WAGENINGEN UNIVERSITY - DEPARTMENT OF SOCIAL SCIENCES
MSC THESIS CHAIR GROUP COM

Using self-regulation strategies to deal with a tempting food environment

The use of self-regulation strategies during grocery shopping and the effects of this on the purchase of unhealthy snacks.

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Abstract

Background: Food choice and intake behaviour can be influenced by self-regulation strategies. Self-regulation strategies are a learned set of strategies that can be applied in a certain situation to tackle the known threat. But can the use of these strategies also influence purchase behaviour during grocery shopping? Therefore in this study the use of purchase-related self-regulation strategies during grocery shopping was investigated and the effects this could have on purchase of unhealthy snacks.

Methods: The study was a cross-sectional survey among adults who were doing their grocery shopping (N=210), that assessed the grocery characteristics, intention towards healthy eating, impulsivity, the use of strategies of the participants and their purchasing behaviour. Some examples of the strategies that were used are; 'I walk as fast as possible through the "unhealthy" paths.', 'I ask myself if I really need this product.', 'I do my groceries once a week, to avoid the temptations in the grocery shop.'.

Results: The results show that strategies were rarely used by the participants of this study. A weak negative correlation was found between self-regulation and the purchase of snacks. The use of self-regulation strategies is mainly influenced by intention to limit unhealthy snack purchase, intention to purchase less unhealthy snacks and intention to eat. Factors that were found to predict self-regulation are; age, grocery occasion and the intentions mentioned above.

Conclusion: The outcomes of this study suggest a weak correlation between the use of self-regulation strategies and the purchase of unhealthy snacks. The effects of self-regulation strategies on purchase of unhealthy snacks should be further investigated.

Introduction

In Western countries a tempting food environment is hard to avoid. With shops and vending machines literally around every corner there is a lot of temptation to resist and the growing problem of obesity in Western counties (Organization, 2005) is a sign that we fail at this.

If obesity can be blamed on the tempting food environment, how is it possible that not everyone is obese? People that live in the same town are all exposed to the same temptation, but only a percentage of these people is obese. This suggests that individual differences have part in this. Although genetic factors are known to play a role in obesity (Wright & Aronne, 2012), genetics do not explain the excessive energy consumption that is the cause of obesity in most people. Not everyone is as good at resisting the tempting food environment. Resisting the temptations this environment provides is a matter of self-regulation (Baumeister & Vohs, 2007).

Self-regulation or the lack of it is shown to have an important role in obesity (Fischer & Munsch, 2012). A way to exceed self-regulation is through the use of strategies (Ridder & de Wit, 2006). Self-regulation strategies are a learned set of strategies that can be applied in a certain situation to tackle the known threat (Vohs & Baumeister, 2011) and these can be used to influence food choice and intake (F. M. Stok et al., 2015). Unhealthy snacks are the main perpetrators of the tempting food environment and an important contributor to obesity (F. M. Stok et al., 2015). Since the initial exposure to unhealthy snacks occurs in places where they can be bought; the focus of this study is on the use of self-regulation strategies during grocery shopping to decrease purchase of unhealthy snacks.

Theoretical background

Self-regulation

Self-regulation refers to all efforts to steer attention, emotions and behaviour to reach beneficial long-term goals, even when there are short-term temptations (de Ridder & de Wit, 2008) (Baumeister & Vohs, 2007). This is a definition of self-regulation, but self-regulation can be described and defined in many different ways. For example in an article of Baumeister and Vohs self-regulation is explained as “The self’s capacity for altering its behaviours. It greatly increases the flexibility and adaptability of human behaviour, enabling people to adjust their actions to a remarkably broad range of social and situational demands (Baumeister & Vohs, 2007) .” This definition emphasises that the “self” alters behaviour, adding to the previous definition with that it is a conscious process that is controlled.

In the Handbook of Self-regulation a distinction is made between these different ways of viewing self-regulation. It explains that the term self-regulation can mean different things to different people and that some see self-regulation as an equivalent to self-control (Vohs & Baumeister, 2011). With the definition of self-control being; “The exertion of control over the self by the self or the overriding of one action tendency in order to attain another goal” (Muraven & Baumeister, 2000). While for the term self-regulation the terms “purposive processes” and “self-corrective adjustments” are mentioned that are necessary to stay on track for the purpose being served and that the sense that the corrective adjustments originate within the person (Vohs & Baumeister, 2011).

Another term that is sometimes associated with self-regulation is impulsivity. Impulsivity is a broad concept referring to responding with insufficient forethought, planning or control (Solanto et al., 2001). One aspect of impulsivity is impaired inhibitory control, this means that a person with high impulsivity has difficulty overriding automatic responses. In an article of Baumeister and Heatherton (Baumeister & Heatherton, 1996) a distinction between self-regulation and impulse-control is made. While impulse-control focusses on preventing the impulse from occurring, self-regulation, because it is a conscious process, helps to tempers impulsive actions by overriding the usual consequences of an impulse.

After these definitions of self-regulation it is clear that to exert self-regulation there must be a short-term temptation that threats a long-term goal. Next to all the internal and external (Wansink, 2004) factors that influence self-regulation , self-regulation depends on the temptation itself (Baumeister, Heatherton, & Tice, 1994). Studies suggested that the strength of the temptation plays a role in how well self-regulation works (Kroese, Evers, & de Ridder, 2013). The individual has to be aware of the threat to be able to apply self-regulation (Kroese et al., 2013). Part of why self-regulation of eating is compromised is through the lack of clear, shared eating appropriateness standards that guide what to eat, how much to eat, and where and when to eat (Ridder, De Vet, Stok, Adriaanse, & De Wit, 2012). If these guidelines are not clear, threats might not be recognised. When an individual is aware that the environment is tempting, self-regulation work well, but when the environment only has weak temptations, these temptations tend to be underestimated and using self-regulation is more challenging (Kroese et al., 2013).

The model of Carver and Scheier describes self-regulation as a feedback loop, where behaviour is seen as reflecting processes of feedback control (Baumeister & Vohs, 2007). This self-corrective view is also described by Baumeister (Baumeister & Vohs, 2007), who emphasises three main ingredients for self-regulation. These ingredients are; standards, monitoring and self-regulatory strength. In this model monitoring shows the feedback mechanism of self-regulation. Later research on these three ingredients of self-regulation includes a fourth ingredient, this is motivation (Baumeister & Vohs, 2007).

That motivation is important in self-regulation is supported by more studies. Because self-regulation requires inhibition of urges, behaviours, desires and emotions it is an effortful process, motivation is required to be worth the effort (Muraven & Baumeister, 2000). Especially since self-regulation is only available in a limited source and cannot be used for everything an individual encounters in a day (Muraven & Baumeister, 2000). Repeatedly exerting self-control will use up the resource, impairing subsequent self-regulatory success, a state known as self-regulatory resource depletion (or ego-depletion (Muraven & Baumeister, 2000). Not only motivation is important to achieve a goal, but it is also necessary that the individual thinks they are personally able to influence the situation to reach this goal (Steptoe, Pollard, & Wardle, 1995). Only when a person believes to be able to influence their own well-being, the next step can be taken of how to achieve this. This means that self-regulation is saved for things that the individual deems important (Baumeister & Vohs, 2007) and believes to have influence on. This means that for self-regulation to be applied to food choice and intake the individual must see eating healthy as something of importance (Baumeister & Vohs, 2007; Vohs & Baumeister, 2011).

Self-regulation and eating behaviour

If eating healthy is seen as long-term goal, can self-regulation really be used for a goal like this and would it work? Different studies were performed to look at the influence of self-regulation on a tempting food environment. Most outcomes suggest that self-regulation has an influence on food choice and intake (F. M. Stok et al., 2015) (Emely De Vet & De Ridder, 2014) and can be used to eat more healthy. Not only can self-regulation help to better resist palatable food (Emely De Vet & De Ridder, 2014), it was also found that under low self-regulation, individuals have difficulties to resist palatable food products (Salmon, Fennis, De Ridder, Adriaanse, & De Vet, 2014). This suggests that self-regulation is a way to resist the unhealthy food environment and help the goal of eating healthy.

A substantial amount of research has been conducted under the label of self-regulation, including the self-regulation of eating behaviour (F. M. Stok, de Vet, de Ridder, & de Wit, 2012). But how is self-regulation applied? Because there is an emphasis on self-control as the essential feature of self-regulation, other important aspects of self-regulation are neglected in the theory (Ridder & de Wit, 2006). One of these important aspects is the use of self-regulation strategies (Ridder & de Wit, 2006).

Self-regulation strategies

To exert effective self-regulation, people need to decide which goals they want to pursue (standards). Therefore strategies have to be determined by which they want to achieve these goals(Baumeister & Vohs, 2007; Poelman, de Vet, Velema, Seidell, & Steenhuis, 2014). This means that if the goal is to regulate the amount of food selected and consumed the first step towards improving self-regulation is identify and evaluate self-regulation strategies that help achieve this goal (Poelman et al., 2014). This is how the person gets a learned set of strategies that can be applied in a certain situation to tackle the known threat. These strategies that are selected by the Individual to pursue a certain goal can be used to approach or avoid an achievement (Vohs & Baumeister, 2011). Often these strategies belong to one of the three different categories: personal, behavioural and environmental.

Self-regulation strategies are rules of thumb that are quite easy to apply and do not require a complete change of lifestyle. Because these strategies are only small changes they are in general easy to be accepted and to hold on to. Despite that they do not require big changes in lifestyle the use of self-regulation strategies can lead to a healthier life style on the long run(Poelman et al., 2014). Self-regulation strategies are much used in daily life, by using strategies a lot of decision can be made quickly without much thinking. It depend on the task and the environment which strategies are used (Poelman et al., 2014).

It is suggested that self-regulation strategies may operate at both sides of the conflict to support goal striving. They may aim at making temptations less relevant, in this way decreasing the chance that the temptation interferes with the long-term goal. But they can also aim at making desired long-term goals more important, in this way directly contributing to goal pursuit (E. De Vet et al., 2014).

Food decisions happen in all kind of situations, at home when on the couch or when doing groceries. Because these situations differ, also the self-regulation strategies that are used differ (Poelman et al., 2014). The focus of this study is on the application of self-regulation strategies during grocery shopping.

