allocation in stores (Hansena & Heinsbroeka, 1979; Yang & Chen, 1999; Kampo, 2000) and shelf space allocation is identified as a primary concern for retailers. Due to the rise in the number of products and their competition for consumer preferences, product allocation is characterized as retailers' central merchandising tool in order to enlarge their sales profits (Corstjens & Doyle, 1981).

A significant amount of literature supports that the space allocated to a product category can have a positive effect on category's performance (Corstjens & Doyle, 1981; Desmet & Renaudin, 1998). Desmet and Renaudin (1998) claim that enhanced visibility for a product category can result in positive impact for its performance. While the majority of studies has focused on how the amount of space devoted to a product category within a store affects products categories performance, the effect of the location for product categories in stores is under-researched (Kampo et al., 2000). However, it is obvious that there are differences concerning the location of products in stores and consequently on consumers' choices. For example, products allocated at the center of the aisle will may attract less attention in comparison with products at the end of the aisles or before the cash register. Positioning products in places close to the end of consumers' shopping trip can increase their sales (Curhan, 1974). Placement of candies at the cash register is a well-known strategy that increases sales for this product category (Cohen et al., 2012).

Thus, it is obvious that even if there is not considerable scientific research on the location of product categories in stores, location is a factor that influences consumer choices. Moreover, there are managerial implications which demonstrate that location of product categories have an effect on consumers' purchases. Examples of products placed at wrong spots where cannot be easily reached due to shop environmental settings (i.e. crowded spots at mall's entrance) or products addressed to elderly people located in places where effort is needed in order to be found (Underhill, 2000), indicate that location really matters. Concerning the product category of unhealthy snacks it is certain that retailers' preferable location for their disposition is the cash registers. However, it is not researched how different locations effect consumers' preferences towards unhealthy snack products. In Norway, some supermarkets have removed sweets from the cash registers and replaced them with healthy snacks but, the effects of these actions have not been studied (Honkanen et al., 2012).

2.2 Ego-depletion

When talking about unhealthy snacks' placement in supermarkets, it is important to stress that they are almost never placed in the beginning of the stores. Apparently, this is not a random choice as there are reasons underlying the placement of unhealthy products somewhere in the end of consumers' shopping trip in the supermarkets. The fact that consumers are vulnerable and more susceptible to indulge when they reach the end of the stores it may be the reason. This personal state when consumers have reduced capacity for self-control and are more likely to yield to temptations is called ego-depletion (Baumeister, 2002). Thus, ego-depletion is a strong indicator of the importance of products location on consumers' choices.

Muraven et al., (1998) support that all acts of choices and decisions are exhausting and result in the state of ego-depletion. Ego-depletion is defined as "a temporary reduction in the self's capacity or willingness to engage in volitional action (including controlling the environment, controlling oneself, making choices, and initiating action), caused by prior exercise of volition" (Muraven et al., 1998, p. 1253). Muraven et al., (1998) claim that individuals' acts of volition affect some limited resource, therefore one act of volition will have a negative effect on subsequent acts. The ego depletion theory

also suggests that some internal resource is used by the self in order to make decisions. Therefore, after one initial decision, there would be less of this resource available for the subsequent decisions. Ego-depletion is a personal state of mental fatigue (Baumeister et al., 2006).

There is more evidence which shows that ego depletion affects consumers. Vohs et al. (2008) in their study assigned participants in different conditions where they had to accomplish preordained choices, to consider among options without actually choosing, or both consider and chose (experiment 6). The last condition caused the biggest depletion, indicating that choosing is the most depleting process. Thus, Vohs et al. (2008) supported that depletion is the outcome of thinking, comparing the options and making choices.

Shiv & Fedorikhin (1999) in their research studied consumers' choices between affective and cognitive product features depending on the level of consumers' cognitive resources. Participants were asked to choose between a chocolate cake, which is associated with affective responses, and fruit salad, which is associated with cognitive responses. Afterwards, some participants were placed under cognitive load when asked to memorize seven digit numbers while they were choosing the chocolate cake or the fruit salad. The results indicated that consumers with cognitive load were significantly more influenced by affective product features than those consumers with low cognitive load. In other words, consumers with sufficient resources were better able to resist affective product features, whereas this was more difficult for consumers who lacked resources (Shiv & Fedorikhin, 1999).

Thus, according to the previous, making choices in the supermarket can result in ego-depletion. Consequently, when consumers reach the end of the supermarket they feel more depleted due to previous choices and decisions that they had to make. By placing the unhealthy snacks in the end of the supermarket it may be more difficult for consumers to resist. So, it can be hypothesized that:

Hypothesis H1: The location of unhealthy snacks in the end (compared to the beginning) of the supermarket is expected to result in a greater likelihood of choosing them by consumers.

2.3 Moderators of ego-depletion effect

As it was mentioned above, ego-depletion may have a great influence on consumers' choices. Ego-depletion leads people to become more impulsive and less self-controlled (Baumeister, 2002). People in a state of ego-depletion have stronger preferences for affective product characteristics (Baumeister et al., 2008) and are more likely to yield to temptations and buy impulsively (Baumeister, 2002). There are many different situational factors which deplete people's resources over time, but the extent that individuals get depleted varies. Personality traits play an important role in this process as some people are more susceptible to indulge and to purchase on impulse than others. However, whether ego-depletion affects consumers' choice depends on two factors.

Firstly, the depletion needs to be strong enough in order to affect choices and this is the case for low self-control people who get depleted more easily. Contrary, high self-control people may still have resources to resist when they get depleted. So, for people with high self-control the decrease in their resources may not be such a negative influence as they can still have self-control to continue when they are depleted. Secondly, depletion matters for those people who have the goal to make healthy choices and due to ego-depletion they can no longer fulfill their goal. For people with no salient health goals, depletion will not influence their choices. Although, making choices results in depletion, since they do not have salient health goals, they will not buy healthy products even if they are depleted or not.

2.3.1 Self –Control

Self –Control and Pure Impulsive behavior

Regulating food intake is one of the most important applications for self-control. Consumers face numerous temptations in everyday life and need to restrain themselves. Individuals differ in their level of self-control and this constitutes a stable personality trait (Baumeister, 2002). Self-control expresses people's ability to resist temptations and specifically those which are highly impulsive. Tendency to buy in impulse is strongly related with snacking consumption (Verplanken et al., 2007) and is connected with individuals' low level of self-control. This study will try to shed more light on the interplay between location of unhealthy snacks, people's self-control and their impact on choices.

Tangney, Baumeister, and Boone (2004) defined self-control as a chronic tendency ''to override or inhibit undesired behavioral tendencies (such as impulses) and to refrain from acting on them'' (p.274). Individuals differ in their capacity for self-control and literature supports that self-control is negatively related to health problems while failure of self-control is linked with eating problems (Tangney et al., 2004). Contrary, it is found that impulsivity is positively related with problematic health behavior (Verdejo-Garcia, et al., 2008)

Moreover, Baumeister et al. (2008) suggest that individuals require self-control in order to give sufficient importance on cognitive product features and people with high preferences for affective product features have low levels of self-control. More research also indicates that focusing more on affective product features and less on the cognitive product features suggests a lack of available self-control strength (Hoch & Loewenstein, 1991; Metcalfe & Mischel, 1999). These findings indicate that for people with low self-control is very difficult to resist temptations and it is very likely to indulge when unhealthy snacks are either in the beginning of the supermarket or in the end. However, for depleted individuals with low self-control it seems extremely difficult to resist.

As it was mentioned above, impulsive behavior is relevant to individuals' capacity for self-control. Individuals use their self-control in order to restrict their impulses. Rook (1987) defined impulsive buying as ''Impulse buying occurs when a consumer experiences a sudden, often powerful and persistent urge to buy something immediately. The impulse to buy is hedonically complex and may stimulate emotional conflict. Also, impulse buying is prone to occur with diminished regard for its consequences'' (p.191). For individuals with low self-control is more possible to act impulsively as a consequence of their failure to restrain their impulses (Tangney et al., 2004).

Honkanen et al., (2012) support that when food related self-control is weak or compromised, the likelihood of impulsive unhealthy snacking is bigger. In their study, they found that individuals with weak food related self-control tend to show a stronger tendency for impulsive snack buying than individuals with stronger food related self-control tendency.

From the above, it can be hypothesized that:

Hypothesis H2a: The location of unhealthy snacks in the end of the supermarket is expected to show stronger effects on purchase choices of unhealthy snacks for individuals with low self-control than for people with high self-control.

Hypothesis H2b: The location of unhealthy snacks in the beginning of the supermarket is expected to show stronger effects on purchase choices of unhealthy snacks for individuals with low self-control than for people with high self-control. *While the effect of H2a is expected to be stronger than this of H2b.*

2.3.2 Relevance of Health goals

We can assume that a big percentage of consumers when making product choices are interested in enjoyment gained by food products but also in their health. When individuals have health goals they should put some constrains on their choices as they should behave in congruency with their goals. However, this is not always easy and environmental conditions have a big impact on this process. Moreover, health goals are more relevant and accessible for some people than for others.

Goals are defined as cognitive structures that individuals follow in order to reach a desirable end state (Fishbach & Dhar, 2005). Individuals make choices based on their goals and in many occasions these are conflicting (Fishbach & Dhar, 2005). Individuals encounter multiple activated goals by either focusing on the pursuit of a focal goal or alternating between different and usually conflicting goals (Dhar & Simonson, 1999) and consequently they experience conflict between long-term goals and temptations. In the food domain, these conflicts are very common (Hoch & Loewenstein, 1991). Long-term goals are those which will offer individuals delayed benefits whereas short-terms goals offer immediate and smaller benefits (Metcalfe & Mischel, 1999). For the present study, for individuals with salient health goals, the desire to eat unhealthy snacks will satisfy their short-term goal.

Individuals' health goals are related with the extent that ego-depletion affects individuals. Ego-depleted consumers will be less able to regulate their behavior towards their goals (Baumeister, 2002). Depletion affects more people who try to pursuit a particular behavior (Baumeister et al., 2006). In essence, ego-depletion will affect more people with relevant health goals compared to those without. A striking example is a study by Vohs and Heatherton (2000) who found that dieters ate more when they were depleted whereas nondieters ate the same amount whether depleted or not. For individuals with chronic inhibitions, their ability to self-regulate is decreasing in situations where effortful self-regulation is needed (Vohs and Heatherton (2000). Thus, it is expected that for individuals with salient health goals, the location of unhealthy snacks will affect their choices, while for individuals with no salient health goals there will not be significant effects. So, the following hypothesis can be formulated:

Hypothesis H3a: The location of unhealthy snacks in the end of the supermarket is expected to show stronger effects on purchase choices of unhealthy snacks for individuals with salient health goal than for people with no salient health goal.

Hypothesis H3b: The location of unhealthy snacks in the beginning of the supermarket is expected to show stronger effects on purchase choices of unhealthy snacks for individuals with no salient health goal than for people with salient health goal.

Fishbach and Dhar (2005) suggest that when individuals focus on their progress towards their central goal allow themselves to follow tempting options. In their study, they found that dieters indulged more easily to chocolate bars when they felt that they had made progress for their goal. Research on license effect also suggests that individuals license themselves to indulge in temptations when they have previously acted in line with a longer-term goal. Khan and Dhar (2006) also support that is very common to make an indulgent choice when a healthy choice was made previously. In the same vein the balancing dynamic developed by Dhar and Simonson (1999) suggests that individuals try to balance between high goals and temptations. For example, a dieter may balance between his/her high goal and the temptations and indulge by making one unhealthy option (Fishbach & Zhang, 2008). Taking under consideration the above it is apparent that for individuals with chronic health goal the initial choice of a goal-congruent option influences their subsequent choices. It is possible that consumers feeling proud for their previous healthy options will feel the need to reward themselves by choosing an unhealthy product for their last choice.

So, when healthy snacks are located before the unhealthy snacks in the supermarket, assuming that individuals with salient health goals have chosen a healthy snack product first, is very possible that they will indulge later. Thus, the following proposition will be measured:

The location of unhealthy snacks in the end of the supermarket is expected to result in a greater likelihood of indulging for individuals with salient health goals who had made a healthy option first.

2.4 Store's evaluation

Consumers after having a purchase experience, unconsciously or not, classify the store as "good" and "healthy" or at least "healthy". So, another variable which is very possible to be affected by different locations of unhealthy snacks is the store evaluation. People's overall attitude towards the supermarket will be different depending on which products they will see in the beginning or in the end of the store. Even if the products which constitute the store assortment in the two conditions are the same, the different locations of healthy and unhealthy products in the supermarket will give individuals different impressions for the store.

