A MATTER OF ASSORTMENT COMPLEXITY?









TO CHOOSE OR NOT TO CHOOSE. A MATTER OF ASSORTMENT COMPLEXITY?

A study about the influence of assortment complexity on choice overload and the role of counterfactual thinking and shopping orientation.

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ABSTRACT

The offered amount of products in supermarkets and drug stores is still expanding as retailers believe 'the more choice is the better'. This results in more and more complex assortments. When the assortment complexity is high, consumers might experience difficulties in making the right product choice. It is called *choice overload* when decision making from complex assortments leads to negative consequences like regret and choice deferral and subsequently results in low satisfaction with the chosen product.

Several researchers argue that choice overload will only occur when consumers are uncertain about their preference. The aim of this study was to confirm this finding and to investigate how two personal characteristics (i.e. counterfactual thinking and shopping orientation) were involved in the choice overload effect. After conducting a preliminary focus group study to determine the product group to do research in, 258 females participated in an online 2x3 experiment. In this experiment variety (2) and size (3) of the hairstyling assortment were manipulated resulting in six different conditions to which participants were randomly assigned.

Results of the current study show that high assortment complexity leads to greater expectations, positive consequences and higher satisfaction until pref

erence uncertainty is taken into account. When participants are uncertain about their preference, complex assortments lead to lower satisfaction and more negative consequences compared to participants who do have a strong preference. In line with previous studies, complex assortments lead in this case indeed to lower satisfaction. However, this study shows that the lowered satisfaction obtained from complex assortments, while experiencing preference uncertainty, is still higher than satisfaction obtained from less complex assortments. Moreover, the study shows that satisfaction obtained from less complex assortments is also decreasing when preference uncertainty is experienced. This might suggest that personal characteristics are more important than thought.

Shopping orientation and counterfactual thinking showed to interact between the assortment complexity and satisfaction with the chosen product. Consumers who often look back at their choices and regret them (counterfactual thinking) or consumers who do not enjoy shopping (utilitarian shopping orientation) experience more choice difficulty and negative consequences than others. Therefore, personality seems to be more important in explaining the choice overload effect than assortment complexity.

For future research it is therefore recommended to focus on the role of personal characteristics in the decision making process rather than the assortment complexity.

PREFACE

I am the kind of consumer that can stand five minutes (or more..) in front of the assortment with desserts and just cannot decide which one I want. The chocolate mousse seems really nice, or should I rather go for the fruit yoghurt? Ice cream is nice too! Maybe I should pick something more healthy and what would my friends who eat at my place like? Choices, choices, choices. Everyday we have to make many choices that sometimes seem so useless and cost so much time.

When doing my internship at Beiersdorf N.V. I was constantly busy with increasing the choice possibilities for consumers. NIVEA deodorant with silver ions, sea extract, stress protect actives or pearl extracts for shiny armpits. I was wondering whether consumers would really have a need for all this choice or that these different claims, colours, brands and thus choices could also have negative consequences.

When I saw a Ted movie from Barry Schwartz about *choice overload*, i got inspired and bought his book. I read his book and was happy to find out that I was not the only one suffering from it. I decided that this was the subject for my master thesis.

I would like to thank Mirjam Galetzka and Joyce Karreman for their support during the past months. And of course I would like to thank my manager at Beiersdorf, my parents, sisters, friends and boyfriend for their interest, support and sometimes new and inspirational ideas. I have had a great student time in Enschede and I am looking forward to starting new adventures like travelling through South America and finding a job.

Enjoy reading!

Chantal Nomden June, 2013

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1 INTRODUCTION

1.1. RESEARCH MOTIVE

When you are at the supermarket because you are buying your groceries, you do not just buy a carton of milk. Like almost any other product in the current supermarket or drug store, there are plenty of items to choose from. There are many different brands, varieties, packages and sizes. What is the difference? And which one do you choose?

It is generally known that people spend more time shopping than ever. However, this is not because consumers enjoy shopping more, consumers need more time to decide what to purchase from growing assortments. Whether buying a pair of jeans, a dessert or shower gel, choices have become increasingly complex due to the overwhelming amount of choice where retailers confront their consumers with (Schwartz, 2009).

The idea behind this growth is that modern society relies on the belief that more choice means greater satisfaction. Companies are promoting their businesses to consumers by communicating that they offer the widest and largest range of options, whether it is about boats, houses, holidays or cars. It is believed it increases the chance of finding the best match to your preferences (Jessup, Veinott, Todd, & Busemeyer, 2009).

Literature of the last years revealed that the relation between the number of choices and satisfaction is a paradox. At a certain point, choice can become overwhelming and causes negative consequences like regret and choice deferral, which eventually lead to lower satisfaction with the chosen product. Consumers are spending so much time finding the right product that it can be demotivating and exhausting when it does not match with what they had in mind. This phenomenon is called 'choice overload' (lyengar & Lepper, 2000).