Empirical background

How do self-regulation strategies influence food choice and intake?

Especially over the past years studies have focused on this question. A few studies in this direction will be mentioned below.

Self-regulation strategies and eating behaviour

In 2013 a cross-sectional survey data study with adolescents was done to look at the use of self-regulation strategies in relation to access to unhealthy foods and intake of unhealthy foods. The outcomes showed that the use of self-regulation strategies could attenuate the effect of easy accessible food. Teaching adolescents to use self-regulation strategies could facilitate healthy eating (E. De Vet et al., 2013).

In this same year another study was done to identify and estimate the feasibility and usefulness of self-regulation strategies to control the amount of food selected and consumed. In this study 32 self-regulation strategies were identified that serve this purpose. Then the effects of using these strategies on overweight were testing with two cross-sectional questionnaire studies and BMI measurement. The outcomes suggested that self-regulation strategies are feasible and useful in weight management (Poelman et al., 2014).

In a study that is currently submitted for review (E. De Vet, Stok, De Wit, & De Ridder, 2015) a cross-sectional survey study was done to investigate the role that habit strength plays in snacking during adolescence and whether self-regulation strategies can overcome habitual snacking. The results of this study suggest that teaching self-regulation strategies may help adolescents to overcome unhealthy snacking habits. Strong snacking habits were associated with higher consumption, but since the use of self-regulation strategies was

negatively associated with unhealthy snacking this effect could be attenuated by use of self-regulation strategies (E. De Vet et al., 2015).

A bottom-up investigation among adolescents investigated the strategies adolescents identify as successful self-regulation of eating behaviour. Results suggest that adolescents have knowledge of various self-regulation strategies, but not put these always to use (F. M. Stok et al., 2012). In this investigation the purchase of food was seen as a moment were strategies can be applied to improve healthy eating behaviour. Two strategies suggest this, namely; (1) Not buying unhealthy foods, so I will not be tempted to eat them, and (2) not spending my pocket money on snacks (F. M. Stok et al., 2012).

Interesting is that most of the research mentioned above focused on self-regulation in adolescents. This is seen as an especially important target group for interventions aimed to increase the use of self-regulatory strategies for eating behaviour. This because eating behaviours that are established during this period often will become eating habits for life (Story, Neumark-Sztainer, & French, 2002; Vohs & Baumeister, 2011).

All these studies look at the effects of using self-regulation strategies on food choice and intake in different kind of situations. Whether self-regulation strategies were used in a tempting environment, for weight management or to alter habits the outcomes of these studies suggest that self-regulation strategies might have positive effect on food choice and intake.

This shows how self-regulation strategies can be used in daily life or at home, but does this work the same way during grocery shopping?

Self-regulation strategies and grocery shopping

A lot of marketing research is done about in-store consumer behaviour, but the research has focused primarily on the effects of in-store display arrangements, brand switching, unplanned buying and consumer characteristics (Park, Iyer, & Smith, 1989). Grocery is seen as a type of consumer behaviour that differs from other consumer buying. Because it is characterized by multiple buying goals that must be achieved, and repetition at regular time intervals (e.g., once a week). But also grocery shopping is influenced by in-store stimuli, such as products, brands and point-of-purchase information, causing purchase intentions and outcomes often differ depending on a variety of situational factors (Park et al., 1989).

Now how does this grocery shopping experience influence the use of self-regulation strategies?

In a study of Poelman et al (Poelman et al., 2014) where the feasibility and usefulness of self-regulation strategies to control the amount of food selected and consumed was researched. Of the 32 self-regulation strategies that were identified three self-regulation strategies that could have an impact on purchase behaviour were discovered (Poelman et al., 2014). There strategies were mainly used to resist the marketing strategies used to persuade consumers to buy larger amount packages, especially of high-calorie, low nutrient dense foods. These three self-regulation strategies to control the amount of food selected corresponding to purchase behaviour were (Poelman et al., 2014):

1. Make a list in advance and do not divert from this. Even not when there is a great offer.
2. Do not buy jumbo-sized packages and do not buy large quantities at once.
3. Do not taste free samples at the shop.

This study suggests that at least some self-regulation strategies are used during grocery shopping and that these could have effect on food choice and eating behaviour.

In a pilot study among adults in America, where social cognitive theory was used to explain how variables as self-regulation may be a key to integrating healthier nutrition into the U.S. was performed. Results suggest

that self-regulation makes an important contribution to nutrition behaviour; as well the buying as the eating of healthier foods (Anderson, Winett, & Wojcik, 2007).

In a prospective study among adolescents the associations of two types of motivation with unhealthy snack purchase was investigated. One of these motivations was the motivation to self-regulate. In this study it was found that adolescents that have this motivation correlated with less unhealthy snack purchase. Suggesting that self-regulation has an influence on the purchase of unhealthy snacks (F. Marijn Stok, De Ridder, Adriaanse, & De Wit, 2010).

The studies mentioned above are just a few studies in the direction of applying strategies during grocery shopping. While the use of self-regulation strategies is a topic that is investigated increasingly over the past few years, there is a remarkable lack of studies on the topic of how self-regulation strategies work in the context of grocery shopping. More research on this subject will have to be done to get more insight. The goal of this study is to get more insight on the effect of self-regulation strategies during grocery shopping and the effects on purchase of unhealthy snacks.

Although using strategies might sound quite appealing and like they could solve a lot of problems. As stated above strategies are not the only factor that influence on food choice. Motives underlying food choice are health, mood, convenience, sensory appeal, natural content, price, weight control, familiarity and ethical concern (Steptoe et al., 1995). It is good to keep in mind that although health is important in food choice, it is not the only important factor and has no extra weight over the other important factors (Steptoe et al., 1995).

Research questions

To what extent do people use self-regulation strategies to limit the purchase of unhealthy products and how effective are these on the final purchases?

Sub-questions

How effective is using purchase-related self-regulation strategies in decreasing the purchase of unhealthy products?

What demographic, situational and psychological factors predict the use of self-regulation strategies to limit the purchase of unhealthy products during grocery shopping?

Which factors effectively decrease the purchase of unhealthy products?

Hypothesis

The intentional use of purchase-related self-regulation strategies decreases the purchase of tempting unhealthy products.

Methods

Participants, study design and procedures

Participants

For this study participants were gathered from two different supermarkets. This was done to make sure the results were not applicable to only one supermarket. The supermarkets that agreed to cooperate with the study were a Spar and an Albert Heijn in the municipality of Emmen; this municipality was chosen because of its proximity for the researcher.

The age of participants ranged from 16 to 87 years and both genders were included in the study. In the end 129 participants were recruited in the Albert Heijn and 81 participants in the Spar. This resulted in a total of 210 participants.

The recruitment of participants took place on different days during the week, at two different time sloths. The times and days of the week were the same in both supermarkets, to prevent that different times and days can influenced the data. The days that the research was executed, were Monday, Wednesday, Friday and Saturday. It was consciously decided to include one weekend day in the study, especially because Saturday often is a day that people do their groceries. The two time sloths in which the research was executed were from 9 am until 1 pm and from 3 pm until 7 pm. These time sloths were chosen to gather information about shoppers with different goals and in different circumstances. For example; during the day people that possibly do not have a full-time job do their groceries and this might be at an entirely different pace than people who come from their work and have to do some grocery shopping before heading home and making dinner. At these times and days the researcher was in the shop that was studied that week to recruit participants.

Study design

The study was executed through a survey with a cross-sectional design. The survey included questions about the way of doing grocery shopping: with a basket or cart, with whom, for how many people, the frequency of doing groceries and the occasion of grocery shopping. Then there was a section of questions about intentions toward unhealthy snacks and healthy eating, followed by a part with several questions that were to assess the impulsivity of the participant. The core of the questionnaire consisted of a list of seventeen possible strategies that could be used during grocery shopping. The frequency in which the participant made use of these self-regulation strategies was assessed. Finally some demographics were asked: gender, age, education and ethnicity. An example of the questionnaire is included in the appendix. Next to the survey that was filled in before the grocery shopping occurred, grocery receipts were collected after the shopping was done. These two together were the data that was collected in this study; these were used in the data analyses and to come to a conclusion.

Procedure

Participants were approached upon entering the store to ask if they wanted to participate in the study. When they agreed to participate the researcher asked the questions of the questionnaire and filled it in according to the answers of the participants. As final question the participant was asked to hand in their receipt after they were done with their grocery shopping. The receipt was gathered to look at the results of using self-regulation strategies during grocery shopping. When the receipt was handed in it was marked with the reference number that was on the according questionnaire.

Most participants handed in their receipt, although there was a number that forgot to do so. From some participants the researcher was able to write down what they bought if they were not willing to give their receipt.

After the study the results of the questionnaires were filled in SPSS and the receipts were analysed. Unhealthy products were categorised, rated and entered into SPSS. The protocol of how the receipts were analysed and rated can be found in the appendix in the scoring protocol.

Measures

Intention to eat healthy was assessed with four items, e.g., "I try to limit the amount of unhealthy snacks I buy." and "I plan to eat more healthy." Individuals were asked to rate on a five-point Likert (Likert, 1932) scale ranging from 1 (strongly disagree) to 5 (strongly agree) how often they use the four intentions which represent three broader categories. Two categories included one item, while the third category included two items. The first category will be referred to as "Intention to limit unhealthy snack purchase", the second category will be called "Intention to purchase less unhealthy snacks" and the third category will be called "Intention to eat healthy". The internal consistency in this third category was satisfying (Cronbach's alpha α= .89)(Cronbach, 1951).

Impulsivity was assessed with seven items based on the motor subscale of the Barratt Impulsiveness Scale (Barratt, Patton, & Stanford, 1975). Participants were asked to what extent they were impulsive on a 4-point Likert scale (Likert, 1932) ranging from Seldom/Never (1) to Always (4). Example items are "I make-up my mind quickly.", "I am happy-go-lucky." and "I buy things on impulse." Cronbach's alpha (Cronbach, 1951) was .56 and a mean score was computed. Despite the low Cronbach's Alpha these seven questions were gathered into one variable; because the Barratt Impulsiveness Scale is a wide-used scale to measure impulsivity and we therefore assume it is reliable.