Theory on the primacy effect suggests that the first impression that individuals form is the lasting one and people tend to make judgments based on this first impression. This effect is apparent in real-life situation and of course in marketing and advertising. A considerable amount of studies has identified the primacy effect (Crano, 1977; DiGirolamo & Hintzman, 1997; Anderson, 1965). Crano (1977) in his study about primacy effect claims that early information receives more attention than the later and short-term memory has more available space to receive this information. Thus, individuals do not have the same ability to process late information as carefully as the earlier information (Crano, 1977). Thus, according to the above theory, by placing the unhealthy food in the beginning of the supermarket it is expected that consumers will evaluate the store worse compared to the store having the unhealthy food in the end.

From the above, it can be hypothesized that:

Hypothesis H4: The location of unhealthy snacks in the beginning (than in the end) of the supermarket is expected to result in less positive evaluations for the store.

2.5 Healthy and Unhealthy snacks: competing or balancing?

Most consumer choices are followed by subsequent choices; however, research is largely focused on isolated choices (Khan & Dhar, 2006). When a product choice in one category is made, it may affect subsequent choices. In this study, it will be also explored if consumers perceive unhealthy and healthy snacks as competing or balancing products by examining consumers' choices of unhealthy and healthy snacks in the same shopping trip. Thus, based on the knowledge gap of product location influence on consumers' choices and trying to go deeper in consumers' decision process, it will be examined the effect of unhealthy snacks buying quantity on healthy snack products choice. So, changes in the location of unhealthy snacks which causes different amounts of purchases for this product category, will result also in different amount of healthy snacks purchases.

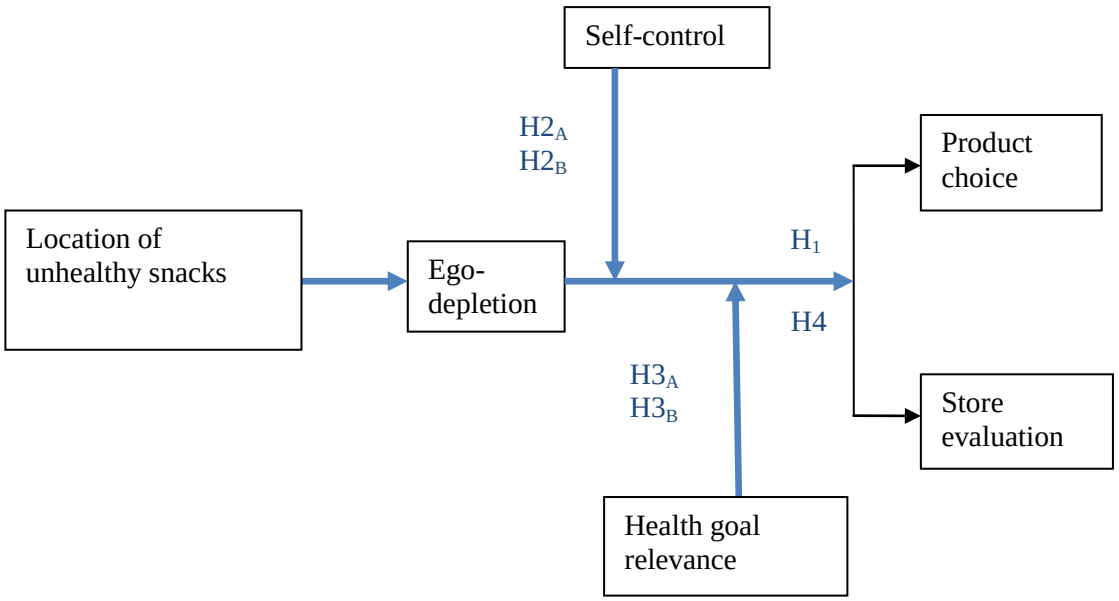
In essence, it will be compared the amount of healthy snacks that consumers will choose to buy in this condition where the location of unhealthy snacks results in bigger number of unhealthy snacks purchases. More specifically, it will be examined if consumers will choose to buy healthy snacks additionally to unhealthy snacks in order to balance their choices between healthy and unhealthy products, or if they will buy fewer healthy snacks. Vice versa, it will be also compared the amount of healthy snacks that consumers will choose in that condition where the location of unhealthy snacks results in smaller number of unhealthy snacks purchases. In this way, the results will show if consumers replace unhealthy snacks with healthy, by buying a bigger amount of healthy snacks, or if they just buy less snacks.

Chapter 3: Conceptual framework

As discussed in the 'Theoretical framework' section the location of products, through the process of ego-depletion, seems to play an important role on consumers' decision. For this reason, the location of unhealthy snacks will be the independent variable in this study. The aim is to manipulate it and examine whether it influences consumers' choice which is the first dependent variable. Moreover, it is hypothesized that location of unhealthy snacks affects consumers' evaluations for the store. Thus, by manipulating the location of unhealthy snacks it is expected to gain different results for the second dependent variable which is the store satisfaction.

However, the impact of the aforementioned independent variable is not direct on consumption and on store satisfaction. In this study two moderator factors will be taken into account. Those are: individuals' levels of self-control and relevance of health goals. They are individual traits and each person may differ in these aspects.

The following figure illustrates the model that this study will use:



Chapter 4: Methodology

4.1 Pilot study

Before the main experiment will take place, a pilot study was designed in order to test the assumption that choice task will evoke ego-depletion for participants. This first study is based on Voh and colleagues' study (2008, experiment 4a) on choice and ego-depletion, using the same choice manipulation activity (i.e making vs. not making choice decisions) and the identical dependent measure of ego depletion (i.e., persistence at an unsolvable puzzle). Supposing that the act of choosing depletes self-resources, subsequent persistence should be decreased. So it was expected that participants who have spent their resources in the choosing task will quit sooner from a tiring task after a series of failures.

Method

Participants:

Participants were Dutch students (41) from Wageningen University who got a product from the virtual supermarket as compensation.

Procedure

The pilot study took place in the building of Leeuwenborch and the estimated time for the experiment was 20 minutes. The participants were randomly assigned in two conditions. Participants in the first condition were told that the first part of the study involves a choice task as they were asked to make around 15 product choices from the virtual supermarket using a shopping list that was given to them. Literature on ego-depletion has shown that individuals get depleted when they have to make a great number of choices (Vohs et al., 2008) or responsible choices (Baumeister et al., 1998). Therefore, in this study, participants in the choice condition read a cover story which intended to make the process of choice more difficult for them (Appendix 1). The instructions for the second condition stated that participants should only have a look at the virtual supermarket and its products (Appendix 2). For both conditions the duration of the first task was hold constant at 10 min in order to be secured that persistence at the second task was not affected by how much time participants had spent in the first task. Participants in both condition after completing the first task, were asked to fill out a short 7-point questionnaire measuring their mood states (BMI, Mayer & Gaschke, 1988). This questionnaire was included in order to be checked that the two different conditions would not create differences in mood of participants (Appendix 3).

When participants in both conditions finished the first task they were asked to provide some data that would help the research on whether female students differ from male students in their problem solving abilities (adapted by Baumeister et al., 1998). Participants were presented with a sheet of 2 unsolvable tracing puzzles and they were asked to trace each figure in its entirety without lifting the pencil from the paper or retracing any line (Appendix 4). In the beginning each participant was given a solvable practice figure in order to learn how the puzzle works and to ask any questions. This procedure became popular by Glass, Singer and Friedman (1969) and has been used in many studies (Vohs et al., 2008). Moreover, participants were informed that they could take as many trials as they wanted as they would be judged on whether or not they finished tracing the figure (Moller et al., 2007) and they could stop, finish or quit anytime they wanted (Adapted by Vohs et al., 2008). The performance on the task of the two groups will be compared based on the time that participants persisted. Finally, participants in both conditions were given a questionnaire including questions about the functionality of the virtual store (this was presented as the scope of the first task), a manipulation check questionnaire and the two scales measuring self-control and health goals (Appendix 5).

4.2 Main Study

For the scope of this study, potato chips and chocolate bars were the unhealthy product categories whose location will be manipulated in order to check the effect on consumers' choices and evaluations of the stores. The choice of these product categories is justified as potato chips and most savory snacks belong to the category of foods with high fat and salt contents (Astrup et al. 2006). Thus, increased consumption of these products is not beneficial for consumers. Moreover, the term "location" of unhealthy snacks in the supermarket refers to the spatial sequential order from the supermarket entrance to the supermarket checkouts.

Method

Participants

The sample study was consisted of Dutch students (123 in number) as this sample is easier to be reached. Moreover, the fact that only Dutch persons participated in the experiment ensured that there will be no mixed results because of cultural differences concerning eating behaviors. Participants were informed that at the end of the survey they would get one of the products they have chosen during the choice task as a reward.

Procedure

This experiment was accomplished using the program of the virtual supermarket also. The participants were asked to make around 15 purchases from the shopping list that will be given to them and also to include the snack products which they need for one week among their other groceries (Appendix 5.1) .This request was necessary in order to be secured that participants will choose snack products.

This study was a between-subjects experiment with two main conditions: unhealthy snacks located in the beginning of the virtual shop and unhealthy snacks located in the end. More specifically, in both conditions there will be the options of unhealthy and healthy snacks. However, in the first condition participants will meet unhealthy snacks immediately when they enter the visual shop, afterwards they will see 5 neutral food product categories and later they will see healthy snacks following again by 5 neutral nonfood product categories. In the second condition, consumers will first meet 5 neutral food product categories, then healthy snacks followed by 5 neutral nonfood product categories and finally unhealthy snacks. A third condition was added in order to be compared with the first condition. In the third condition, consumers will first meet 5 neutral food product categories then unhealthy snacks and 5 neutral nonfood product categories will follow. At the end of the virtual store will be placed the healthy snacks. The scope of adding this condition is to gain confidence that the difference in choices is due to ego-depletion and not because of the order in which consumers meet healthy products (as in the first condition healthy products are placed after the unhealthy whereas in the second before). So, by comparing the first and the third condition it can be strongly supported that the only effect on the outcome is due to ego-depletion.

Apart from the snacks the rest of the products in the virtual supermarket should be neutral in order to be secured that participants will not be affected by the existence of healthy or unhealthy food products. For this reason a pre-test was conducted to test which food product (categories) are perceived as neutral. Participants (n=44) evaluated 24 food product (categories) in a 7-point scale (1-unhealthy, 7-healthy) and data were analyzed by repeated measures in 95% Confidence Interval Level (Appendix 6). Product categories whose mean score were around 4 and were not significantly different between them were selected (wine, vinegar, oil) (table 1). However, canned vegetables, were not selected due to their association with vegetables whereas, muesli bars and unsalted crackers were not selected as they can be perceived as snacks and confuse the participants. Finally, pasta (M=4.6) and coffee (M=3) were selected in order to fill the number of neutral products that is needed.

Table 1 : Pairwise Comparisons

Factor		Mean	Std. deviation	95% Confidence Interval	
				Lower Bound	**Lower Bound**
	Pasta	**4.636 c, d**	.195	4.242	5.030
	Canned vegetables	4.432 d, e	.219	3.990	4.874
	Muesli Bars	4.341 d, e,	.198	3.942	4.739
	Unsalted crackers	4.318 d, e,	.168	3.979	4.657
	Wine	**3.955 e**	.189	3.572	4.337
	Vinegar	**3.955 e**	.195	3.561	4.348
	Oil	**3.841 e**	.223	3.392	4.290
	Coffee	**3.045 f**	.142	2.760	3.331

After the choice task was over, the individuals' traits of self-control and relevance of health goals were measured. Finally, participants were asked to evaluate the store they visited.

4.3 Measures

4.3.1 Self-control

Honkanen et al. (2012) in their study measured food related self-control by adapting the trait scale developed by Tagney, Baumeister and Boone (2004) for measuring individuals' self-Control and making the items related to food. The three items finally used were measured on a Likert scale from 1 (Strongly disagree) to 7 (strongly agree). The items are reverse-coded and are the following:

1. I have a hard time breaking bad food habits
2. I wish I had more self-discipline when it comes to unhealthy food
3. Sometimes I can't stop myself from eating unhealthy food, even if I know it's wrong

4.3.2 Relevance of health goals

Individuals' salience of health goals will be measured with the following 8-item, 7 point Scale on a Likert scale from 1 (Strongly disagree) to 7 (strongly agree). This scale measures the extent that individuals are interested in eating healthily (Roininena et al., 2001). So, the participants will be asked to fill in the following questions:

Please indicate to what extent do you agree with the following statement?

1. In general, I'm very much interested in how healthy my diet is.
2. In general, I always follow a healthy and balanced diet.
3. In general, it is important to me that my diet is low in fat.
4. In general, it is important to me that my daily diet is rich in vitamins and minerals.
5. In general, I eat what I like and I'm not worried about the healthiness of my diet.
6. In general, I eat any foods even if they can raise my cholesterol.
7. In general, the healthiness of food has little effect on my food choice.
8. In general, the healthiness of snacks has little effect on my food choice.

4.3.3 Store's evaluation

Store's evaluation will be measured using the Attitude towards the Business (Overall) scale adapted by Homer (1995). Through this 5-item, 7-point scale, people's overall evaluation of a store is measured. The scale is the following:

Please express your attitude towards the store.

Negative -1-2-3-4-5-6-7- positive

Unpleasant -1-2-3-4-5-6-7- pleasant

Worthless -1-2-3-4-5-6-7- valuable

Unfavorable -1-2-3-4-5-6-7- favorable

Dislike a lot -1-2-3-4-5-6-7- like a lot

Chapter 5: Results

5.1 Pilot Study

Sample description

Data were collected from 41 Dutch students (age M=22) of Wageningen University. In 4 days 11 male and 30 female participants (Table 2) took part in the research.

Table 2. Number of participants and gender distribution among the two conditions

Condition	Gender		Number of participants
	Male	Female	
Choice condition	5	16	21
Non-choice condition	6	14	20
Total	11	30	41

Reliability of Constructs

Reliability was checked for the three scales. Results are shown in the table 3 and they indicate acceptable levels of reliability.

Table 3: Reliability of scales

Constructs	Number of Items	Reliability	Level
Ego-depletion	4	0.70	acceptable
Self-control	3	0.86	acceptable
Health relevance	8	0.74	acceptable

Mood

A one-way ANOVA on the two mood subscales indicated that the two conditions did not differ in their valence of mood (pleasant versus unpleasant) or arousal at the end of the first task, $F(1,39)=0.096$, ns; $F(1,39)=0.000$, ns respectively. Thus, any difference in the performance of the unsolvable puzzles between the two conditions was not due to different mood states.

Persistence

The main dependent measure was the amount of time participants persisted on the unsolvable puzzles. A one-way analysis of variance (ANOVA) indicated significant variation among the two conditions, $F(1, 39) = 6.90$, $p<.05$. The means are represented in Table 4 and indicate that participants in the choice condition quitted sooner. It has to be mentioned that 6 participants, all of them from the non-choice condition, where asked to stop working on the puzzle when 15 min. had passed.

Table 4: Persistence on Unsolvable Puzzles

Condition	Time (min)
Choice condition	7.90
Non-choice condition	10.64

The questionnaire where participants had to report how tired they were and their desire to quit showed no significant variation among the two conditions. A one-way analysis of variance (ANOVA) indicated that there was not a significant effect of condition on the 4 items of the scale. More analytical:

- There was not a significant effect of condition on reported tiredness, $F(1,39)=0.001$, $p> .05$.
- There was not a significant effect of condition on reported difficulty of choosing or non-choosing task, $F(1,39)=2.067$, $p> .05$
- There was not a significant effect of condition on reported desire to stop working on choosing or non-choosing task, $F(1,39)=2.067$, $p> .05$
- There was not a significant effect of condition on reported forcing oneself on choosing or non-choosing task, $F(1,39)=0.354$, $p> .05$

5.2 Main study

5.2.1 Sample description

The research sample consisted of 123 undergraduate students of Wageningen University (one was excluded as she did not complete the whole experiment). 42 male and 81 female participants (Table 5) took part in the research and their age was ranging from 18 to 29 years.

Table 5. Number of participants and gender distribution among the three conditions

Condition	Gender		Number of participants
	Male	Female	
1st condition	15	25	40
2nd condition	11	30	41
3rd condition	16	26	42
Total	**42**	**81**	**123**

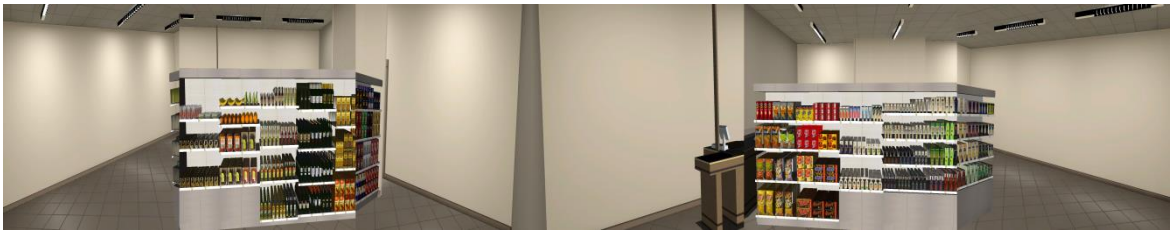
Moreover, the majority of the participants belonged to Social Science (51.23%), followed by Agrotechnology and Nutrition (24.4%), Animal Science (5.7%), Environmental department (11.4%), and at last there were equal number of respondents from the field Plant Science (1.6%) and Biology department (1. 6 %). Finally, 4.1% were not students.

The homogeneity of the groups was examined in terms of age, gender and field of studies. Gender was equally balanced across the three conditions ($\chi2(2)=1.468$, $p>0.05$). This means that males and females have been equally distributed to all conditions. Moreover, One-Way Analysis indicated that there is no effect of age on conditions ($F(2,120)=1.925$, $p>0.05$) Finally, the field of studies of participants was also equally balanced across conditions ($\chi^2(12)=13.293$, $p>0.05$).

The study design included three conditions in which participants were assigned randomly.

In the **1st condition** unhealthy snacks were located in the beginning of the store. Then, 5 product categories were following and afterwards healthy snacks were located. In the end of the store were placed 5 more product categories.

In the **2nd condition** the only change in the products' locations was that unhealthy snacks were located in the end of the store



Finally, the **3rd condition** was included in order to be compared with the 1st and gain confidence about the effect of ego-depletion. So, in this condition healthy snacks were located in the end of the store and unhealthy snacks were placed 5 product categories before them.

Comparing the 1st with the 2nd condition the location of unhealthy snacks changed but also the order in which participants saw the unhealthy and healthy products changed. Contrary comparing the 1st with the 3rd condition the order in which participants saw the products is the same however, the location of products was different.

5.2.2 Snack Choice description

The mean absolute participants' snack choice in each condition is shown in the following table (Table 6).

Table 6. Mean snack choices per condition

Condition	Mean snack choices	
	Healthy	Unhealthy
1st condition	5.2	1.3
2nd condition	5.0	1.3
3rd condition	4.6	1.9

Moreover, apart from the absolute number of snacks bought, it was also calculated the number of each individual different item bought per condition (SKU) (Table 7). The underlying reason for this was that a pack of unhealthy snacks (e.g. chips) may count for more than one time snacking, contrary to the healthy snacks (e.g. fruits).

Table 7. Mean SKU snack choices per condition

Condition	Mean SKU snack choices	
	Healthy	Unhealthy
1st condition	3.1	1.3
2nd condition	2.8	1.3
3rd condition	2.3	1.8

Reliability of Constructs

Reliability was checked for the three scales. Results indicate acceptable levels of reliability. (Cronbach's a: 0.79 for store evaluation, Cronbach's a: 0.83 for self-control and Cronbach's a: 0.71 for health goals)

5.2.3 Statistical analysis

Explanation of the Dependent Variables used in the analysis

The statistical analysis was conducted in two ways:

- on the percentage of unhealthy snacks bought and on the percentage of different SKU's bought
- on the absolute number of snacks bought and on the absolute number of different SKU's bought

In this study, participants were asked to make the snack choices they would need for one week. It is expected that the number of snack choices would differ between participants. In order to avoid that the unequal number of snack choices between participants would influence the results, it is used the percentage of unhealthy snack choices out of all snack choices for each participant for the analysis. However, in order to investigate if the expected effect for percentage of unhealthy snack choices is due to unhealthy choices, the absolute number for healthy and unhealthy choices will also be examined.

5.2.3.1 Analysis using the percentages

Based on the visual inspection of the histogram, the distribution of SKU snack choices was found non-normal therefore the natural logarithm of the variable was calculated. The distribution of the new variable, log_SKUsnackchoices was close to a normal distribution and afterwards it was examined if there were any outliers. Kolmogorov-Smirnov test and Shapiro-Wilk test indicate that the distribution of the log_SKUsnack choice is significant different from a normal distribution ($p<0.05$) (Appendix 7). However, for these tests with large sample sizes is very easy to get significant results from small deviations from normality, and so a significant test does not necessarily indicate whether the deviation from normality is enough to bias any statistical procedures that will be applied to the data (Field, 2009).

The 3 standard deviation criterion indicated 4 outliers, however, there were important reasons to exclude only the three of them. Two of the outliers made no unhealthy choices and they scored low in the scale asking the personal preference of the unhealthy products existing in the virtual supermarket (M=2.93 and M=3.27 respectively). Thus, they were excluded from the analysis, as it may be the personal preference towards the specific unhealthy products that influenced their choices and not the location of these products. Moreover, the third person made no healthy choices and he scored medium in the likeness scale for the healthy products existing in the virtual (M=4.5). However, it was decided that he should be excluded as he reported that he did not see all healthy product categories. Finally, the fourth person who was not excluded made no healthy choices, whereas reported that he saw all healthy product categories and also scored medium in the scale about the likeness of the healthy products (M=4.06). So, the fact that he did not make any healthy choices could be due to the location of the healthy products.

Using the same procedure for the total absolute snack choices the same three outliers were found (Appendix 7).

The variables of unhealthy choices (percentage of absolute unhealthy choices, percentage of absolute SKU unhealthy choices) and healthy choices (percentage of absolute healthy choices, percentage of SKU healthy choices) were found normally distributed in order to be used in the analysis.

Testing Hypothesis

Hypothesis H1: *The location of unhealthy snacks in the end (compared to the beginning) of the supermarket is expected to result in a greater likelihood of choosing them by consumers.*

The General Linear Model was used to test hypothesis H1. As it is indicted in Table 8, the overall effect of condition on the percentage of SKU unhealthy snack purchases is significant $F(2,117)= 5.058$ $p=0.008$. It was assumed that in the case where unhealthy snacks are located in the end of the store (2^{nd} condition), would result in more unhealthy snack purchases. Looking at the Pairwise Comparisons between the 1^{st} (M=30.87) and the 2^{nd} (M=30.98) condition it is found that there is no significant difference ($p>0.05$) (Table 9). However, when looking the Pairwise Comparisons between the 2^{nd} (M=30.98) and the 3^{rd} condition (M=47.09) it is indicated that they have significant difference ($p<0.05$) and the percentage of SKU unhealthy snack purchases was bigger in the 3^{rd} condition. Moreover, it was assumed that in 3^{rd} condition, where other choices had to be made before the

selection of unhealthy snacks, there would be more unhealthy purchases than in 1st condition, where unhealthy snacks were located in the beginning of the store. By comparing the 1st condition (M=30.87) and the 3rd condition (M=47.09) it is shown that there is significant difference ($p<0.05$) and the percentage of SKU unhealthy snack purchases is bigger in 3rd condition than in 1st condition.

Table 8.Tests of Between-Subjects Effects for unhealthy choices(SKU percentage)

Dependent Variable: SKU percentage of unhealthy choices					
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Corrected Model	7050,237[a]	2	3525,119	5,058	,008
Intercept	158168,742	1	158168,742	226,959	,000
Condition	7050,237	2	3525,119	5,058	**,008**
Error	81537,955	117	696,906		
Total	247995,037	120			
Corrected Total	88588,193	119			
a. R Squared = .080 (Adjusted R Squared = .064)					

Table 9.Pairwise Comparisons between the three conditions

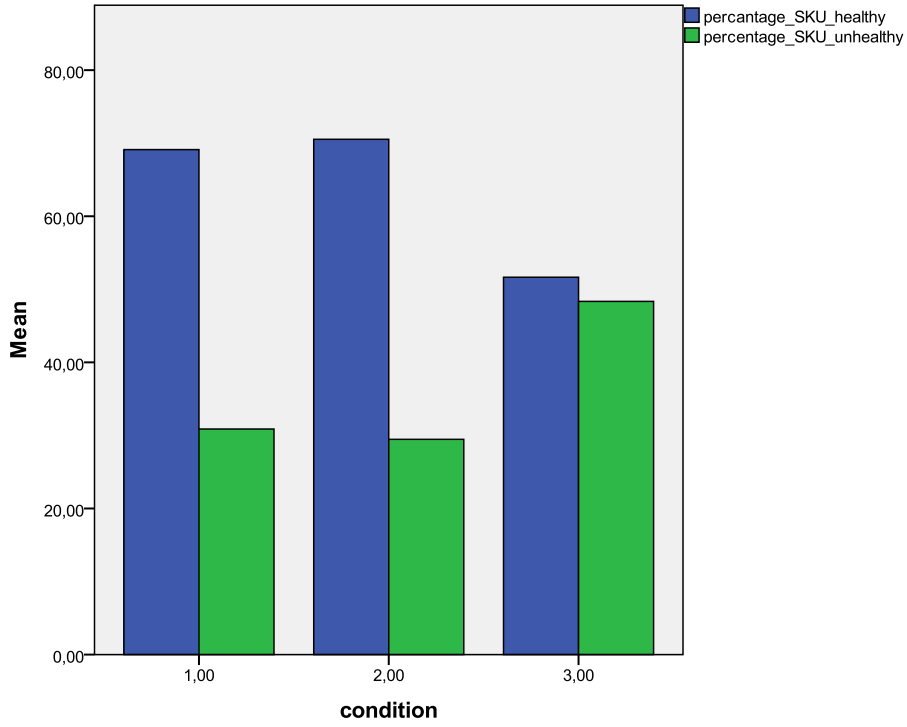
Dependent Variable: SKU percentage of unhealthy choices				
(I) Condition	**(J) Condition**	**Mean Difference (I-J)**	**Std. Error**	**Sig.**
1.00	2.00	-,102	5,941	,986
	3.00	-16,212*	5,867	**,007**
2.00	1.00	,102	5,941	,986
	3.00	-16,110*	5,905	**,007**
3.00	1.00	16,212*	5,867	**,007**
	2.00	16,110*	5,905	**,007**
Based on estimated marginal means				
***The mean difference is significant at the .05 level.**				

The same analysis using the percentage of unhealthy snacks choices instead of the percentage of SKU unhealthy choices indicated also marginally significant effect of condition on unhealthy snack choices (Appendix 7.1).