Self-regulation strategies during grocery shopping were assessed with 17-items. These strategies were purchase-related self-regulation strategies that were gathered from previous studies on this subject (Poelman et al., 2014) and a small pilot study that was done before the start of this study. Participants were asked to rate on a five-point Likert scale (Likert, 1932) ranging from Never (1) to Always (5) how often they use the 17 specific self-regulation strategies. Through factor analysis and Cronbach's alpha (Cronbach, 1951) it was show that not all strategies that were assessed could be used for the data analysis because of their lack of reliability. Finally one cluster of eight questions was formed to work with during the data analysis. Example items are "I walk as fast as possible through the "unhealthy" paths.", "I use a basket instead of a cart, so I cannot buy much." and "I ask myself if I really need this product." The internal consistency in these eight self-regulation strategies was satisfying (Cronbach's alpha α= .77)(Cronbach, 1951). These eight questions together will be referred to as "self-regulation".

Receipts were the second way to collect data. The receipts were analyse and unhealthy snacks were counted and given a score. During the analysis of the receipts it was tried to only include snacks that are generally seen as unhealthy snacks in the score: all kind of cookies, cakes, candy and hearty snacks. Snacks that are not always considered as unhealthy snacks were excluded from this score; gingerbread, rice crackers. Despite that soft drinks and soda are a big contributor to overweight these also were not included in the calculations. A list of the exceptions and list of what is rated as unhealthy snack can be found in the appendix in the scorings protocol.
Most unhealthy snacks received a score of 1, except for family packs, these received a score of 4 because the content is generally about four times as much as in a normal pack, see the appendix for the calculation. What is counted as family pack can be found in the appendix in the scorings protocol. This way every receipt had a certain score for the number of snacks bought, and then the total number of purchases was counted as well. Then the same was done for the costs. First the money spent on snacks was calculated and then the money spent on the total groceries. The number of snacks were compared to the total number of purchases and the amount of money spend on snacks compared to the total amount of money spend. This gave a certain percentage of snacks bought and money spent on snacks compared to the total amount of snacks and money. Both of these numbers were divided by the number of people in the household, to get a mean average of

snacks or money spent on snacks per person in a household. The percentage of snacks compared to the total groceries per person in the household will be referred to in the results as "snack per capita" and "spent per capita" to indicate the percentage of money spent on snacks per person in the household.

Gender was assessed with one item asking "I am a male/female", the appropriate answer could be circled.

Age was assessed with one item asking "My age is…….years", the appropriate answer could be given on the dots.

Education was assessed with the one item asking "My highest completed level of education is:." Three possible answers were provided; the box of the appropriate answer could be ticked. Three possible answers were given; the appropriate answer could be ticked. The different levels of education will be referred to in the results as; "Education low", "Education middle" and "Education high".

Ethnicity was assessed with the one item asking "I was born in:" Two possible answers were provided, "The Netherlands", "Another country, namely…" the appropriate answer could be ticked and additional information could be given on the dots. Although the questionnaire assessed both nationality and ethnicity, the number of participants with another ethnicity was small and because most of the foreign parents or nationalities were German it had no added value for the results. Therefore only the results for nationality are used to represent the ethnicity of the participants in the results.

Cart or basket use was assessed with the one item asking "How are you doing groceries today? With a…:" Three possible answers were given, "Basket", "Cart", and "Other", the appropriate answer could be ticked. These will be referred to in results as; "Basket use", "Cart use" and "Other use".

Grocery occasion was assessed with the one item asking "What is the most appropriate? Today's grocery is…" Three possible answers were provided "Because I forgot something or had to get something quickly", "For the entire week or for several days" and "For a special occasion", the appropriate answer could be ticked. The will be referred to in results as; "Grocery quick", "Grocery week" and "Grocery special".

Intention to buy unhealthy snacks was assessed with the one item asking "Do you intend to buy unhealthy snacks? Yes/No", the appropriate answer could be circled.

In summary the variables derived from the questionnaire and receipts that will be used in the results are:

1. Intention to limit unhealthy snack purchase
2. Intention to purchase less unhealthy snacks
3. Intention to eat healthy
4. Impulsivity
5. Self-regulation
6. Snack per capita
7. Spent per capita
8. Gender
9. Age
10. Education
11. Ethnicity
12. Cart or basket use
13. Grocery occasion
14. Intention to buy unhealthy snacks

Statistical analysis

How do we get to answers to the research question with these variables? The research questions that are investigated are:

1. To what extent do people use self-regulation strategies to limit the purchase of unhealthy products and how effective are these on the final purchases?
2. How effective is using purchase-related self-regulation strategies in decreasing the purchase of unhealthy products?
3. What demographic, situational and psychological factors predict the use of self-regulation strategies to limit the purchase of unhealthy products during grocery shopping?
4. Which factors effectively decrease the purchase of unhealthy products?

To answer these questions some interaction variables were included for the measurement, to show the interaction between two of the previously mentioned variables. To be able to make these interactions the variables self-regulation, impulsivity, Intention to limit unhealthy snack purchase, intention to purchase less unhealthy snacks and intention to eat healthy had first been standardized. After which it was possible to compare these different variables and make the interactions. This resulted in four new variables, namely:

1. Impulsivity x Self-regulation
2. Intention to limit unhealthy snack purchase x Self-regulation
3. Intention to purchase less unhealthy snacks x Self-regulation
4. Intention to eat healthy x Self-regulation

Now the research questions could be answered.

To answer the first research question the eight strategies were looked at separately. The information that was of interest to answer this question were the mean, standard deviation (SD), range of answers and percentage of the questions that was answered with 'Never' (% Never) . These were calculated via descriptive and frequency tests in SPSS. Descriptive test gave the mean, standard deviation and range while the frequency test gave the percentages of given answers. The outcomes of these results are shown in Table 1 in the result section.

The second research question was investigated by computing of bivariate correlations. This method was chosen to look at the independent contribution of the different variables that were included in this test. The Spearman test for Bivariate Correlations (Spearman, 1904) was used to look at which variables had a correlation with each other. The closer to 1 the results of this test are the stronger the relation between variables is, while if the outcomes are close to 0 this indicates a weak relationship. Showing what interactions variables have with each other as positive results show that if one variable increases the other increases as well, while negative results show that if one increases the other will decrease. For this test the variables Intention to limit unhealthy snack purchase, intention to purchase less unhealthy snacks, intention to eat healthy, impulsivity, self-regulation, snack per capita and spent per capita were included. Another Spearman Test for Bivariate Correlations was performed, now with the focus on the two variables snack per capita and spent per capita. In this test the people that had the intention to buy unhealthy snacks were excluded. This was done because since participants already had the intention to buy unhealthy snacks the outcome of their receipts would not show the influence of the other variables on the purchase of unhealthy snacks. The mean, standard deviation (SD), number of persons that answered the question (N) and range of answers were derived from a descriptive test and also included in the outcome.
The results of these tests are shown in Table 2.

For the third questions we wondered by what factors self-regulation was influenced; situational, demographic or psychological factors, or a mix of the three. Therefore to answer this question these factors were used in a

linear regression to see which one predicted self-regulation best. The variables were gender, age, education and ethnicity to look at demographics, grocery occasion and cart or basket use to look at the situational influence and impulsivity and intention to look at psychology. Self-regulation is the dependent variable in this case. Because education, grocery occasion and cart or basket use were nominal variables with more than two answer possibilities these three variables were categorized into dummy variables before being included in the calculations. In dummy variables the true value is represented as a numerical value 0 or 1 to make it possible to use them in calculations. The results of the linear regression are available in Table 3 in the results section.

Another linear regression analysis is performed for research question four. To answer this question two linear regression tests were done, one with snack per capita as dependent variable and the other with spent per capita as dependent variable. These two were used as dependent variable because they were the "outcome of the grocery shopping" and therefore good to measure the effects of all other factors on the outcome. For both these tests participants that had the intention to buy unhealthy snacks (40% of the participants) were excluded. This was done because since participants already had the intention to buy unhealthy snacks the outcome of their receipts would not show the influence of the other variables on the purchase of unhealthy snacks. The independent variables included in this test were; gender, age, education, ethnicity, occasion groceries, self-regulation, impulsivity, Intention to limit unhealthy snack purchase, intention to purchase less unhealthy snacks, intention to eat healthy, impulsivity x self-regulation, Intention to limit unhealthy snack purchase x self-regulation, intention to purchase less unhealthy snacks x self-regulation and intention to eat healthy x self-regulation. In Table 4 the results of this test are shown.

Results

Descriptive results

Most of the participants (N=210) were female (79%) . The age ranged from 16-87 with an average age of 49.13 years (SD=17.07). The education levels of the participants showed that 35% had a high educational level and 26% a lower education level. Most of the participants were born in the Netherlands (96%) and had two Dutch parents (91%).

A shopping basket was used by 45% of the customers, 44% used a shopping cart while exactly 10% used something else while doing their groceries. Most grocery shopping was done alone (80%) while 15% brought their partner or another adult to go shopping. Households consisted of 1-10 people, with on average 2.67people in a household (SD=1.49). Only 5% of the shopping was done with children. Most grocery shopping was done for households only consisting of adults (72%).

The occasion of most shopping was to quickly get some groceries (55%), then shopping for some days or a week (39%) while special occasion shopping was only sometimes the case (6%). The number of times people went to the grocery store in a week ranged from 1 to 7 times a week with an average of 2.89 times a week (SD=1.60).

For 61% of all participants the shop they were interviewed in was their regular grocery shop. In the questionnaire 40% of people intended to buy unhealthy snacks, while in the end 51% actually bought something that was classified as unhealthy. If drinks were counted as unhealthy snacks; the percentage of participants that bought unhealthy snacks would have been 59% instead.

For the Intention to limit unhealthy snack purchase question the most given answer was that people agreed to this (M=3.70, SD=.94), but they generally disagreed to the intention to purchase less unhealthy snacks in the future (M=2.59, SD=.97). In general people disagreed that they want to eat more healthy than they do at this moment (M=2.54, SD=.87). Participants were weakly impulsive (M=1.80, SD=.33).

Research questions

1. **To what extent do people use self-regulation strategies to limit the purchase of unhealthy products and how effective are these on the final purchases?**

The eight strategies were assessed and the results are presented in Table 1. This Table shows that the answer of most people to the strategies was that they never use them. This explains why all means are around 1.5, since the largest portion (71-90%) of the questions was answered with never.