Hence, H1 is not confirmed as it was found that the biggest amount of unhealthy SKU snack purchases occurred in 3rd condition, where unhealthy snacks were located in the middle of the shopping trip, and not in the 2nd condition as it was hypothesized.

Figure 1 provides also a visual depiction of the SKU percentage of unhealthy and healthy snack choices across the three conditions.

Figure 1.Comparison of mean SKU unhealthy and healthy snack choices percentages across conditions



Hypothesis H2a: *The location of unhealthy snacks in the end of the supermarket is expected to show stronger effects on purchase choices of unhealthy snacks for individuals with low self-control than for people with high self-control.*

Hypothesis H2b: *The location of unhealthy snacks in the beginning of the supermarket is expected to show stronger effects on purchase choices of unhealthy snacks for individuals with low self-control than for people with high self-control. While the effect of H2a is expected to be stronger than this of H2b.*

In order to test Hypothesis H2 and include self-control as a covariate in the analysis it was first checked if it is independent from the experimental manipulations i.e. this variable was roughly equal across the three conditions. Firstly, the variable Self-control was centered around its mean. To do this, the mean value of the variable Self-control was calculated and then a new variable, MCent_Self_Control, was created by subtracting the mean from the original values. The main effect of condition is not significant, $F(2, 117)=0.900$, $p=0.409$, (Table 10) which shows that the average level of self-control was roughly the same in the three conditions and thus self-control can be used as independent variable.

Table 10. Test of between subjects effect for Self Control

Dependent Variable: MCent_Self_Control					
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Corrected Model	3,550[a]	2	1,775	,900	,409
Intercept	,000	1	,000	,000	,993
Condition	3,550	2	1,775	,900	**,409**
Error	230,738	117	1,972		
Total	234,290	120			
Corrected Total	234,288	119			

a. R Squared = .015 (Adjusted R Squared = -.002)

The results suggest that there is significant main effect of different conditions on the percentage of SKU unhealthy snack purchases $F(2, 114)=4.861$, $p<0.05$) (Table 11). But the interaction effect between the variable condition and Self-control, is not significant ($F(2, 113)=0.699$, $p>0.05$) (Table 11). That indicates that the level of self-control did not play a role on participants' choices of unhealthy snacks after the exposure in the different conditions. Consequently, hypothesis H2b is not supported by the data.

Table 11.Tests of Between-Subjects Effects for unhealthy choices(SKU percentage)

Dependent Variable: SKU Percentage of unhealthy choices					
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Corrected Model	8053,078[a]	5	1610,616	2,280	,051
Intercept	156435,216	1	156435,216	221,439	,000
Condition	6868,160	2	3434,080	4,861	,009
MCent_Self_Control	1,609	1	1,609	,002	,962
Condition* MCent_Self_Control	987,339	2	493,670	,699	**,499**
Error	80535,115	114	706,448		
Total	247995,037	120			
Corrected Total	88588,193	119			

a. R Squared =,091 (Adjusted R Squared=, 051)

The same analysis using the number of the percentage of unhealthy snack choices instead of the percentage of unhealthy SKU choices indicated no significant interaction effect of condition and self-control on unhealthy snack choices (Appendix 7.2).

Hypothesis H2a and H2b are not supported be the data.

Hypothesis H3a: *The location of unhealthy snacks in the end of the supermarket is expected to show stronger effects on purchase choices of unhealthy snacks for individuals with salient health goal than for people with no salient health goal.*

Hypothesis H3b: *The location of unhealthy snacks in the beginning of the supermarket is expected to show stronger effects on purchase choices of unhealthy snacks for individuals with no salient health goal than for people with salient health goal.*

In order test Hypothesis H3a and include health relevance as a covariate in the analysis it was first checked if it is independent from the experimental manipulations i.e. this variable was roughly equal across the three conditions. Firstly, the variable Health Goal was centered around its mean. To do this, the mean value of the variable Health Goal was calculated and then a new variable, MCent_ Health_Goal, was created by subtracting the mean from the original values. The main effect of condition is not significant, $F(2, 117)=0.347$, $p>0.05$, (Table 12) which shows that the average level of health goals, was roughly the same in the three conditions and thus health relevance can be used as independent variable.

Table 12.Test of between subjects effect for Health Goal relevance.

Dependent Variable: MCent_Health Goal					
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Corrected Model	,149[a]	2	,074	,347	,708
Intercept	,002	1	,002	,008	,929
Condition	,149	2	,074	,347	**,708**
Error	25,101	117	,215		
Total	25,251	120			
Corrected Total	25,250	119			

a. R Squared =,006 (Adjusted R Squared = -,011)

The results suggest that there is significant main effect of different conditions on the percentage of SKU unhealthy snack purchases ($F(2, 114)= 4.938$, $p<0.05$) (Table 13). But the interaction effect between the variable condition and health relevance, is not significant ($F(2, 114)=1.071$, $p>0.05$) (Table 13). That indicates that the level of health relevance did not play a role on participants' choices of unhealthy snacks after the exposure in the different conditions. Consequently, hypothesis H3b will not show any significant effects either.

Table 13.Tests of Between-Subjects Effects for unhealthy choices (SKU percentage)

Dependent Variable: SKU percentage of unhealthy choices					
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Corrected Model	8566,968[a]	5	1713,394	2,441	,038
Intercept	155057,746	1	155057,746	220,899	,000
Condition	6931,873	2	3465,937	4,938	,009
MCent_health_relevance	153,447	1	153,447	,219	,641
Condition* MCent_health_relevance	1503,653	2	751,827	1,071	**,346**
Error	80021,224	114	701,941		
Total	247995,037	120			
Corrected Total	88588,193	119			

a. R Squared = ,061 (Adjusted R Squared = ,020)

The same analysis using the number of the percentage of unhealthy snack choices instead of the percentage of unhealthy SKU choices indicated no significant interaction effect of condition and health goal relevance on unhealthy snack choices (Appendix 7.3).

Hypothesis H3a and H3b are not supported by the data.

Hypothesis H4: *The location of unhealthy snacks in the beginning (than in the end) of the supermarket is expected to result in less positive evaluations for the store*.

The General Linear Model was used to test hypothesis H4. As it is indicted in Table 14, the overall effect of condition on evaluation of the store is not significant F(2,117)=0.23 p=0.978.

Table 14.Tests of Between-Subjects Effects for overall evaluation of store

Dependent Variable: Store Evaluation					
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Corrected Model	,031[a]	2	,016	,023	,978
Intercept	,001	1	,001	,002	,967
Condition	,031	2	,016	,023	**,978**
Error	80,357	117	,687		
Total	80,389	120			
Corrected Total	80,388	119			

a. R Squared = ,000 (Adjusted R Squared = -,017)

Hypothesis H4 is not supported by the data.

5.2.3.2 Analysis using the absolute numbers

The same outliers who were excluded when analysing for the percentages were also excluded for analysing for the absolute snack choices. Based on the visual inspection of the histograms, the variables of unhealthy choices (absolute unhealthy choices, absolute sku unhealthy choices) and healthy choices (absolute healthy choices, sku healthy choices) where found normally distributed and were used in the analysis.

Hypothesis H1: *The location of unhealthy snacks in the end (compared to the beginning) of the supermarket is expected to result in a greater likelihood of choosing them by consumers*.

The General Linear Model was used to test hypothesis H1. As it is indicted in Table 15, the overall effect of condition on the absolute number of SKU unhealthy snack purchases is significant F(2,117)= 3.381, p=0.037. Looking at the Pairwise Comparisons (Table 16) we get the same results as when analysing for the percentages of SKU unhealthy snack purchases. So, by comparing the 1st condition (M=1.30) and the 3rd condition (M=1.90) it is shown that there is significant difference (p<0.05) and the absolute number of SKU unhealthy snack purchases is bigger in 3rd condition than in 1st condition. Moreover, looking the Pairwise Comparisons between the 2nd (M=1.38) and the 3rd condition (M=1.90) it is indicated that they have significant difference (p<0.05) and the absolute number of SKU unhealthy snack purchases was bigger in the 3rd condition.

Table 15.Tests of Between-Subjects Effects for unhealthy choices(SKU absolute)

Dependent Variable: absolute SKU unhealthy choices					
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Corrected Model	8,626[a]	2	4,313	3,381	,037
Intercept	280,431	1	280,431	219,849	,000
Condition	8,626	2	4,313	3,381	**,037**
Error	149,241	117	1,276		
Total	440,000	120			
Corrected Total	157,867	119			
a. R Squared = .055 (Adjusted R Squared = .038)					

Table 16.Pairwise Comparisons between the three conditions

Dependent Variable: absolute SKU unhealthy choices				
(I) Condition	**(J) Condition**	**Mean Difference (I-J)**	**Std. Error**	**Sig.**
1.00	2,00	-,085	,254	,740
	3,00	-,602*	,251	**,018**
2.00	1,00	,085	,254	,740
	3,00	-,518*	,253	**,043**
3.00	1,00	,602*	,251	**,018**
	2,00	,518*	,253	**,043**
Based on estimated marginal means				
***The mean difference is significant at the .05 level.**				

The same analysis using the number of absolute unhealthy snack choices instead of the number absolute unhealthy SKU choices indicated also significant effect of condition on unhealthy snack choices (Appendix 8.1).

Hypothesis H2a: *The location of unhealthy snacks in the end of the supermarket is expected to show stronger effects on purchase choices of unhealthy snacks for individuals with low self-control than for people with high self-control.*

Hypothesis H3a: *The location of unhealthy snacks in the end of the supermarket is expected to show stronger effects on purchase choices of unhealthy snacks for individuals with salient health goal than for people with no salient health goal*

Moreover, as was also the case when analysing for the percentages of SKU unhealthy snack purchases, there were no interaction effect neither of condition and Self-control ($F(2,114)= 1.432$, $p>0.05$) nor of condition and health relevance ($F(2, 114)=0.217$, $p>0.05$) on absolute unhealthy SKU snack choices (Appendix 8.2).

The same analysis using the number of absolute unhealthy snack choices instead of the number absolute unhealthy SKU choices indicated also no significant interaction effects (Appendix 8.3).

Finally, based on the license effect it was assumed the following: *The location of unhealthy snacks in the end of the supermarket is expected to result in a greater likelihood of indulging for individuals with salient health goals who had made a healthy option first.*

For measuring this statement only the condition in which healthy snacks were placed before the unhealthy snacks (2^{nd} condition) was selected. For this case, it is explored if individuals with salient health goals, who had purchased healthy snacks, would later choose some unhealthy snacks in order to balance their choices. The analysis showed that the interaction effect of healthy SKU snack choices and health goals on unhealthy SKU choices is not significant ($F(9,16)= 1.233$, $p>0.05$) (Table 17). In other words, from the data is indicated that having health goals and choosing healthy snacks does not influence subsequent unhealthy snack choices.