This is the rank order in which strategies are by the participants of this study, the first is the most used and the eight the least:

1. When I feel like buying something unhealthy, I say no to myself (M=2.75).
2. I avoid special offers for unhealthy products (M=1.60).
3. I walk as fast as possible through the "unhealthy" paths (M=1.54).
4. I avoid the "unhealthy" paths (M=1.45).
5. I ask myself if I really need this product (M=1.45).
6. Before I go to the shop I decide if and how many unhealthy snacks I am going to buy (M=1.43).
7. I do my groceries once a week, to avoid the temptations in the grocery shop (M=1.30).
8. I use a basket instead of a cart, so I cannot buy much (M=1.24).

Table 1. Means, standarts deviations (SD), range of given answers and the percentage that answered never for the eight self-regulation strategies.

Item	Mean*	SD*	Range*	% Never
1. When I feel like buying something unhealthy, I say no to myself.	2.75	.98	1-5	9%
2. I avoid special offers for unhealthy products.	1.60	1.05	1-5	71%
3. I walk as fast as possible through the "unhealthy" paths.	1.54	1.07	1-5	78%
4. I avoid the "unhealthy" paths.	1.45	1.02	1-5	81%
5. I ask myself if I really need this product.	1.45	.96	1-5	80%
6. Before I go to the shop I decide if and how many unhealthy snacks I am going to buy.	1.43	.96	1-5	81%
7. I do my groceries once a week, to avoid the temptations in the grocery shop.	1.30	.89	1-5	88%
8. I use a basket instead of a cart, so I cannot buy much.	1.24	.75	1-4	90%

* Mean, SD and range of answers on a five-point Likert scale.

All strategies are answered within the entire range of answers, from never to almost always; except for strategy 8 "I use a basket instead of a cart, so I cannot buy much." The range of answers given for this question ranges from 'Never' (1) to 'Often' (4), 'Almost always' (5) is not answered for this strategy. According to the results of Table 1 most participants do not make use of the stated strategies, since the most common answer for use of strategies is 'Never'. The only exception on this rule is the first strategy that is answered 1/3 of the time with seldom and 1/3 of the time with sometimes. Only about 10% of the participants never makes use of this strategy, while the use of other strategies differentiates between the 10-30%. How effective this use of strategies is will be answered in the next results.

2. **How effective is using purchase-related self-regulation strategies in decreasing the purchase of unhealthy products?**

A Spearman correlation test was used to answer this question. The following variables were included in this test; Intention to limit unhealthy snack purchase, intention to purchase less unhealthy snacks, intention to eat healthy, impulsivity, self-regulation, snack per capita and spent per capita.

Table 2a. Means, standard deviations (SD), number of answers (N), range of given answers and bivariate Spearman's rho correlations between intention to limit unhealthy snack purchase, intention to purchase less unhealthy snacks, intention to eat healthy, impulsivity, self-regulation, snack per capita, spent per capita.

	Intention to limit unhealthy snack purchase	Intention to purchase less unhealthy snacks	Intention to eat healthy	Impulsivity	Self-regulation	Snack per capita	Spent per capita
Intention to limit unhealthy snack purchase	-	.18**	.09	-.07	.18**	-.03	-.01
Intention to purchase less unhealthy snacks		-	.59***	.10	.33***	-.14*	-.12
Intention to eat healthy			-	.18*	.26***	-.08	-.06
Impulsivity				-	.02	-.01	-.00
Self-regulation					-	-.12	-.15*
Snack per capita						-	.94***
Spent per capita							-
Mean	3.70	2.59	2.54	1.80	1.60	6.88	5.57
SD	.94	.97	.90	.33	.59	14.02	13
N	210	210	210	209	209	191	184
Range	1-5	1-5	1-5	1-3	1-4	0-100	0-100

***. Correlation is significant at the .001 level (2-tailed).
**. Correlation is significant at the .01 level (2-tailed).
*. Correlation is significant at the .05 level (2-tailed).

Because the two variables snack per capita and spent per capita reflect the outcomes of the grocery shopping another linear regression was conducted for these two variables. In this second test all participants that intended to buy unhealthy snacks (40% of the participants) were excluded because the recite of these participants would not reflect the effects of the other variables since there was already an intention to purchase unhealthy snacks.

Table 2b. This test was done with the 60% of the participants that did not intend to buy unhealthy snacks.

	Intention to limit unhealthy snack purchase	Intention to purchase less unhealthy snacks	Intention to eat healthy	Impulsivity	Self-regulation	Snack per capita	Mean	SD	N	Range
Snack per capita	.05	-.28**	-.23*	-.14	-.20*	-	4.48	11.52	112	0-71
Spent per capita	.09	-.22*	-.17	-.16	-.22*	.92***	2.87	7.81	111	0-58

***. Correlation is significant at the .001 level (2-tailed).
**. Correlation is significant at the .01 level (2-tailed).
*. Correlation is significant at the .05 level (2-tailed).

In Table 2b more significant correlations are shown than in Table 2a. By just making use of the answers of people who did not intend to buy snacks, now correlations between intention to purchase less unhealthy snacks and spent per capita, between intention to eat healthy and snack per capita and between self-regulation and snack per capita are additionally found.

The outcomes show that there are positive significant correlations as well as a negative correlation. For the positive correlations this means that if the one variable increases the other does as well, while the negative outcomes show that if one increases, the other will decrease. Based on Cohen's (1988) interpretation of effect sizes the correlations between intention to limit unhealthy snack purchase and intention to purchase less unhealthy snacks, between intention to limit unhealthy snack purchase and self-regulation, between intention to purchase less unhealthy snacks and snack per capita, between intention to purchase less unhealthy snacks and spent per capita, between intention to eat healthy and snack per capita, between self-regulation and snack per capita, between self-regulation and spent per capita can be considered weak (r's<.30). The correlations between intention to eat healthy and self-regulation and between Intention to purchase less unhealthy snacks and self-regulation can be considered moderate (r's between .30 and .50; see Table 2). The correlations between Intention to purchase less unhealthy snacks and intention to eat healthy, between Intention to purchase less unhealthy snacks and self-regulation, between intention to eat healthy and self-regulation, between snack per capita and spent per capita can be considered strong (r's> .50). No correlation was found between impulsivity and self-regulation, the number of unhealthy snacks purchased or the amount spent on unhealthy snacks. A weak correlation was found between the use of self-regulation strategies and a decrease in the purchase of unhealthy products.

3. What demographic, situational and psychological factors predict the use of self-regulation strategies to limit the purchase of unhealthy products during grocery shopping?

Table 3 presents results of multiple linear regression analysis with self-regulation as dependent variable and gender, age, education, ethnicity, grocery occasion, basket or cart use, impulsivity, intention to limit unhealthy snack purchase, intention to purchase less unhealthy snacks, intention to eat healthy and intention to buy unhealthy snacks as independent variables.

Table 3. The association between background characteristics, grocery circumstances and self-regulation is researched with a linear regression test.

	Self-regulation			
	B	SE(B)	Beta	P-value
Gender*	.16	.09	.11	.08
Age	-.01	.00	-.21	<.01
Education low*	.10	.10	.08	.32
Education high*	.15	.08	.13	.07
Ethnicity	-.04	.19	-.01	.83
Grocery quick*	-.20	.08	-.18	.01
Grocery special*	.05	.15	.02	.36
Cart use*	-.09	.08	-.08	.26
Other use*	-.04	.13	-.02	.77
Impulsivity	.03	.11	.02	.79
Intention to limit unhealthy snack purchase	.08	.04	.14	.04
Intention to purchase less unhealthy snacks	.19	.05	.31	<.01
Intention to eat healthy	.03	.05	.04	.62
Intention to buy unhealthy snacks*	.02	.08	.02	.83
R^2**	.22			
F-test	5.89			
P-value (Sig)	<.001			

**Adjusted R^2 because it is a multiple regression model.

* Gender (1= male, 2=female), Education low (low (1) vs middle (0), Education high (middle (0) vs high (1)), Grocery quick (quick (1) vs week (0)), Grocery special (special (1) vs week (0)), Cart use (Cart (1) vs Basket (0)), Other use (Other (1) vs Basket (0)), intention to buy unhealthy snacks (1=yes, 2=no).

Because the F-test is significant (Sig <.001) it can be said that the model has explanatory power. According to the R^2 value this tests accounts for 22% of the total variability explained by the model. This means that the use of self-regulation strategies is for 22% explained by gender, age, education, ethnicity, grocery occasion, cart or basket use, impulsivity and intention. Gender, education, ethnicity, cart or basket use, impulsivity, intention to eat healthy and intention to buy unhealthy snacks had no influence on the use of self-regulation strategies. More frequent use of self-regulation strategies was associated with lower age, grocery occasion, increased intention to limit unhealthy snack purchase and increased intention to purchase less unhealthy snacks. This suggests that these factors have predictive value on the use of self-regulation strategies to limit the purchase of unhealthy products during grocery shopping. For grocery occasion people reported to use less strategies when doing quick groceries and special occasion groceries compared to when doing weekly groceries.

4. Which factors effectively decrease the purchase of unhealthy products?

To determine which factors effectively decrease the purchase of unhealthy products two linear tests are done with spent per capita and snack per capita as dependent. People that intended to buy unhealthy snacks during their grocery shopping (40% of the participants) were excluded from these tests. Because if the participants already had the intention to buy unhealthy snacks the outcome of their receipts would not show the influence of the other variables on the purchase of unhealthy snacks.

As independent variables gender, age, education, ethnicity, occasion groceries, self-regulation, impulsivity, Intention to limit unhealthy snack purchase, intention to purchase less unhealthy snacks and intention to eat healthy. Also the interactions between impulsivity and self-regulation, intention to limit unhealthy snack purchase and self-regulation, intention to purchase less unhealthy snacks and self-regulation, and intention to eat healthy and self-regulation were included in this test.

Table 4. This test was done with the 60% of the participants that did not intend to buy unhealthy snacks. The association between background characteristics, grocery circumstances, interactions and the number of unhealthy snacks bought and the amount paid for unhealthy snacks.

	Spent per capita				**Snack per capita**			
	B	SE(B)	Beta	Sig	B	SE(B)	Beta	Sig
Gender*	3.38	2.03	.18	.10	.67	2.98	.02	.82
Age	-.02	.06	-.04	.76	-.16	.08	-.23	.06
Education low*	-.09	2.05	.01	.96	.05	2.96	.00	.99
Education high*	1.52	1.93	.09	.43	2.90	3.11	.12	.35
Ethnicity	-2.59	5.99	-.04	.67	-4.86	8.63	-.06	.57
Occasion week*	1.92	1.79	.11	.29	.65	2.52	.03	.80
Occasion special*	-.82	5.00	-.02	.87	-.32	7.19	-.01	.96
Self-regulation	-3.57	1.97	-.26	.07	-3.76	2.58	-.20	.15
Impulsivity	-1.47	3.28	-.05	.66	-10.38	4.97	-.231	.04
Intention to limit unhealthy snack purchase	.28	.99	.03	.78	-.08	1.29	-.01	.95
Intention to purchase less unhealthy snacks	-.98	1.21	-.12	.42	-2.88	1.90	-.25	.13
Intention to eat healthy	.33	1.32	.04	.81	.27	2.06	.02	.90
Impulsivity x self-regulation	.08	1.36	.01	.95	.05	1.51	.01	.97
Intention to limit unhealthy snack purchase x self-regulation	.67	1.27	.13	.60	.83	1.80	.11	.65
Intention to purchase less unhealthy snacks x self-regulation	.27	1.31	.05	.84	-.04	1.83	-.01	.98
Intention to eat healthy x self-regulation	.30	1.10	.03	.79	1.74	1.59	.12	.28
R^2**	-.05				.00			
F-test	.69				1.01			
P-value (Sig)	.80				.45			

**Adjusted R^2 because it is a multiple regression model.

* Gender (1= male, 2=female), Education low (low (1) vs middle (0), Education high (middle (0) vs high (1)), Grocery quick (quick (1) vs week (0)), Grocery special (special (1) vs week (0)), Cart use (Cart (1) vs Basket (0)), Other use (Other (1) vs Basket (0))

The results (Table 4) show that the F-test for these models is not significant. Although this means that the model has no explanatory power, the individual associations are still reliable. No association was found

between the money spent on snacks/ the number of snack purchased and gender, education, ethnicity, grocery occasion, intentions to limit or buy less unhealthy snacks, intention to eat healthy or the interaction between self-regulation and the different intentions. The only significant association that is found is between impulsivity and the number of snacks bought. Increased impulsivity is associated with decreased snack purchase. Further two marginal significant outcomes are found. The association between the number of snacks bought and age shows that higher age leads to the decreased purchase of unhealthy snacks. Increased use of self-regulation strategies is associated with a decreased amount of money that is spent on unhealthy snacks. According to these results impulsivity effectively decreases the purchase of unhealthy products.

Discussion

The aim of this research was to investigate to what extent people use self-regulation strategies to limit the purchase of unhealthy products and how effective these are on the final purchases.

The results showed that most of the participants did not make use of the specific strategies that were assessed in this study (use of 10-30%). On average, participants used the self-regulation strategies never to seldom. This use of strategies was remarkably low (M= 1.60, SD=.96) compared to previous studies about the use of strategies (M=3.45, SD=.51 (Poelman et al., 2014)). Perhaps the difference between these studies could be explained by the different contexts in which they were performed. The current study was performed in a shop and people were randomly selected after they entered the shop to do their groceries. While in the previous study of Poelman people who were interested to participate in the study received the questionnaire via e-mail at home and could fill it in there. Because of these different selection methods of the participants, people with quite different mind-sets could have been selected for both studies. For example by addressing people in the grocery store they are in a mind-set of shopping while if people fill in the questionnaire at home they might be in another mind-set. Also because for the study of Poelman people had to be interested to participate while in the current study people that entered the store were asked to participate. It is possibly that the participants of the previous study already had a strategy or health focus and were therefore interested in participating in the study, while in this study there was no selection on participants like that.

Despite the low use of self-regulation strategies during shopping by the participants of this study, one strategy that was assessed in this study was clearly used more than the others (M=2.75, SD=.98). This was the strategy; 'When I feel like buying something unhealthy, I say no to myself.' It is possible that this strategy was preferred over the other strategies because it is a typical example of self-regulation; saying no to an immediate desire (Vohs & Baumeister, 2011). This kind of self-regulation strategy can be used in many different situations aside from grocery shopping.

The results show a weak correlation between the use of self-regulation strategies and the number of and amount spent on snacks (Table 2). This was supported by a marginal association that was found between self-regulation strategies and the amount of money spent on snacks. Both these results suggest that increased self-regulation leads to decreased purchase of unhealthy snacks. This is in line with previous research that suggests that self-regulation could play an important role in (healthier) (Anderson et al., 2007) food choice (E. De Vet et al., 2015) in adults (Poelman et al., 2014; F. M. Stok et al., 2012).

The strong correlation that was found between self-regulation and intention to limit unhealthy snack purchase, intention to purchase less unhealthy snacks and intention to eat healthy suggest that these have a big effect on whether self-regulation strategies are used or not. This was in line with previous research (Baumeister & Vohs, 2007; Muraven & Baumeister, 2000) that showed that motivation is needed to accomplice goals. Without motivation to try to limit the purchase of unhealthy snacks or eating healthy it would not be necessary to apply strategies.

The number of bought snacks and the amount spent on snacks was not correlated with impulsivity (Table 2). This was surprising because the theory shows that increased impulsivity leads to less controlled behaviour and in certain situation to more unhealthy snacks purchase (Nederkoorn, Guerrieri, Havermans, Roefs, & Jansen, 2009). Other studies suggest that impulsivity has a strong association with snacking habits and in this way also has an influence on how well strategies work (Verplanken & Herabadi, 2005). In Table 4 the opposite of these findings was found, according to the results higher impulsivity was associated with decrease of unhealthy snack purchase. These results are not in line with previous research and therefore this outcome is seen as attributable to the current study. Perhaps because for this test 40% of the participants were excluded the small sample size could explain this outcome.

Two factors that according to the results predict a more frequent use of self-regulation strategies were; intention to limit unhealthy snack purchase and intention to purchase less unhealthy snacks. Although intention to eat healthy was not found to predict use of self-regulation strategies. A possible explanation is that this might have to do with the difference between doing and not doing that previous studies suggested (Richetin, Conner, & Perugini, 2010). In the case of this study doing would be “eating healthy” while not doing would be “buying snacks”. A cross-sectional study by Richetin et al even suggested this are two different systems, based on different goals, with different self-strategies, and therefore with different effects on the outcome (Richetin et al., 2010). This same study also suggests that in certain situations outcomes might be predicted better by the intention not to do something than the intention to do it (Richetin et al., 2010). This is in line with the outcomes of this study and might explain why intention to limit unhealthy snack purchase and intention to purchase less unhealthy snacks have an effect on the assessed self-regulation strategies. While no effect of intention to eat healthy on the use of self-regulation strategies was found.

Another predictor of more frequent use of self-regulation strategies was grocery occasion. The use of self-regulation strategies was reported less when doing quick groceries compared to when doing weekly groceries. It is possible that weekly groceries are seen as having more impact on life than quick groceries. Since future impacts are often overestimated (Vohs & Baumeister, 2011), weekly groceries might be seen as a more important step toward a long-term goal than quick groceries. Because of the apparent bigger importance of weekly groceries this might make the use of self-regulation strategies during these kind of groceries seem more important. The impact of quick groceries on this long-term goal might be underestimated, because of this self-regulation strategies might be harder to apply (Kroese et al., 2013).

Finally, age was found to predict the use of self-regulation strategies (Table 3). An association between age and self-regulation strategies was shown in the results, which indicates that higher age leads to the decreased purchase of unhealthy snacks. This outcome is not in line with previous research that suggested that when age increases the use of self-regulation theories increase (Poelman et al., 2014). A possible explanation is that because the use of self-regulation strategies by the participants of this study was very low, it is possible that one of the younger participants made more use of self-regulation strategies compared to other participants. In this study this could have created a disproportional outcome.

Strengths and weaknesses

The questionnaire of this study was originally designed to be filled in by the participants. But within a few hours after the start of the study it became clear that this approach was not feasible for the participants. Although the questionnaire did not contain complicated language, it was effortful, unpleasant and took a lot of time for the participants to fill in. To adapt to this setback the approach of the study was altered. Instead of letting the participants fill in the questionnaire, the researcher asked the questions of the questionnaire in an interview style and filled in the questions according to the answers of the participants. This approach made it a lot easier for participants to cooperate in the study, although it meant the research hours had to be prolonged with two extra hours a day to recruit enough participants.

This study was executed close to holidays were unhealthy snacks are part of. For example the study at the Albert Heijn was conducted in the same period as Sint Maarten and study at the Spar was conducted close to Sinterklaas. With the question about intention to purchase unhealthy snacks people who had as goal to buy unhealthy snacks for one of these events could be excluded. But because of advertising for the holidays, people could have been reminded in-store that they still had to purchase unhealthy snacks for these events. This and the extra temptation special offers and seasonal unhealthy snacks provided for these events could have influence on the outcomes.

For some of the tests, people that had intention to buy unhealthy snacks were excluded. This was done in the cases where the grocery shopping outcome was included. This means that for these tests only the 60% of the participants that did not have the intention to buy unhealthy snacks was included. Because, if there was an intention to buy unhealthy snacks, healthy shopping was not a goal for these participants. This means that it was not necessary for them to use self-regulations strategies during their grocery shopping to resist temptations and therefore using their receipts for these tests would not reflect the effect of their use of self-regulation strategies. By excluding 40% of the participants for these tests the sample size became quite small.

Despite the insignificant F-test for the model in Table 4, which indicated that the model had no explanatory value, a marginal significance was found between self-regulation and the amount of money spent on unhealthy snacks. Since there is still an association between those two variables in a crude model this shows that a relation between these two variables is very likely.

One of the strengths of this study is the context in which it was executed. Because the participants were approached in the store they were in the same mind-set people are in when doing grocery shopping. Executing the study in this context made it a very relevant way to research grocery shopping related behaviour.