Table 17.Tests of Between-Subjects Effects for unhealthy SKU choices

Dependent Variable: SKU unhealthy snack choices					
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Corrected Model	39,726[a]	22	1,806	1,481	,212
Intercept	9,018	1	9,018	7,398	,015
healthy_sum_SKU	17,219	9	1,913	1,569	,207
MCent_health_relevance	3,178	1	3,178	2,607	,126
healthy_sum_SKU * MCent_health_relevance	13,527	9	1,503	1,233	**,342**
Error	19,504	16	1,219		
Total	134,000	39			
Corrected Total	59,231	38			

a. R Squared = ,671 (Adjusted R Squared = ,218)

The same analysis using the number of absolute unhealthy snack choices instead of the number absolute unhealthy SKU choices indicated also no significant interaction effects (Appendix 8.4).

5.2.3.3 Analysis using the absolute numbers for healthy choices

Moreover, the General Linear Model was used to test the overall effect of condition on the absolute number of SKU healthy snack purchases and as it is indicated in table 18, is marginally significant $F(2,117)= 2.979$, $p=0.055$. Looking the Pairwise Comparisons between the 2nd (M=2.95) and the 3rd condition (M=2.34) it is indicated that they have marginally significant difference and the absolute number of SKU healthy snack purchases was bigger in the 2nd condition. Moreover, by comparing the 1st condition (M=3.10) and the 3rd condition (M=2.34) it is shown that there is significant difference ($p<0.05$) and the absolute SKU healthy snack purchases is bigger in 1st condition than in 3rd condition (Table 19). These results for the healthy choices are consistent with the previous results that were found for the unhealthy choices.

Table 18.Tests of Between-Subjects Effects for healthy choices(SKU absolute)

Dependent Variable: absolute SKU healthy choices					
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Corrected Model	13,075[a]	2	6,537	2,979	,055
Intercept	938,211	1	938,211	427,594	,000
Condition	13,075	2	6,537	2,979	**,055**
Error	256,717	117	2,194		
Total	1205,000	120			
Corrected Total	269,792	119			

a. R Squared = .048 (Adjusted R Squared = .032)

Table 19.Pairwise Comparisons between the three conditions

Dependent Variable: absolute SKU healthy choices				
(I) Condition	**(J) Condition**	**Mean Difference (I-J)**	**Std. Error**	**Sig.**
1.00	2,00	,151	,333	,651
	3,00	,759*	,329	**,023**
2.00	1,00	-,151	,333	,651
	3,00	,607	,331	**,069**
3.00	1,00	-,759*	,329	**,023**
	2,00	-,607	,331	**,069**
Based on estimated marginal means				
***The mean difference is significant at the .05 level.**				

The same analysis using the number of absolute healthy snack choices instead of the number absolute unhealthy SKU choices indicated no significant effect of condition on healthy choices (Appendix 8.5). The explanation about this discrepancy is due to the fact that the absolute numbers of healthy snack choices were high in all conditions and in about the same level. During the experiment it was noticed that many participants were choosing some kind of healthy product several times. This can be confirmed also when checking the mean absolute and SKU healthy choices across the three conditions.

What is more, it was found no interaction effect of condition and Self-control ($F(2,114)= 0.906$, $p>0.05$) and a marginal significant effect of condition and health relevance ($F(2, 1174=2.399$, $p=0.095$) on absolute healthy SKU snack choices (Appendix 8.6).

The same analysis using the number of absolute healthy snack choices instead of the number absolute unhealthy SKU choices indicated no interaction effect neither of condition and Self-control ($F(2,114)= 1.131$, $p>0.05$) nor of condition and health relevance ($F(2, 114)=0.252$, $p>0.05$) on healthy snack choices (Appendix 8.7).

After comparing the choices for unhealthy and healthy snacks it can be noted that in the case where the biggest amount of unhealthy snacks purchases took place, the smallest amount of healthy purchases occurred. So, participants did not try to balance their choices between healthy and unhealthy products. While in the case where the smallest amount of unhealthy snacks was chosen, it was noted the biggest amount of healthy choices. So, it seems that participants tried to replace the unhealthy snacks with healthy. From the above it can be claimed that there is a trend of competition between unhealthy and healthy choices.

Finally, analysis for the total number of snack choices indicated no effect of condition neither on absolute number of snack choices or on absolute SKU snack choices. In other words, the different location of snack did not influence the total chosen amount of snack products.

5.2.3.4 Statistical analysis for the female population of the sample

Literature indicates that there are gender differences in choices and health motives for eating (Steptoe et al., 1995). Grogan et al., (1997) in their study claim that women perceive sweet snacking as more unhealthy and more pleasant than men, resulting in more ambivalence for women than for men. So, statistical analysis was conducted for the female population of the sample (N= 80) in order to be explored if the results differ from the total sample. Again, the statistical analysis was conducted on both the percentage of unhealthy snack bought and on the percentage of different SKU's bought.

All in all, the analysis for the female population showed similar results to the overall sample. So, for the female sample the main effect of condition on the percentage of SKU unhealthy snack purchases was found marginally significant ($F(2,80)=2.737$, $p=0.071$) (Appendix 9). The same analysis using the percentage of unhealthy snack choices instead of the percentage of SKU unhealthy snack purchases number indicated no significant effect of condition on the percentage of unhealthy snack choices (Appendix 9.1). Moreover, as was also the case for the total sample, there were no interaction effect neither of condition and Self-control ($F(2, 74)= 0.734$, $p>0.05$) nor of condition and health relevance ($F(2, 74)=0.080$, $p>0.05$) on unhealthy snack choices (Appendix 9.2).

However, an interesting outcome concerns the evaluation of the store. The overall effect of condition on evaluation of the store is marginally significant, $F(2,77)=2.441$ $p=0.094$ for the female population (Appendix 9.3). This result differs greatly from the result gained from the whole sample. In Table 20, it is shown that the interaction effect of gender and condition on store evaluation is significant ($F(2,113)=4.199$, $p<0.05$).

Table 20.Tests of Between-Subjects Effects for overall evaluation of store(only for females)

Dependent Variable: SKU unhealthy snack choices					
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Corrected Model	9,590[a]	5	1,918	3,068	,212
Intercept	3,361	1	3,361	5,376	,022
condition	4,495	2	2,248	3,595	,031
gender	3,813	1	3,813	6,100	,015
condition* gender	5,250	2	2,625	4,199	**,017**
Error	70,645	113	,625		
Total	80,235	119			
Corrected Total	80,235	118			

a. R Squared = ,120 (Adjusted R Squared = -,081)

One-Way Anova only for the female population indicated that condition has a marginally significant effect on store evaluation, $F(2,77)=2.441$, $p=0.094$. Moreover, One-Way Anova only for the male population showed no significant effect of condition on store evaluation, $F(2,36)=1,643$, $p=0.208$. Finally, the analysis for the assumption made based on the license effect that: "*The location of unhealthy snacks in the end of the supermarket is expected to result in a greater likelihood of indulging for individuals with salient health goals who had made a healthy option first"* for the female sample only, showed that the interaction effect for healthy snack choices and health goals is not significant ($F(3,17)=1.844$, $p>0.05$) (Appendix 9.4).

Chapter 6: Discussion and conclusions

The aim of the present study was to examine the effect of products category location on healthiness of products choices and evaluation of the store, while taking into account the individual traits of self-control and relevance of health goal.

This study begun with the idea that the act of making choices depletes the resources needed for exerting self-control. Research on ego depletion suggests that the capacity for self-control and decision making use a common and limited resource (Vohs et al. 2007; Bruyneel et al. 2006; Schmeichel 2007; Vohs et al. 2008; Baumeister et al. 2008). To explore this possibility, a pilot study was conducted and provided support for the hypothesis that the act of choose depletes the self and reduces subsequent persistence. Furthermore, it was found significant effect of the location of unhealthy and healthy snacks on products' choices; however, the hypotheses were not exactly confirmed.

More specifically, when comparing the unhealthy snacks chosen when these were placed in the beginning of the store (1stcondition) versus the unhealthy snacks chosen in the case where they are placed after other products (3rd condition) the results are in line with the theory of ego-depletion. Based on the literature of ego-depletion it was expected that when unhealthy snacks were placed after other products participants would choose more than in the case that unhealthy snacks were placed in the beginning of the store, as participants in the former case had to make some product choices before meeting the unhealthy snacks in the store. Consequently, it was expected that ego-depleted participants would choose more unhealthy products. The analysis confirmed the effect of ego-depletion.

Moreover, it was hypothesized that participants would choose more unhealthy snacks when these were placed in the end of the store (2nd condition), than in the beginning of the store (1st condition). However, this hypothesis was not confirmed as participants in both conditions chose almost the same amount of unhealthy snacks. Previous research has shown that when there was the option of choosing nothing, depleted individuals were more likely to select not to choose (Pocheptsova et al., 2007). Pocheptsova et al., (2007) offered participants a selection among several consumer products to purchase but also the option of choosing nothing. They found that ego depleted participants were more likely than others to select the do-nothing option. In the present study also participants were not strictly asked to choose unhealthy snacks but they were asked to make as many snack choices as they wish. Given that in the 2nd condition unhealthy products were placed in the end of the store it can be assumed that ego-depleted participants chose to not make any choices. The assumption that ego-depleted individuals may prefer not to make choices can be also supported by the fact that when healthy snacks were placed in the end of the store (3rd condition) it was observed the smallest amount of healthy snack choices compared to the cases that they were not placed in the end. Thus, it can be suggested that stronger ego depletion may lead individuals to avoid choosing.

Furthermore, another possible explanation about the results gained when comparing unhealthy snack choices when these are placed in the beginning of the store (1st condition) versus in the end (2nd condition) is the fact that in this case where unhealthy snacks are in the end of the store and participants have already chosen some healthy snacks may reduce their unhealthy choices. So, by having made already some choices for the task they were asked to, they may do not want to press themselves to think and make more decisions.

It is also important to note here that for this study the effect of ego-depletion was tested based on the amount of unhealthy snacks choices individuals would make. In previous studies it was found that ego-depleted individuals ate from a self-indulgent food (Vohs et al., 2000) or, shifted towards the indulgent choice when having limited choices (healthy granola bar versus chocolate bar) (Novemsky et al., 2007). It can be assumed that in the previous studies on ego-depletion, it was "easier" for depleted individuals to yield to temptations. The choice task in the present study was quite demanding and thus, avoiding making more choices might was the easiest for ego-depleted individuals.

Thinking a bit further of ego-depletion the fact that the process of choosing took place in terms of a study might have an influence on the results. Even if participants were voluntarily willing to take part in the study it is conceivable that they felt the desire to finish as soon as possible with the task assigned to them. So, participants might feel that they were close to the end of the study by the moment they were near the end of the store. In other words, by seeing the cash register they may feel that they accomplished the task they were asked and therefore did not continue choosing. Another parameter which is maybe involved in the choosing process, and it is not connected to ego-depletion, is the possible effect of having made a number of previous product choices. So, the fact that participants had made a number of choices during their shopping trip might discourage them from choosing more products when reaching the end of the store. For example, they might feel that they have already bought many products and their cart was full.

Additionally, it was expected that the personality traits of self-control and health goal relevance would have moderating role on the decision process. However, statistically there were no significant effects of either self-control or health goals relevance on product choices. Previous researches (Eertmans et al., 2005; Kim et al., 2010) indicate that personality traits are good predictors of choices. A possible explanation for the absence of impact of these personality traits on product decision may be the fact that the research sample comes from the same environment, so it may be the case that there were no big deviations in these traits among the participants. This can also be confirmed by the fact that mean values for the two scales, M=3.9 for self-control and M=4.12 for health relevance, had medium values and standard deviations were relatively low (SD=1.38 and SD=0.46 relatively).

Concerning the evaluation of the stores, it was hypothesized that the store in which unhealthy products were placed in the beginning would result in worse evaluation due to primacy effect. However, there was no significant effect of the location of unhealthy snacks on store evaluation for the study sample. It has to be noted that the virtual supermarkets used for this study varied from the normal supermarkets as they had only specific product categories. So, when participants were asked to evaluate the stores they might had in mind the task that was asked from them to carry out and they did not evaluate it as a "real" store.

Theoretical and managerial implications

The present study was an attempt to go deeper in consumers' decision process and how is this affected by the location of the products. The results of this study could have implications for ego-depletion theory. Previous research has shown that self-regulatory action affect subsequent one due to ego-depletion. According to the resource-depletion model, self-regulatory resources can be depleted when individuals try to resist temptations (Vohs at Heatherton, 200). The ego-depletion findings of this research support the theory that decision making and self-control exertion draw on

the same limited resource. In the present study, it can be claimed that ego-depletion was produced relatively easy, comparing to a real shopping trip as the variety of the products was smaller in the virtual store. This implies that the resource is indeed quite limited. As this limited resource is involved in many self's activities and behaviours it is expected that should be replenished. Investigating the reasons that accelerate or delay the replacement would enhance the understanding of ego-depletion theory.