Using a five-point Likert scale, ranging from Never (1) to Always (5,) to measure the use of self-regulation is a method that was used in previous studies (E. De Vet et al., 2014) (Poelman et al., 2014). For example in a large study from de Vet et al a TESQ-E questionnaire was developed that used this same method to assess the use of self-regulation strategies in their participants (E. De Vet et al., 2014). This study was performed in several different countries and the results showed that this method of testing was a reliable and valid method to assess self-regulation strategies. The same method is also used in a study of Poelman et al to measure the frequency of often-used self-regulation strategies (Poelman et al., 2014).

Directions for future research and Implications

In this study most of the people that participated did not make use of the strategies assessed. So far studies to investigate the effects of self-regulation strategies on eating behaviour have been promising and suggest that these can help people to make better food choices (Emely De Vet & De Ridder, 2014)(Salmon, Fennis, De Ridder, Adriaanse, & De Vet, 2014). The minimal use of strategies by the participants of this study shows that there is a lot room for improvement. In a previous study it was shown that the use of self-regulation strategies can be learned (F. M. Stok et al., 2012). Maybe in the future a study can be executed where participants are trained to use self-regulation strategies during grocery shopping, to study the effects on the purchase of unhealthy snacks. Although previous studies suggest a positive association between self-regulation strategies and decreased intake of unhealthy snacks, a lot more research in the use of self-regulation strategies during grocery shopping is necessary to draw conclusions.

In a previous study of Poelman et al self-regulation strategies to control the amount of food consumed were identified (Poelman et al., 2014). A total of 32 strategies were identified of which three strategies for purchase behaviour. This were a few strategies on purchase behaviour and it would be interesting to do a study with focus on purchase behaviour. This could help to find more and make an overview of the different purchase-related strategies for food. Afterwards this overview could be used to develop other studies in this direction.

Studies that look at the effects of the strategies identified on food choice and purchase and more broadly; the impact this could have on food intake. For example an intervention where participants learn a set of purchase-related self-regulation strategies and the effects on food purchase could be studied by exposing them to different purchase environments.

The model that is shown in Table 4 had an insignificant F-test. This showed that other variables than the ones tested in this study were more important for the number of snacks bought and the amount of money spent on snacks. It would be interesting to investigate what these other factors are, and maybe once a good overview of these factors is available, this knowledge can be used to influence more healthy food choices.

In Table 3 it was found that one of the factors that predicts use of self-regulation strategies is the grocery occasion. According to the results more self-regulation strategies are used during weekly groceries compared to quick groceries. In the future it might be interesting to research if people really consider their weekly grocery shopping as having a bigger impact on life and if they are therefore better at regulating these, compared to quick groceries. It would also be interesting to investigate the impact of quick groceries to see if they are underestimated. If this leads to a decreased use of self-regulation strategies, it gives a chance to temptations to bypass self-regulation and influence the choices people make.

Conclusion

In conclusion we can say that despite the participants of this study made little use of the strategies that were assessed, still a correlation was found between use of self-regulation strategies and a decreased purchase of unhealthy snacks. This is in line with previous research and although the correlation was weak in this study, it suggests that the use of self-regulation strategies could influence and decrease the purchase of unhealthy snacks.

More research is necessary to draw substantiated conclusions about the use of purchase-related self-regulation strategies during grocery shopping and the effects it has on the purchase of unhealthy snacks.

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Appendix

Questionnaire

Kruis aan of omcirkel welk antwoord voor u van toepassing is.

1. Hoe doet u vandaag boodschappen? Met een:

O Mandje.
O Karretje.
O Anders.

2. Met wie doet u boodschappen?

O Alleen.
O Met kind(eren).
O Met partner/andere volwassene(n).

3. Als u uzelf meerekent, voor hoeveel mensen doet u nu boodschappen?

1 2 3 4 5 6 7 8 9 10 personen

4 Voor wie doet u boodschappen?

O Volwassene(n).
O Volwassene(n) en kind(eren).

5. Wat is het meest van toepassing? Ik doe boodschappen….

O Omdat ik iets was vergeten of nog snel wat moest halen.
O Voor heel de week/een aantal dagen.
O Voor een speciale gelegenheid.

6. Hoe vaak per week doet u normaal gesproken boodschappen?

.....keer

7. Is dit uw gebruikelijke supermarkt?

O Ja O Nee

De volgende vragen hebben betrekking op ongezonde tussendoortjes. Hiermee bedoelen we dingen die u eet en drinkt op een ander moment dan uw hoofdmaaltijden (bijvoorbeeld; koek, snoep, chips, gefrituurd eten, gezoete dranken, energie- en frisdranken)

9. Bent u nu van plan ongezonde tussendoortjes te kopen?

O Ja O Nee

De vragenlijst gaat verder op de ommezijde

Geef nu aan in hoeverre u het eens bent met de volgende uitspraken. Omcirkel het antwoord dat het beste bij u past.

Ik probeer de hoeveelheid ongezonde tussendoortjes die ik koop te beperken.	Helemaal mee oneens	Mee oneens	Niet mee eens, niet mee oneens	Mee eens	Helemaal mee eens
Ik wil minder ongezonde tussendoortjes kopen.	Helemaal mee oneens	Mee oneens	Niet mee eens, niet mee oneens	Mee eens	Helemaal mee eens
Ik zou best gezonder willen eten.	Helemaal mee oneens	Mee oneens	Niet mee eens, niet mee oneens	Mee eens	Helemaal mee eens
Ik ben van plan om gezonder te gaan eten.	Helemaal mee oneens	Mee oneens	Niet mee eens, niet mee oneens	Mee eens	Helemaal mee eens

In hoeverre zijn de volgende zinnen op u van toepassing? Omcirkel het antwoord wat het beste bij u past.

	Zelden/ nooit	**Soms**	**Vaak**	**Altijd**
Ik neem snel een beslissing.	O	O	O	O
Ik leef zorgeloos.	O	O	O	O
Ik koop dingen in een opwelling.	O	O	O	O
Ik handel impulsief.	O	O	O	O
Ik geef meer uit dan ik verdien.	O	O	O	O
Ik doe dingen in een opwelling.	O	O	O	O
Ik doe dingen zonder na te denken.	O	O	O	O

Soms hebben mensen manieren om ongezonde aankopen te vermijden. In hoe verre maakt u gebruik van de volgende manieren als u boodschappen doet? Denk hierbij terug aan de afgelopen maand.

Ik vermijd de “ongezonde” rijen (bijvoorbeeld het snoep en chips pad).	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Ik loop zo snel mogelijk door de “ongezonde” rijen.	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Ik vermijd de aanbiedingen voor ongezonde producten	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Ik doe in één keer boodschappen voor heel de week, zodat ik niet vaker in de verleiding kom.	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Ik gebruik een mandje in plaats van een karretje, zodat ik niet veel kan kopen.	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd

Ik doe snel boodschappen, zodat ik geen tijd heb wat lekker te kopen.	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Ik zeg nee tegen mezelf als ik zin in ongezonde dingen heb.	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Ik vertrouw op mijn wilskracht.	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Ik doe boodschappen in de ochtend omdat ik dan makkelijker ongezond eten kan weerstaan.	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Ik weet precies wat ik de komende dagen ga eten en haal ik alleen wat ik daarvoor nodig heb.	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Ik maak een boodschappen lijstje en daar houd ik me aan.	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Ik doe boodschappen nadat ik gegeten heb, zodat ik geen honger heb.	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Ik spreek van te voren met mezelf af of ik iets lekkers mag kopen en hoeveel.	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Ik vraag mezelf bij producten die ik pak af of ik die wel echt nodig heb.	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Ik koop grootverpakkingen van ongezonde producten.	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Ik lees de etiketten.	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Ik bedenk gezonde tussendoortjes en koop die (bijvoorbeeld: nootjes, fruit) in plaats van ongezonde (snoep).	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd

Ik doe iets anders, namelijk.....

Ik ben een: man/vrouw

Mijn leeftijd is: .....jaar

Mijn hoogst afgeronde opleiding is:

O Lagere school, lbo, mavo, vmbo, mbo-1
O Havo, vwo, mbo-2-4
O Hbo, wo

Ik ben geboren in:

O Nederland.
O In een ander land, namelijk.....

Mijn ouders:

O Zijn allebei in Nederland geboren.
O Een van mijn ouders is in een ander land geboren.
O Allebei mijn ouders zijn in een ander land geboren.

Vergeet alstublieft niet uw bonnetje in te leveren!

Scoring protocol

Scoringsprotocol kassabon

Om de bonnetjes te kunnen analyseren zijn een aantal regels opgesteld over wat wel en niet als tussendoortje geteld wordt. Deze regels zijn behoorlijk streng om een duidelijke scheidslijn te maken tussen wat wel en niet als tussendoortje geldt. Dit zorgt ervoor dat producten die wel als ongezond kunnen worden gezien soms niet in de tussendoortjes klasse vallen en andersom, maar dit was noodzakelijk om de analyse te kunnen uitvoeren. Hieronder is beschreven wat wel en nit als tussendoortje beschouwd wordt in dit onderzoek.

Tussendoortjes zijn alle soorten koek, snoep en hartige dingen die buiten maaltijden genuttigd worden. Dranken kunnen ook als tussendoortjes worden gezien, hierbij wordt gedacht aan frisdrank, aanmaaklimonade, gezoete drank, vruchtensap en melkdranken met een smaakje.

Onder koek worden alle soorten gebak, koekjes en cakes verstaan. Voorbeelden zijn:
- Soesje
- Pepernoten
- Taaitaai
- Kruidkoek

Onder snoep vallen alle zoetigheden die niet onder koek vallen, zoals:
- Haribo
- Mars/Bros/Kitkat/Smarties/ect
- Handijsjes (chantilly, waterijsjes)
- Negerzoenen
- Zoete SnackaJack (chocola, caramel)
- Zoete popcorn
- Kauwgom
- Pepermunt
- Keelpastilles

Voorbeelden van hartige dingenhartige dingen zijn:
- Chips/Doritos/Ringlets
- Nootjes/pinda's
- Zoutjes
- Tucs
- Hartige sultana
- Hartige SnackaJack (kaas, tomaat, zonder smaak verwijzing)
- Zoute popcorn
- Bifi

Dranken:*
- Dairy milk/optimel drink
- Cola/Sinas
- Aanmaaklimonade/Carvan/Slimpie

*Dranken zijn in de resultaten van deze studie niet meegenomen als tussendoortjes.
Wat is niet als tussendoortje gerekend? Alle toetjes, slagroom, broodjes, crackers, cruesli, cornflakes, omdat dit in Nederland als onderdeel van de maaltijd gebruikt kan worden. Bakproducten voor tussendoortjes die nog bereid moeten worden, zoals cake of koekjes mix. Uiteindelijk een selectie van producten die we hebben uitgesloten omdat ze als gezond worden gezien. Deze worden niet meegeteld als tussendoortje omdat het in de vragenlijst specifiek ging over ongezonde tussendoortjes.