Based on the results of this study practical implications may be suggested. The self's capacity resource is limited, and thus when it has been depleted by choices, fewer remain available for subsequent choices. Moreover, it is possible that ego depletion leads people toward avoiding choices. Thus, there are differences concerning the choices that take place at the beginning of the shopping trip versus those that follow at the end. It is suggested that consumers' organizations should advise retailers to place healthy food products, like fruits and vegetables that require elaborate choice process, before the unhealthy. In that case it is more likely that consumers will choose them. Contrary, it is advisable that unhealthy snacks should be placed in the end of the store but not close to the cash registers, as ego-depleted consumers may avoid choosing them. There is a great variety of unhealthy snacks like chocolate or chips that may discourage consumers from comparing and choosing.

Suggestion for future research

This study was aiming to examine products' location effect on healthiness of choices through the process of ego depletion. As it was mentioned also before, the fact that participants might want to finish with the task that was assigned to them, might influence their choices. More specifically, as participants had made some snack choices, and the task was not forcing them for a particular number of product choices, might preferred to finish with the study. So, they might felt they fulfilled the task as they had already made some healthy snack choices. It would be interesting if in a follow up study when examining specifically the location of unhealthy products and its effect on whether they are chosen not to give the option of choosing healthy products. In that way, it could be found the direct effect of ego-depletion on unhealthy choices. What is more, a non-student population might be better for future research as differences in personality traits are expected to have effect on consumer choices.

Moreover, through the current study design it can be compared the effect of order and location for unhealthy product choices. By adding one more condition, which would allow the comparison of the effect of the order and the location for healthy choices, the design will be more balanced.

Furthermore, a future study focusing on ego-depletion could add more product categories following the one of interest, when this is placed in the end of the store, in order to be avoided a possible "end of task" effect. By adding more product categories it can be assured that the effect found is due to ego-depletion and not due to the end of the task. Another, interesting alternative would be to place the cash-register in a bigger distance where cannot be seen by the participants while they are choosing. By making this change it may be secured that participants will accomplish the choosing task without quitting because of perceiving the cash-register as the end of the task.

Finally, in a try to research more about ego-depletion it would be interesting to explore if every product choice is gradually influenced by the ego-depletion or if is needed a certain number of product choices in order for individuals to be affected by ego-depletion. In that way, we could gain

insight about if ego-depletion is a progressive process or if it occurs after a number of product choices.

It is acknowledged that there is a lot to be explored as at the moment there is not a clear understanding of the whole process connecting ego-depletion and decision making, however, this study is a good starting point for future research. The fact that an interesting effect is found in this study can give rise to following studies that could ascertain the role of location on consumers' choices.

Appendix 1

Summary of the experiment

Dear participant, this experiment consists of two parts and lasts approximately 20 minutes. For the first part we are interested in the reliability and functionality of the virtual store. Therefore, you are asked to enter the virtual store and make some choices from the shopping list which will be given to you. The second part is a design test that would help the research on whether female students differ from male students in their problem solving abilities. You will be asked to answer two short questionnaires, one between the two tasks and one at the end of the experiment. When you will finish both parts of the experiment you will receive a gift based on your choices during the first task.

Task 1

Imagine that you just moved to the town you are going to do your internship for the following months. The town is quite small and you are visiting the small store which is the closest to your new house. You are planning to buy some basics products you are going to need for the coming week as you will not be able to visit any supermarket again during that week. Moreover, you need some additional products for a dinner-party that you have organized for the coming Friday with your new roommates.

As you will be very busy during the coming week you will not be able to cook, so you have already got some food supplies for breakfast and dinner from your parents' home. Thus, the only food products you need to buy are the following:

- 1 **Coffee** Package
- 1 package of **pasta**
- 1 bottle of **oil**
- 1 bottle of **red wine** you prefer
- The **snacks** you are going to need for the whole week

Your roommates and you decided that the dinner that will have in order to get to know each other better will be a Pasta Night! So, you decided to bring:

- 2 different types of **pasta**
- 1 bottle of **red wine** that will accompany your dinner
- 1 bottle for **vinegar** that your roommates will use for a special sauce

Finally, you need some products for your personal care. So, you have to buy:

- 1 **shampoo** for every day care
- 1 **toothpaste**
- 1 **shower gel** with relaxing and fresh aroma
- 1 **hand soap**
- 1 **deodorant** with long-lasting and fresh fragrance

You have 10 minutes for this task. Enjoy!

Appendix 2

Summary of the experiment

Dear participant, this experiment consists of two parts and lasts approximately 20 minutes. For the first part we are interested in the reliability and functionality of the virtual store. Therefore, you are asked to enter the virtual store and experience how it looks. The second part is a design test that would help the research on whether female students differ from male students in their problem solving abilities. You will be asked to answer two short questionnaires, one between the two tasks and one at the end of the experiment.
When you will finish both parts of the experiment you will receive a gift that it would be chosen for you.

Task 1

Imagine that you just moved to the town you are going to do your internship for the following months. The town is quite small and you are visiting the small store of your neighborhood which is the closest to your new house.

In this visit you are not going to buy any products as you just want to see how the store looks like. The aim of this first visit is to become familiar with the store and check the assortment for the following product categories:

- Coffee
- pasta
- oil
- wine
- snacks
- vinegar
- shampoo
- toothpaste
- shower gel
- hand soap
- deodorant

You have 10 minutes to take a look on the products from the above list. Enjoy!

Appendix 3

1st Questionnaire

Circle the response on the scale below that indicates how well each adjective or phrase describes your present mood.

1-definitely do not feel **2**-do not feel **3**-slightly feel **4**-feel **5**- feel moderate **6**-definetely feel **7**- feel a lot

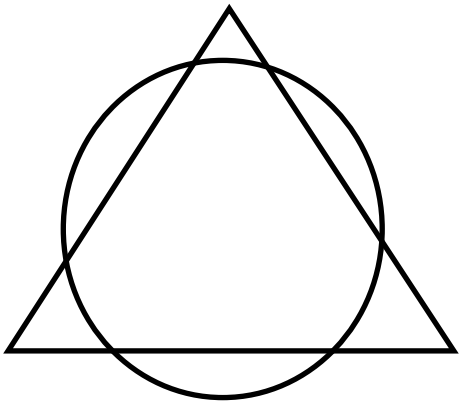
		Nervous	-1-2-3-4-5-6-7-
Active	-1-2-3-4-5-6-7-	Gloomy	-1-2-3-4-5-6-7-
Fed up	-1-2-3-4-5-6-7-	Happy	-1-2-3-4-5-6-7-
Loving	-1-2-3-4-5-6-7-	Peppy	-1-2-3-4-5-6-7-
Jittery	-1-2-3-4-5-6-7-	Content	-1-2-3-4-5-6-7-
Calm	-1-2-3-4-5-6-7-	Caring	-1-2-3-4-5-6-7-
Sad	-1-2-3-4-5-6-7-	Tired	-1-2-3-4-5-6-7-

Appendix 4

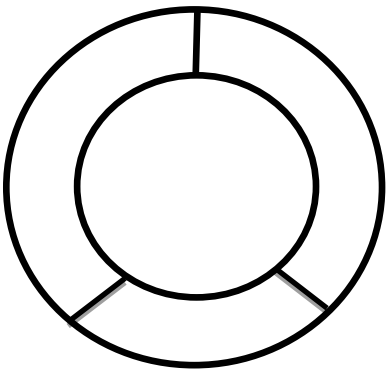
Task 2

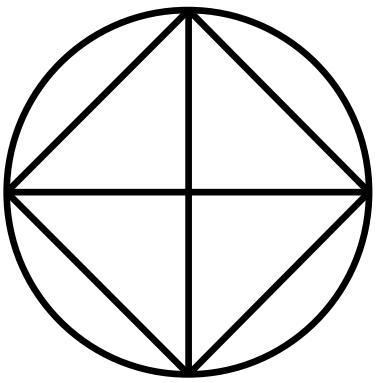
In this task, you will be given 2 figures and you are asked to trace each figure **without retracing any lines and without lifting your pencil from the paper.** You can take as many trials as you want as you will not be judged on the number of trials. You will be judged on whether or not you finish tracing the figure. If you wish to stop before you finish (i.e., before you solve the puzzles) please bring your sheet with your answers.

The following figure is an example that will help you to learn how the puzzles work and how you can solve them. Please try to solve this puzzle for practicing and feel free to ask any questions.



Now please try to solve the two following puzzles. Good luck!!





Appendix 5

2nd Questionnaire

Age:
Gender: ☐ Male ☐ Female
Student: ☐ Yes ☐ No

A) The questions concern the first task (virtual store)

Please evaluate the virtual store in the following terms:

1. How close to a real store does the virtual store look?

Not at all - 1 -2-3-4-5-6-7- very much

2. How easy was to move around the virtual store?

Not at all - 1 -2-3-4-5-6-7- very much

The following sentences describe different situations. Please read each item and then mark the appropriate answer.

1. How difficult was the first task for you?

Not at all -1-2-3-4-5-6-7- very much so

2. Did you feel the desire to stop working for the first task?

Not at all -1-2-3-4-5-6-7- very much so

3. Did you force yourself to continue?

Not at all -1-2-3-4-5-6-7- very much so

B) General Questions

Indicate the extent of your agreement or disagreement with the following statements.

1. I have a hard time breaking bad food habits
   Strongly disagree -1-2-3-4-5-6-7- strongly agree

2. I wish I had more self-discipline when it comes to unhealthy food
   Strongly disagree -1-2-3-4-5-6-7- strongly agree

3. Sometimes I can't stop myself from eating unhealthy food, even if I know it's wrong
   Strongly disagree -1-2-3-4-5-6-7- strongly agree

4. In general, I'm very much interested in how healthy my diet is.
   Strongly disagree -1-2-3-4-5-6-7- strongly agree

5. In general, I always follow a healthy and balanced diet.
   Strongly disagree -1-2-3-4-5-6-7- strongly agree

6. In general, it is important to me that my diet low in fat.
   Strongly disagree -1-2-3-4-5-6-7- strongly agree

7. In general, it is important to me that my daily diet rich in vitamins and minerals.
   Strongly disagree -1-2-3-4-5-6-7- strongly agree

8. In general, I eat what I like and I'm not worried about the healthiness of my diet.
   Strongly disagree -1-2-3-4-5-6-7- strongly agree

9. In general, I eat any foods even if they can raise my cholesterol.
   Strongly disagree -1-2-3-4-5-6-7- strongly agree

10. In general, the healthiness of food has little effect on my food choice.
    Strongly disagree -1-2-3-4-5-6-7- strongly agree

11. In general, the healthiness of snacks has little effect on my food choice.
    Strongly disagree -1-2-3-4-5-6-7- strongly agree

Appendix 5.1

Questionnaire

Leeftijd: _____ jaar

Geslacht: ☐ Man ☐ Vrouw
Student: ☐ Ja ☐ Nee

Circle the response on the scale below that indicates how tired you feel.

	Definitely do not feel						Feel a lot
Tired	1	2	3	4	5	6	7

Please indicate how much you like or dislike the following products:

	Dislike very much						Like very much
Appels	1	2	3	4	5	6	7
Bananen	1	2	3	4	5	6	7
Peren	1	2	3	4	5	6	7
Sinaasappels	1	2	3	4	5	6	7
Blauwe bessen	1	2	3	4	5	6	7
Frambozen	1	2	3	4	5	6	7
Aardbeien	1	2	3	4	5	6	7
Bramen	1	2	3	4	5	6	7
Bugles Nacho Cheese	1	2	3	4	5	6	7
Lay's Paprica	1	2	3	4	5	6	7
Lay's Cheese Onion	1	2	3	4	5	6	7
Lay's Hot Wok Chilli Super Chips	1	2	3	4	5	6	7
Wokkels Naturel	1	2	3	4	5	6	7
Pringle Orginal	1	2	3	4	5	6	7
Bugles Naturel	1	2	3	4	5	6	7

	Dislike very much						Like very much
Doritos Nacho Cheese	1	2	3	4	5	6	7
Praline Melk BonBon Bloc	1	2	3	4	5	6	7
Chucky White KitKat	1	2	3	4	5	6	7
Snickers	1	2	3	4	5	6	7
Twix	1	2	3	4	5	6	7
M&M'S peanut	1	2	3	4	5	6	7
Kinder Bueno	1	2	3	4	5	6	7
KitKat Chunky	1	2	3	4	5	6	7
Snoeptomaten	1	2	3	4	5	6	7
Snoepkomkommers	1	2	3	4	5	6	7
Walnoten	1	2	3	4	5	6	7
Student Haver	1	2	3	4	5	6	7
Cashewnoten	1	2	3	4	5	6	7
Amandelen	1	2	3	4	5	6	7
Gemengde Noten, ongezouten	1	2	3	4	5	6	7
Pijnboompitten	1	2	3	4	5	6	7

Please express your attitude towards the virtual store you just visited.

a)	Negative	1	2	3	4	5	6	7	positive
b)	Unpleasant	1	2	3	4	5	6	7	pleasant
c)	Worthless	1	2	3	4	5	6	7	valuable
d)	Unfavorable	1	2	3	4	5	6	7	favorable
e)	Dislike a lot	1	2	3	4	5	6	7	like a lot

Geef aan in welke mate je het eens of oneens bent met de volgende stellingen

	Strongly disagree						strongly agree
a. I have a hard time breaking bad food habits	1	2	3	4	5	6	7
b. I wish I had more self-discipline when it comes to unhealthy food	1	2	3	4	5	6	7
c. Sometimes I can't stop myself from eating unhealthy food, even if I know it's wrong	1	2	3	4	5	6	7
d. In general, I'm very much interested in how healthy my diet is.	1	2	3	4	5	6	7
e. In general, I always follow a healthy and balanced diet.	1	2	3	4	5	6	7
f. In general, it is important to me that my diet is low in fat.	1	2	3	4	5	6	7
g. In general, it is important to me that my daily diet is rich in vitamins and minerals.	1	2	3	4	5	6	7
h. In general, I eat what I like and I'm not worried about the healthiness of my diet.	1	2	3	4	5	6	7
i. In general, I eat any foods even if they can raise my cholesterol.	1	2	3	4	5	6	7
j. In general, the healthiness of food has little effect on my food choice	1	2	3	4	5	6	7
k. In general, the healthiness of snacks has little effect on my food choice	1	2	3	4	5	6	7

Please indicate the extent of your agreement or disagreement with the following statements

	Strongly disagree						strongly agree
a) The way product assortment is organized in the virtual store is pleasant	1	2	3	4	5	6	7
b) The way store's products are displayed is good for searching and buying products	1	2	3	4	5	6	7
c) The order of different product categories in the virtual store is agreeable	1	2	3	4	5	6	7
d) It was easy to move in the virtual	1	2	3	4	5	6	7

	supermarket						
e)	The controls of the virtual supermarket were easy	1	2	3	4	5	6	7
f)	The controls of the virtual supermarket were not annoying for me	1	2	3	4	5	6	7

Did you see the chips in the virtual store? Ja Nee

Did you see the chocolates in the virtual store? Ja Nee

Did you see the fruits & vegetables in the virtual store? Ja Nee

Did you see the nuts in the virtual store? Ja Nee

Age: _____

Sex: ☐ Man ☐ Woman

What is your study program?

☐ Social Science ☐ Agrotecnology & Nutrition

☐ Animal Science ☐ Environmental Science

☐ Plant Science

Please give us some comments for the study if you would like.

Bedankt voor je tijd!

Appendix 6

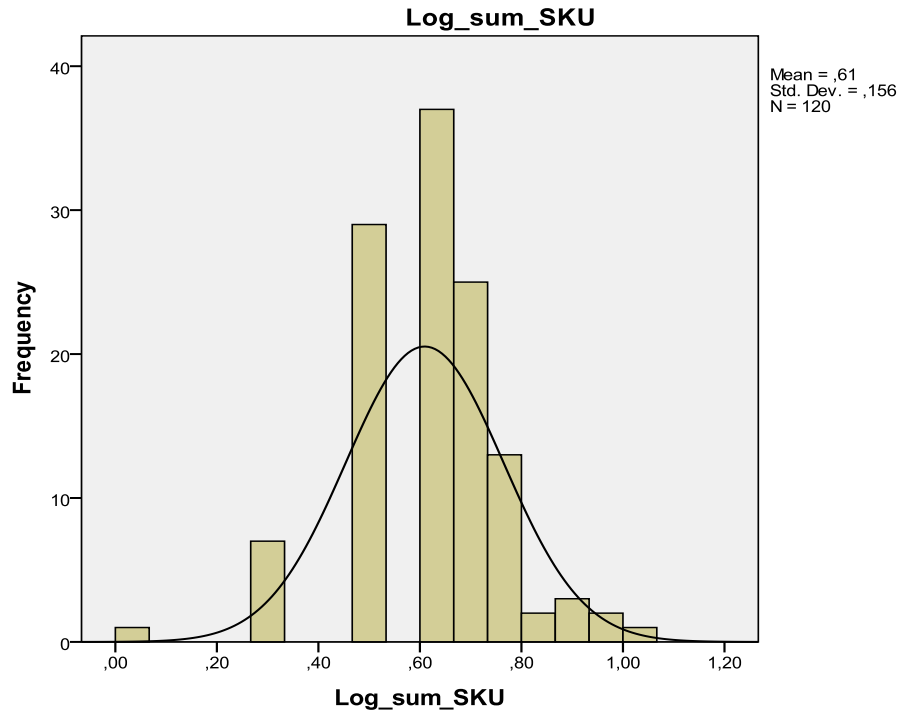
Factor1	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1. Fruits	6.523	.095	6.332	6.714
2. Dried Nuts	5.364 a	.193	4.975	5.752
3. Thee	5.318 a	.186	4.943	5.694
4. Rice	5.182 a	.150	4.879	5.484
5. Dried fruits	5.159 a, b	.166	4.825	5.493
6. Soup	4.955 a, c	.152	4.647	5.262
7. Spice	4.750 b, c, d	.166	4.415	5.085
8. Pasta	4.636 c, d	.195	4.242	5.030
9. Canned vegetables	**4.432 d, e**	.219	3.990	4.874
10. Muesli Bars	**4.341 d**	.198	3.942	4.739
11. Unsalted crackers	**4.318 d**	.168	3.979	4.657
12. Wine	**3.955 e**	.189	3.572	4.337
13. Vinegar	**3.955 e**	.195	3.561	4.348
14. oil	**3.841 e**	.223	3.392	4.290
15. coffee	3.045 f	.142	2.760	3.331
16. Salad dressing	2.750 f, g	.187	2.373	3.127
17. Cookies	2.727 f	.179	2.366	3.089
18. Gums	2.659 f, h	.195	2.266	3.052
19. Chocolate bars	2.614 g, h	.206	2.198	3.029
20. Sauces	2.568 g	.167	2.231	2.905
21. Cakes	2.523 g	.174	2.173	2.873
22. Sugar	2.295 h	.147	1.988	2.593
23. Energy drinks	1.455	.132	1.189	1.721
24. Chips	1.909	.137	1.632	2.186

Appendix 7

Snack Choice description when using the SKU number of snack choices

Normal distribution of the logarithm of SKU snack choices after the remove of the outliers.

Figure 1.Histogram of SKU snack choices



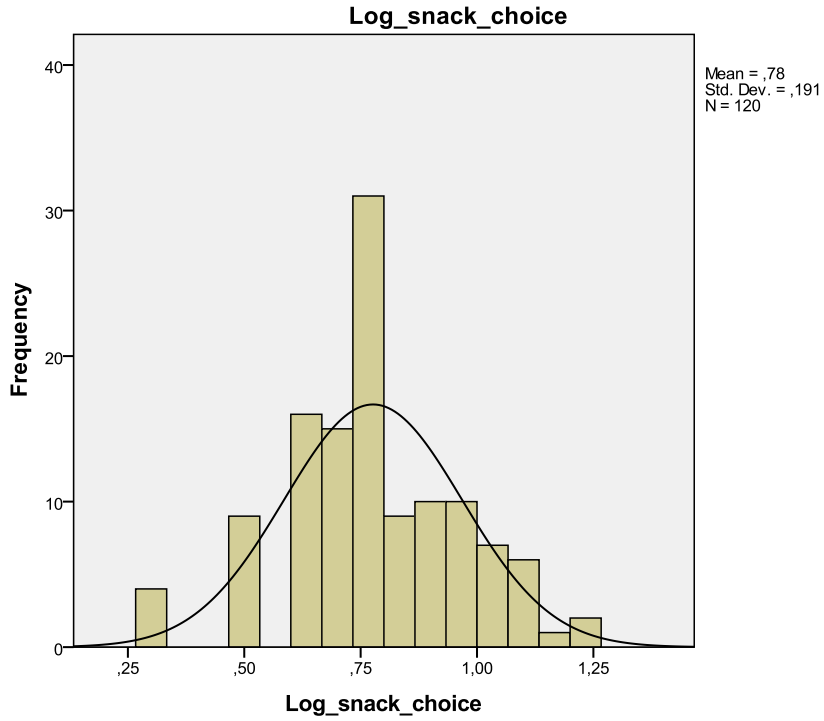
Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Lognatural_SKU_TOTAL	.192	123	.000	.903	123	.000

a. Lilliefors Significance Correction

Snack Choice description when using the absolute number of snack choices

Using the 3 standard deviations criterion there were detected three outliers and excluded from the analysis.



Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Lognatural_absolute_ TOTALSNACKS	.154	123	.000	.935	123	.000

a. Lilliefors Significance Correction

Appendix 7.1

Statistical analysis for Hypothesis 1when using the percentage of unhealthy snack choices

Tests of Between-Subjects Effects

Dependent Variable:percentage_unhealthy

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	4263,727[a]	2	2131,863	3,057	,051
Intercept	104918,149	1	104918,149	150,453	,000
condition	4263,727	2	2131,863	3,057	,051
Error	81589,556	117	697,347		
Total	191563,848	120			
Corrected Total	85853,283	119			

a. R Squared = ,050 (Adjusted R Squared = ,033)

Estimates

Dependent Variable:percentage_unhealthy

condition	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1,00	25,451	4,175	17,182	33,721
2,00	25,319	4,229	16,945	33,694
3,00	37,954	4,124	29,787	46,122

Pairwise Comparisons

Dependent Variable:percentage_unhealthy

(I) condition	(J) condition	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a]	
					Lower Bound	Upper Bound
1,00	2,00	,132	5,943	,982	-11,637	11,901
	3,00	-12,503*	5,869	,035	-24,125	-,880
2,00	1,00	-,132	5,943	,982	-11,901	11,637
	3,00	-12,635*	5,907	,035	-24,333	-,937
3,00	1,00	12,503*	5,869	,035	,880	24,125
	2,00	12,635*	5,907	,035	,937	24,333

Based on estimated marginal means

a. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

*. The mean difference is significant at the ,05 level.

Appendix 7.2

Statistical analysis for Hypothesis 2 when using the percentage of unhealthy snack choices

Tests of Between-Subjects Effects

Dependent Variable:percentage_unhealthy

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	6718,427[a]	5	1343,685	1,936	,094
Intercept	104490,459	1	104490,459	150,527	,000
Condition	4541,658	2	2270,829	3,271	,042
MCent_self_control	365,386	1	365,386	,526	,470
condition * MCent_self_control	1729,394	2	864,697	1,246	,292
Error	79134,856	114	694,165		
Total	191563,848	120			
Corrected Total	85853,283	119			

a. R Squared = ,078 (Adjusted R Squared = ,038)

Appendix 7.3

Statistical analysis for Hypothesis 3 when using the percentage of unhealthy snack choices

Tests of Between-Subjects Effects

Dependent Variable:percentage_unhealthy

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	5212,772[a]	5	1042,554	1,474	,204
Intercept	102605,428	1	102605,428	145,051	,000
Condition	4188,995	2	2094,498	2,961	,056
MCent_health_relevance	3,875	1	3,875	,005	,941
condition * MCent_health_relevance	931,107	2	465,553	,658	,520
Error	80640,511	114	707,373		
Total	191563,848	120			
Corrected Total	85853,283	119			

a. R Squared = ,061 (Adjusted R Squared = ,020)

Appendix 8

Appendix 8.1

Hypothesis 1 when using the absolute number of unhealthy snack choices

Tests of Between-Subjects Effects

Dependent Variable:unhealthy_sum

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	8,914[a]	2	4,457	3,505	,033
Intercept	286,502	1	286,502	225,295	,000
condition	8,914	2	4,457	3,505	,033
Error	148,786	117	1,272		
Total	446,000	120			
Corrected Total	157,700	119			

a. R Squared = ,057 (Adjusted R Squared = ,040)

Estimates

Dependent Variable:unhealthy_sum

condition	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1,00	1,325	,178	,972	1,678
2,00	1,385	,181	1,027	1,742
3,00	1,927	,176	1,578	2,276

Pairwise Comparisons

Dependent Variable:unhealthy_sum

(I) condition	(J) condition	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a]	
					Lower Bound	Upper Bound
1,00	2,00	-,060	,254	,815	-,562	,443
	3,00	-,602*	,251	,018	-1,098	-,105
2,00	1,00	,060	,254	,815	-,443	,562
	3,00	-,542*	,252	,034	-1,042	-,043
3,00	1,00	,602*	,251	,018	,105	1,098
	2,00	,542*	,252	,034	,043	1,042

Based on estimated marginal means

a. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

*. The mean difference is significant at the ,05 level.