Onder toetjes vallen alle soorten:
- Yoghurt (vruchten yogurt/ straciatella yoghurt/etc)
- Vla
- Schepijs

Broodjes:
- Croissants
- Bolletjes
- Krentebollen

Bakproducten:
- Mix voor koekjes
- Mix voor cake
- Taartvulling

Gezonde producten:
- Yakult
- Alpro soya rice dream/almond dream/ect
- Pro-activ
- Drink ontbijt
- Breaker
- Peperkoek
- Rijstewafel
- Droge worst
- Kroeproek

Er is geprobeerd een onderscheid te maken tussen grootverpakkingen/familieverpakkingen/uitdeelzakken en andere verpakkingen. Grootverpakkingen hebben een waarde van 4 in plaats van 1 zoals de andere soort verpakkingen. Deze waarde is gekozen omdat grootverpakkingen vaak chips of chocolade producten zijn zoals Mars/Twix/ect. De gemiddelde chips zak is 85-225 gram met een gemiddelde van 155 gram. Terwijl de grootverpakkingen zo een 625 gram zijn, wat ongeveer vier keer zoveel is als een gemiddelde zak chips. Chocola is vaak zo een 45-200 gram in normale verpakking, met als gemiddelde 122 grams. De grootverpakkingen zijn gemiddeld zo een 460 gram wat, wat minder dan vier keer zoveel is als een normale verpakking. Hierdoor leek vier een goed gemiddelde voor grootverpakkingen. Als er een grootverpakking op de bon staat die dus als 4 producten geteld wordt in plaats van een wordt het totaal aantal producten van de bon ook aangevuld met drie extra om dit verschil goed te maken.

Als grootverpakking zijn bestempeld:
- All stars/Mars/Bros/Twix mini
- Familiezak Maltezers
- 5-pack pepermunt

Uitvoering

1. Afhankelijk van of er bovengenoemde tussendoortjes op het bonnetje staan wordt er bij BTussengekocht en BSnackgekocht* ja of nee ingevuld.

2. Per categorie wordt gekeken hoeveel tussendoortjes gekocht zijn. Dit is voor de categorieën koek, snoep, hartig en dranken in respectievelijk BKoek, BSnoep, BHartig en BDrank.

3. Het totaal van de tussendoortjes wordt opgeteld in BHoeveelSnack. Dit zijn de categorie koek, snoep en hartig. De categorie drank wordt hier niet bijgeteld omdat aan drinken niet vaak als tussendoortjes gedacht wordt.

3. Alle producten van het bonnetje worden geteld en dit aantal wordt als BHoeveelTotaal.

4. Het geld dat uitgegeven aan tussendoortjes wordt opgeteld en in de kolom BBedragTussen en BBedragSnack* aangegeven.

5. In de kolom BTotaalBedrag wordt het totaal dat uitgegeven is weergegeven.

*Het verscheel tussen de Tussen en Snack categorie is dat bij de Snack categorie dranken niet zijn meegeteld, terwijl bij de Tussen categorie dit wel gedaan is.

SPSS protocol

Vragenlijst

Nummer: Nummer op de vragenlijst.

Vragenlijst 100 tot 229 zijn ingevuld in de Albert Heijn, 400 tot 480 zijn ingevuld in de Spar.

Dagentijd: Welke dag, tijd en winkel.

Code is ABCD. A = dag in de winkel (1-4, 1 voor dag een, 2 voor dag twee, ect.), B=tijd in de winkel (O voor ochtend, A voor avond), CD= winkel (AH voor Albert Heijn, SP voor spar.)

1=1OAH, 2=1AAH, 3=20AH, 4=2AAH, 5=3OAH, 6=3AAH, 7=4OAH, 8=4AAH, 10=1OSP, 11=1ASP, 12=2OSP, 13=2ASP, 14=3OSP, 15=3ASP, 16=4OSP, 17=4ASP

Bonnetje: Is er een kassabon bij de vragenlijst of niet.

1=ja, 2=nee, 3=er is geen kassabon maar er is wel een lijstje van wat gekocht is.

Vragenlijst:

Kruis aan of omcirkel welk antwoord voor u van toepassing is.

Metwat/
Basket or cart: **1. Hoe doet u vandaag boodschappen? Met een:**

1 O Mandje.
2 O Karretje.
3 O Anders.

Metwie: **2. Met wie doet u boodschappen?**

1 O Alleen.
2 O Met kind(eren).
3 O Met partner/andere volwassene(n).

Hoeveel: **3. Als u uzelf meerekent, voor hoeveel mensen doet u nu boodschappen?**

Getal 1 2 3 4 5 6 7 8 9 10 personen

Voorwie: **4 Voor wie doet u boodschappen?**

1 O Volwassene(n).
2 O Volwassene(n) en kind(eren).

Grocery Occasion
/Waarom: **5. Wat is het meest van toepassing? Ik doe boodschappen....**

1 O Omdat ik iets was vergeten of nog snel wat moest halen.
2 O Voor heel de week/een aantal dagen.
3 O Voor een speciale gelegenheid.

Hoevaak: **6. Hoe vaak per week doet u normaal gesproken boodschappen?**

Getal .....keer

Supermarkt

7. Is dit uw gebruikelijke supermarkt?

1 O Ja
2 O Nee

De volgende vragen hebben betrekking op ongezonde tussendoortjes. Hiermee bedoelen we dingen die u eet en drinkt op een ander moment dan uw hoofdmaaltijden (bijvoorbeeld; koek, snoep, chips, gefrituurd eten, gezoete dranken, energie- en frisdranken)

Tussen-doortje

9. Bent u nu van plan ongezonde tussendoortjes te kopen?

1 O Ja
2 O Nee

Geef nu aan in hoeverre u het eens bent met de volgende uitspraken. Omcirkel het antwoord dat het beste bij u past.

		1	2	3	4	5
Beperkt/ Intention to limit purchase:	**Ik probeer de hoeveelheid ongezonde tussendoortjes die ik koop te beperken.**	Helemaal mee oneens	Mee oneens	Niet mee eens, niet mee oneens	Mee eens	Helemaal mee eens
Minder/ Intention to purchase less:	**Ik wil minder ongezonde tussendoortjes kopen.**	Helemaal mee oneens	Mee oneens	Niet mee eens, niet mee oneens	Mee eens	Helemaal mee eens
Gezonder:	**Ik zou best gezonder willen eten.**	Helemaal mee oneens	Mee oneens	Niet mee eens, niet mee oneens	Mee eens	Helemaal mee eens
Plan-gezonder:	**Ik ben van plan om gezonder te gaan eten.**	Helemaal mee oneens	Mee oneens	Niet mee eens, niet mee oneens	Mee eens	Helemaal mee eens

In hoeverre zijn de volgende zinnen op u van toepassing? Omcirkel het antwoord wat het beste bij u past.

		1 **Zelden/nooit**	2 **Soms**	3 **Vaak**	4 **Altijd**
Beslissnel:	Ik neem snel een beslissing.	O	O	O	O
Zorgeloos:	Ik leef zorgeloos.	O	O	O	O
Koop-opwelling:	Ik koop dingen in een opwelling.	O	O	O	O
Impulsief:	Ik handel impulsief.	O	O	O	O
Blut:	Ik geef meer uit dan ik verdien.	O	O	O	O
Doe-opwelling:	Ik doe dingen in een opwelling.	O	O	O	O
Nietdenken	Ik doe dingen zonder na te denken.	O	O	O	O

Soms hebben mensen manieren om ongezonde aankopen te vermijden. In hoe verre maakt u gebruik van de volgende manieren als u boodschappen doet? Denk hierbij terug aan de afgelopen maand.

		1	2	3	4	5
Vermijd:	Ik vermijd de “ongezonde” rijen (bijvoorbeeld het snoep en chips pad).	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Gasnel:	Ik loop zo snel mogelijk door de “ongezonde” rijen.	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Geen-aanbieding:	Ik vermijd de aanbiedingen voor ongezonde producten	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Nietvaak:	Ik doe in één keer boodschappen voor heel de week, zodat ik niet vaker in de verleiding kom.	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Metmandje	Ik gebruik een mandje in plaats van een karretje, zodat ik niet veel kan kopen.	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Snel:	Ik doe snel boodschappen, zodat ik geen tijd heb wat lekker te kopen.	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Zegnee:	Ik zeg nee tegen mezelf als ik zin in ongezonde dingen heb.	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Wilskracht:	Ik vertrouw op mijn wilskracht.	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Ego-depletion:	Ik doe boodschappen in de ochtend omdat ik dan makkelijker ongezond eten kan weerstaan.	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Planmeal:	Ik weet precies wat ik de komende dagen ga eten en haal ik alleen wat ik daarvoor nodig	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
List:	Ik maak een boodschappen lijstje en daar houd ik me aan.	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Afterdinner	Ik doe boodschappen nadat ik gegeten heb, zodat ik geen honger heb.	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Afspraak:	Ik spreek van te voren met mezelf af of ik iets lekkers mag kopen en hoeveel.	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Nodig:	Ik vraag mezelf bij producten die ik pak af of ik die wel echt nodig heb.	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Groot-verpakking: **	Ik koop grootverpakkingen van ongezonde producten.	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Etiketten:	Ik lees de etiketten.	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd
Gezond vervanging:	Ik bedenk gezonde tussendoortjes en koop die (bijvoorbeeld: nootjes, fruit) in plaats van ongezonde (snoep).	(bijna) Nooit	Zelden	Soms	Vaak	(bijna) Altijd

Gender:	**Ik ben een:**
1	Man
2	Vrouw
Age:	**Mijn leeftijd is:**
Getal	……..jaar
Opleiding:	**Mijn hoogst afgeronde opleiding is:**
1	O Lagere school, lbo, mavo, vmbo, mbo-1
2	O Havo, vwo, mbo-2-4
3	O Hbo, wo
Nationaliteit:	**Ik ben geboren in:**
1	O Nederland.
2	O In een ander land, namelijk…….
Ouders:	**Mijn ouders:**
1	O Zijn allebei in Nederland geboren.
2	O Een van mijn ouders is in een ander land geboren.
3	O Allebei mijn ouders zijn in een ander land geboren.

Vergeet alstublieft niet uw bonnetje in te leveren!

**Grootverpakkingreversed: Omdat grootverpakking de enige vraag is die naar een ongezonde in plaats van een gezonde gewoonte moest deze vraag worden omgedraaid.

Kassabon

BTussengekocht:	Staat er wat op de kassabon dat als tussendoortje bestempeld is? Dit zijn zoveel vaste tussendoortjes als vloeibare. 1=ja, 2=nee
BSnackgekocht:	Staat er wat op de kassabon dat als tussendoortje bestempeld is? Dit zijn alleen de vaste tussendoortjes. 1=ja, 2=nee
BKoek:	Hoeveel producten uit de koek categorie staan op de kassabon?
BSnoep:	Hoeveel producten uit de snoep categorie staan op de kassabon?
BHartig:	Hoeveel producten uit de hartige tussendoortjes categorie staan op de kassabon?
BDrank:	Hoeveel producten uit de drank categorie staan op de kassabon?
BHoeveelSnack:	Hoeveel tussendoortjes zijn er in totaal gekocht, zonder de drank categorie
BHoeveelTotaal:	Hoeveel producten zijn er in totaal gekocht tijdens het boodschappen doen.

Snack per capita/ SnackPerHoofd:	Het aantal snacks op de gehele aankopen, gedeeld door het aantal mensen in het gezin om te kijken hoeveel gemiddeld per persoon wordt gegeten. PercentageSnack/Hoeveel.
BBedragTussen:	Wat is het bedrag dat uitgegeven is aan tussendoortjes, dit zijn zowel vaste als vloeibare tussendoortjes.
BBedragSnack:	Wat is het bedrag dat uitgegeven is aan tussendoortjes, dit zijn alleen de vaste tussendoortjes.
BedragTotaal:	Wat is het bedrag dat is uitgegeven tijdens het boodschappen doen.
Spent per capita/ BedragPerHoofd:	Het percentage van het totale bedrag wat aan snacks is uitgegeven, gemiddeld over het aantal mensen in het gezin. BBedragPercentage/BedragSnackPerHoofd

Resultaten

SelfRegulation:	Het gemiddelde van de acht strategieën die in methoden als betrouwbaar genoeg bevonden werden om te gebruiken voor de resultaten.
Intention to eat healthy:	Het gemiddelde van de twee intenties die samen genomen werden zoals beschreven in methoden. Dit zijn intentie Beperkt en Minder (Variabele 12 en 13 in SPSS)
Impulsivity:	Het gemiddelde van de zeven vragen om impulsiviteit te meten volgens IBS.
Z[]:	De Z-waarde van de [] variabelen.
Intention to limit purchase X SelfRegulation:	De interactie tussen self-regulation strategieën en Intention to limit unhealthy snack purchase. ZBeperkt * ZSelfRegulation.
Intention to purchase less X SelfRegulation:	De interactie tussen self-regulation strategieën en Intention to purchase less unhealthy snacks. ZMinder * ZSelfRegulation.
Intention to eat healthy X SelfRegulation:	De interactie tussen self-regulation strategieën en Intention to eat healthy. ZIntentionHealth * ZSelfRegulation.
EduLaag/Midden/Hoog:	Dummy variables education 100/ 010/ 001.
OccSnel/Week/Spec:	Dummy variables grocery occasion 100/ 010/ 001.
GrocBask/Cart/Other:	Dummy variables cart or basket use 100/ 010/ 001.

Syntax

Making variables:

Cronbach's Alpha

Intention 3+4

```
RELIABILITY
  /VARIABLES=Gezonder Plangezonder
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA.
```

Reliability Statistics

Cronbach's Alpha	N of Items
.888	2

Impulsivity

```
RELIABILITY
  /VARIABLES=Beslissnel Zorgeloos Koopopwelling Impulsief Blut Doeopwelling
Nietdenken
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA.
```

Reliability Statistics

Cronbach's Alpha	N of Items
.585	7

Self-regulation

```
RELIABILITY
  /VARIABLES=Vermijd Gasnel Geenaanbieding Nietvaak Metmandje Zegnee
Afspraak Nodig
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA.
```

Reliability Statistics

Cronbach's Alpha	N of Items
.768	8

```
FACTOR
  /VARIABLES Vermijd Gasnel Geenaanbieding Nietvaak Metmandje Zegnee
Afspraak Nodig
  /MISSING LISTWISE
```

```
  /ANALYSIS Vermijd Gasnel Geenaanbieding Nietvaak Metmandje Zegnee
Afspraak Nodig
  /PRINT INITIAL EXTRACTION
  /CRITERIA MINEIGEN(1) ITERATE(25)
  /EXTRACTION PC
  /ROTATION NOROTATE
  /METHOD=CORRELATION.
```

Transform variables

```
COMPUTE SnackperHoofd=((BHoeveelSnack/BHoeveelTotaal)/Hoeveel)*100.
EXECUTE.
```

Results in %-of-unhealthy-snacks-in-groceries

```
COMPUTE BedragperHoofd=((BBedragSnack / BBedragTotaal)/Hoeveel)*100.
EXECUTE.
```

Results in €-spent-on-unhealthy-snacks

Interaction variables

```
COMPUTE IntentionHealth=(Gezonder+Plangezonder)/2.
EXECUTE.
```

Resulted in Intention to eat healthy

To measure the interaction the Z-variable of all variables that will be used had to be calculated.

```
DESCRIPTIVES VARIABLES=Beperkt Minder IntentionHealth Impulsivity
SelfRegulation
  /SAVE
  /STATISTICS=MEAN STDDEV MIN MAX.
```

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Probeert uw de aankoop van ongezonde tussendoortjes te beperken?	210	1	5	3.70	.938
Wilt u minder ongezonde tussendoortjes kopen?	210	1	5	2.59	.966
IntentionHealth	210	1	5	2.54	.871
Impulsivity	209	1	3	1.80	.332
Gemiddelde 8 strategieitems	209	1	4	1.60	.593
Valid N (listwise)	208				

With this Z-value the further interactions can be calculated.

```
COMPUTE SelfRegXintentionLimit=ZSelfRegulation * ZBeperkt.
EXECUTE.
COMPUTE SelfRegXintentionLess=ZSelfRegulation * ZMinder.
EXECUTE.
```

```
COMPUTE SelfRegXintentionHealth=ZSelfRegulation * ZIntentionHealth.
EXECUTE.
COMPUTE SelfRegXImpulsivity=ZSelfRegulation * ZImpulsivity.
EXECUTE.
```

Categorical variables

Education, Grocery Occasion, Cart or basket use

```
DATASET ACTIVATE DataSet1.

SAVE OUTFILE='C:\Users\JIL\Desktop\Thesis\Thesis.sav6.sav'
  /COMPRESSED.
RECODE Opleiding (1=1) (2=0) (3=0) INTO EduLaag.
EXECUTE.
RECODE Opleiding (2=1) (ELSE=0) INTO EduMidden.
EXECUTE.
RECODE Opleiding (3=1) (ELSE=0) INTO EduHoog.
EXECUTE.
RECODE Waarom (1=1) (ELSE=0) INTO GrocSnel.
EXECUTE.
RECODE Waarom (2=1) (ELSE=0) INTO GroWeek.
EXECUTE.
RECODE Waarom (3=1) (ELSE=0) INTO GroSpec.
EXECUTE.
RECODE Metwat (1=1) (ELSE=0) INTO OccBask.
EXECUTE.
RECODE Metwat (2=1) (ELSE=0) INTO OccCart.
EXECUTE.
RECODE Metwat (3=1) (ELSE=0) INTO OccOther.
EXECUTE.
```

Answering research questions:

Research question 1

```
FREQUENCIES VARIABLES=Vermijd Gasnel Geenaanbieding Nietvaak Metmandje
Zegnee Afspraak Nodig
  /ORDER=ANALYSIS.

DESCRIPTIVES VARIABLES=Vermijd Gasnel Geenaanbieding Nietvaak Metmandje
Zegnee Afspraak Nodig
  /STATISTICS=MEAN STDDEV MIN MAX.
```

Research question 2

```
NONPAR CORR
  /VARIABLES=Beperkt Minder IntentionHealth Impulsivity SelfRegulation
SnackperHoofd BedragperHoofd
  /PRINT=SPEARMAN TWOTAIL NOSIG
  /MISSING=PAIRWISE.

  DESCRIPTIVES VARIABLES=Beperkt Minder IntentionHealth Impulsivity
SelfRegulation SnackperHoofd BedragperHoofd
  /STATISTICS=MEAN STDDEV MIN MAX.
```

Research question 3

```
REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT SelfRegulation
  /METHOD=ENTER Gender Age EduLaag EduMidden EduHoog Nationaliteit OccSnel
OccWeek OccSpec GroBask GroCart GroOther Impulsivity Beperkt Minder
IntentionHealth Tussendoortje.
```

Research question 4

```
REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT SnackperHoofd
  /METHOD=ENTER Gender Age EduLaag EduMidden EduHoog Nationaliteit OccSnel
OccWeek OccSpec SelfRegulation Impulsivity Beperkt Minder IntentionHealth
ImpulsivityXSelfReg IntentionLimitXSelfReg IntentionLessXSelfReg
IntentionHealthXSelfReg.

REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT BedragperHoofd
  /METHOD=ENTER Gender Age EduLaag EduMidden EduHoog Nationaliteit OccSnel
OccWeek OccSpec SelfRegulation Impulsivity Beperkt Minder IntentionHealth
ImpulsivityXSelfReg IntentionLimitXSelfReg IntentionLessXSelfReg
IntentionHealthXSelfReg.
```