Appendix 8.2

Hypothesis 2 and 3 when using the absolute SKU number of unhealthy snack choices

Tests of Between-Subjects Effects

Dependent Variable:sum_SKU_unhealthy

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	13,882[a]	5	2,776	2,198	,059
Intercept	277,020	1	277,020	219,331	,000
condition	9,149	2	4,574	3,622	,030
M_Self_control	,939	1	,939	,743	,390
condition * M_Self_control	3,617	2	1,808	1,432	,243
Error	143,984	114	1,263		
Total	440,000	120			
Corrected Total	157,867	119			

a. R Squared = ,088 (Adjusted R Squared = ,048)

Tests of Between-Subjects Effects

Dependent Variable:sum_SKU_unhealthy

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	9,280[a]	5	1,856	1,424	,221
Intercept	276,976	1	276,976	212,503	,000
condition	8,291	2	4,146	3,181	,045
M_health_relevance	,033	1	,033	,026	,873
condition * M_health_relevance	,564	2	,282	,217	,806
Error	148,587	114	1,303		
Total	440,000	120			
Corrected Total	157,867	119			

a. R Squared = ,059 (Adjusted R Squared = ,017)

Appendix 8.3

Hypothesis 2 and 3 when using the absolute number of unhealthy snack choices

Tests of Between-Subjects Effects

Dependent Variable:unhealthy_sum

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	14,234[a]	5	2,847	2,262	,053
Intercept	283,227	1	283,227	225,056	,000
condition	9,459	2	4,730	3,758	,026
M_Self_control	1,006	1	1,006	,799	,373
condition * M_Self_control	3,578	2	1,789	1,422	,246
Error	143,466	114	1,258		
Total	446,000	120			
Corrected Total	157,700	119			

a. R Squared = ,090 (Adjusted R Squared = ,050)

Tests of Between-Subjects Effects

Dependent Variable:unhealthy_sum

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	10,106[a]	5	2,021	1,561	,177
Intercept	282,304	1	282,304	218,048	,000
condition	8,492	2	4,246	3,279	,041
M_health_relevance	,047	1	,047	,037	,849
condition * M_health_relevance	1,037	2	,518	,400	,671
Error	147,594	114	1,295		
Total	446,000	120			
Corrected Total	157,700	119			

a. R Squared = ,064 (Adjusted R Squared = ,023)

Appendix 8.4

The location of unhealthy snacks in the end of the supermarket is expected to result in a greater likelihood of indulging for individuals with salient health goals who had made a healthy option first. **when using the absolute number of unhealthy snack choices**

Tests of Between-Subjects Effects

Dependent Variable:unhealthy_sum

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	48,958[a]	21	2,331	3,858	,003
Intercept	21,245	1	21,245	35,157	,000
M_health_relevance	1,420	1	1,420	2,350	,144
healthy_sum	29,242	8	3,655	6,049	,001
healthy_sum * M_health_relevance	15,168	8	1,896	3,138	,023
Error	10,273	17	,604		
Total	134,000	39			
Corrected Total	59,231	38			

a. R Squared = ,827 (Adjusted R Squared = ,612)

Appendix 8.5

Analyzing healthy choices when using absolute healthy choices

Tests of Between-Subjects Effects

Dependent Variable:healthy_sum

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	7,037[a]	2	3,518	,325	,723
Intercept	3023,499	1	3023,499	279,218	,000
condition	7,037	2	3,518	,325	,723
Error	1266,930	117	10,828		
Total	4294,000	120			
Corrected Total	1273,967	119			

a. R Squared = ,006 (Adjusted R Squared = -,011)

Appendix 8.6

Tests of Between-Subjects Effects

Dependent Variable:sum_SKU_healthy

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	30,271[a]	5	6,054	2,881	,017
Intercept	911,323	1	911,323	433,745	,000
condition	10,883	2	5,442	2,590	,079
M_Self_control	13,755	1	13,755	6,547	,012
condition * M_Self_control	3,807	2	1,904	,906	,407
Error	239,521	114	2,101		
Total	1205,000	120			
Corrected Total	269,792	119			

a. R Squared = ,112 (Adjusted R Squared = ,073)

Tests of Between-Subjects Effects

Dependent Variable:sum_SKU_healthy

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	23,709[a]	5	4,742	2,197	,059
Intercept	946,381	1	946,381	438,419	,000
condition	13,121	2	6,560	3,039	,052
M_health_relevance	1,589	1	1,589	,736	,393
condition * M_health_relevance	10,358	2	5,179	2,399	,095
Error	246,083	114	2,159		
Total	1205,000	120			
Corrected Total	269,792	119			

a. R Squared = ,088 (Adjusted R Squared = ,048)

Appendix 8.7

Tests of Between-Subjects Effects

Dependent Variable:healthy_sum

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	42,468[a]	5	8,494	,786	,562
Intercept	2917,621	1	2917,621	270,085	,000
condition	10,846	2	5,423	,502	,607
M_Self_control	5,755	1	5,755	,533	,467
condition * M_Self_control	24,427	2	12,213	1,131	,326
Error	1231,499	114	10,803		
Total	4294,000	120			
Corrected Total	1273,967	119			

a. R Squared = ,033 (Adjusted R Squared = -,009)

Tests of Between-Subjects Effects

Dependent Variable:healthy_sum

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	16,177[a]	5	3,235	,293	,916
Intercept	3009,600	1	3009,600	272,776	,000
condition	6,502	2	3,251	,295	,745
M_health_relevance	1,821	1	1,821	,165	,685
condition * M_health_relevance	5,561	2	2,780	,252	,778
Error	1257,790	114	11,033		
Total	4294,000	120			
Corrected Total	1273,967	119			

a. R Squared = ,013 (Adjusted R Squared = -,031)

Appendix 9

Statistical analysis for the Female Sample

Hypothesis 1 when using the percentage of SKU unhealthy snack choices

Tests of Between-Subjects Effects for unhealthy snack choices (SKU percentage)(only female sample).

Dependent Variable: SKU percentage of unhealthy choices					
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Corrected Model	3782,873[a]	2	1891,437	2,737	,071
Intercept	102927,114	1	102927,114	148,956	,000
Condition	3782,873	2	1891,437	2,737	,071
Error	53206,056	77	690,988		
Total	159614,481	80			
Corrected Total	56988,929	79			

a. R Squared = ,066 (Adjusted R Squared = ,042)

Appendix 9.1

Hypothesis 1 when using the percentage of unhealthy snack choices

Tests of Between-Subjects Effects

Dependent Variable:percentage_unhealthy

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1821,499[a]	2	910,749	1,217	,302
Intercept	70899,106	1	70899,106	94,714	,000
Condition	1821,499	2	910,749	1,217	,302
Error	57638,988	77	748,558		
Total	130112,345	80			
Corrected Total	59460,487	79			

a. R Squared = ,031 (Adjusted R Squared = ,005)

Appendix 9.2

Hypothesis 2 when using the percentage of SKU unhealthy snack choices

Test of between subjects effect for Self Control (only female sample)

Dependent Variable: Self Control					
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Corrected Model	5,959[a]	2	2,979	1,598	,209
Intercept	3,991	1	3,991	2,140	,148
Condition	5,959	2	2,979	1,598	,209
Error	143,596	77	1,865		
Total	153,515	80			
Corrected Total	149,554	79			

a. R Squared = ,040 (Adjusted R Squared = ,015

Table 15. Tests of Between-Subjects Effects for unhealthy choices (SKU percentage)(only female sample).

Dependent Variable: SKU percentage of unhealthy choices					
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Corrected Model	4916,732[a]	5	983,346	1,397	,235
Intercept	94798,722	1	94798,722	134,719	,000
Condition	3993,404	2	1996,702	2,838	,065
MCent_Self_Control	30,821	1	30,821	,044	,835
Condition*	1033,071	2	516,535	,734	,483

MCent_Self_Control			
Error	52072,197	74	703,678
Total	159614,481	80	
Corrected Total	56988,929	79	

a. R Squared = ,086 (Adjusted R Squared = ,025)

Hypothesis 3 when using the percentage of SKU unhealthy snack choices

Test of between subjects effect for Health Goal relevance (only female sample).

Dependent Variable: Health Goal					
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Corrected Model	,110[a]	2	,055	,257	,774
Intercept	,088	1	,088	,409	,525
Condition	,110	2	,055	,257	,774
Error	16,529	77	,215		
Total	16,739	80			
Corrected Total	16,639	79			

a. R Squared = ,007 (Adjusted R Squared = -,019)

Tests of Between-Subjects Effects for unhealthy choices (SKU percentage)(only female sample).

Dependent Variable: SKU percentage of unhealthy choices					
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Corrected Model	3898,980[a]	5	779,796	1,087	,375
Intercept	101182,745	1	101182,745	141,035	,000
Condition	3842,265	2	1921,133	2,678	,075
MCent_health_relevance	6,869	1	6,869	,010	,922
Condition* MCent_health_relevance	114,691	2	57,346	,080	,923
Error	53089,949	74	717,432		
Total	159614,481	80			
Corrected Total	56988,929	79			

a. R Squared = ,068 (Adjusted R Squared = ,005)

Hypothesis 2 when using the percentage of unhealthy snack choices

Tests of Between-Subjects Effects

Dependent Variable:percentage_unhealthy

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	4337,296[a]	5	867,459	1,165	,335
Intercept	64388,726	1	64388,726	86,438	,000
Condition	2295,967	2	1147,983	1,541	,221
MCent_self_control	503,132	1	503,132	,675	,414
condition * MCent_self_control	1728,889	2	864,444	1,160	,319
Error	55123,190	74	744,908		
Total	130112,345	80			
Corrected Total	59460,487	79			

a. R Squared = ,073 (Adjusted R Squared = ,010)

Hypothesis 3 when using the percentage of unhealthy snack choices

Tests of Between-Subjects Effects

Dependent Variable:percentage_unhealthy

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	2179,313[a]	5	435,863	,563	,728
Intercept	69893,572	1	69893,572	90,294	,000
Condition	1842,404	2	921,202	1,190	,310
MCent_health_relevance	117,867	1	117,867	,152	,697
condition * MCent_health_relevance	234,710	2	117,355	,152	,860
Error	57281,173	74	774,070		
Total	130112,345	80			
Corrected Total	59460,487	79			

a. R Squared = ,037 (Adjusted R Squared = -,028)

Appendix 9.3

Hypothesis 4

Tests of Between-Subjects Effects for overall evaluation of store(only female sample)

Dependent Variable: Store Evaluation					
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Corrected Model	2,487[a]	2	1,244	2,441	,094
Intercept	1,294	1	1,294	2,540	,115
Condition	2,487	2	1,244	2,441	,094
Error	39,223	77	,509		
Total	42,833	80			
Corrected Total	41,710	79			

Descriptives

store_evaluation

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1.00	25	4.9840	.63750	.12750	4.7209	5.2471	3.60	6.20
2.00	29	4.5793	.83725	.15547	4.2608	4.8978	2.60	6.00
3.00	26	4.6385	.62742	.12305	4.3850	4.8919	3.40	6.00
Total	80	4.7250	.72662	.08124	4.5633	4.8867	2.60	6.20

Multiple Comparisons

Dependent Variable:store_evaluation

	(I) condition	(J) condition	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Tukey HSD	1.00	2.00	.40469	.19478	.101	-.0608	.8702
		3.00	.34554	.19992	.201	-.1322	.8233
	2.00	1.00	-.40469	.19478	.101	-.8702	.0608
		3.00	-.05915	.19276	.949	-.5198	.4015
	3.00	1.00	-.34554	.19992	.201	-.8233	.1322
		2.00	.05915	.19276	.949	-.4015	.5198
Dunnett t (>control)[a]	2.00	1.00	-.40469	.19478	.996	-.7827	
	3.00	1.00	-.34554	.19992	.989	-.7335	

a. Dunnett t-tests treat one group as a control, and compare all other groups against it.

Appendix 9.4

Tests of Between-Subjects Effects for SKU unhealthy choices(only female sample).

Dependent Variable: SKU unhealthy snack choices					
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Corrected Model	33,688[a]	11	3,063	3,001	,021
Intercept	45,959	1	45,959	45,040	,000
healthy_sum_SKU	20,098	3	6,699	6,565	,004
MCent_health_relevance	1,988	1	1,988	1,948	,181
healthy_sum_SKU * MCent_health_relevance	5,646	3	1,882	1,844	,177
Error	17,347	17	1,020		
Total	109,000	29			
Corrected Total	51,034	28			

a. R Squared = ,660 (Adjusted R Squared = ,440)

References

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