Different studies not always confirmed the negative consequences of choice overload. The existence of choice overload was therefore questioned in the meta analysis conducted by Scheibehenne, Greifeneder, & Todd (2010). Chernev, Bockenholt & Goodman (2010) responded to this meta analysis that the question is not whether choice overload exists or not, but under which circumstances it occurs. Therefore, it is necessary to investigate besides the influence of assortment size, other factors that could be moderating this effect, when explaining choice overload.

To understand the effect that assortment size can have on choice, it will be essential to consider the interaction between the complexity of the assortment beyond the number of

options available and the decision processes that people adopt (Scheibehenne, Greifeneder & Todd, 2010). Not only the size of the assortment seems to be of influence, but also the variety of an assortment is very important. Variety of the assortment is very complex and can exist of different brands, colours or flavours and can determine how consumers perceive the assortment. In this study, the interaction of size and variety is measured and together they are defined as the assortment complexity.

Previous research discussed that choice overload will only occur when preconditions are met. An important precondition is preference uncertainty, which consumers experience when they are not familiar with the assortment and do not have a strong preference for a product already. When people have a strong preference in mind, large assortments turned out to be more effective than small assortments (Chernev, Mick, & Johnson, 2003). However, when consumers do not know what to choose, they find it more difficult to choose from large assortments than from small assortments, which can cause choice overload.

Different personal characteristics are expected to play a moderating role in choice overload as well. Counterfactual thinking describes the degree to which individuals regret their choices and often wonder: "if only.." or "what if.." after they have made a choice (Epstude & Roese, 2008). In other studies it is often measured as a dependent variable. However, in this study it is also assumed that counterfactual thinking is a personal characteristic people contain to a greater or lesser extent. It is expected that consumers who have more doubts about their choices will experience more difficulty shopping from complex assortments.

A personal characteristic which is never related to choice overload before, is shopping orientation. Within shopping orientation, a distinction is made between hedonic and utilitarian orientation. Hedonic shoppers shop for fun, while utilitarian shoppers shop because of functional reasons only. It is interesting to investigate whether utilitarian shoppers perceive more negative consequences from choosing from complex assortments than hedonic shoppers. By measuring these personal characteristics it is possible to find out if the choice overload effect is more complex and depends on the personality of the consumer as well.

The aim of this study is to provide more insight about the functioning of choice overload. Does preference uncertainty indeed function as a precondition, what is the interaction effect between size and variety and what is the moderating role of counterfactual thinking and shopping orientation? The study consists of a preliminary focus group study and an online 2x3 experiment. The main research question is: What is the influence of assortment complexity on the occurrence of choice overload (i.e. more negative consequences and lower satisfaction) and what is the role of counterfactual thinking and shopping orientation?

1.2. RELEVANCE

- Existing literature focuses mainly on the assortment size instead of other determinants of choice complexity. This research will not only aim on the assortment size but also on the variety of the assortment.
- Unlike previous research about choice overload, this research focuses on personal care products instead of food. There is an overwhelming amount of shampoos, creams and deodorants available at drug stores. This study concentrates on the hairstyling assortment of a drug store. In an average drug store there are up to 150 different hairstyling products for women. Moreover, the price range in drug stores is higher than in supermarkets, which increases the risk of making a wrong decision. Furthermore, the preliminary focus group study pointed out that consumers have trouble making a choice within the hairstyling assortment, because the purchase frequency of hairstyling is lower than most other personal care products. The focus group is less familiar with the assortment, which can consequently lead to higher preference uncertainty what makes it harder to choose.
- Jessup et al. (2009) mentioned that most research about choice overload focused on the adverse effects of large assortments on choice without investigating factors that moderate this effect. In the present study, the role of two personal characteristics, i.e. counterfactual thinking and shopping orientation, are taken into account.

1.3. STRUCTURE

Based on literature discussed in the theoretical framework, a conceptual model has been developed together with the hypotheses and research questions (chapter two). Chapter three describes the preliminary focus group study. Chapter four focuses on the exact method of the research, the results are presented in chapter five, leading to a conclusion and discussion in chapter six.

2 THEORETICAL FRAMEWORK

In this theoretical framework, the main theories and studies on which current research is built are discussed. Paragraph 2.1 explains the emergence of choice overload. Paragraph 2.2 discusses the assortment complexity and paragraph 2.3 focuses on the two preconditions for choice overload. In paragraph 2.4 the decision making process is described and paragraph 2.5 is about the moderating role of consumer characteristics. This all results in the conceptual model, which is presented in paragraph 2.7.

2.1. CHOICE OVERLOAD

Because the human desire for choice is unlimited, the freedom to choose is often seen as advantageous. 'The more choice the better', is an understanding that is widely accepted in our modern society (Schwartz, 2009). From an economical perspective, having more options is preferable, because it increases the possibility of finding the best option (Jessup et al., 2009). Economic theories also suggest that increasing choice should - all else being equal - increase satisfaction with the chosen option because there is a greater chance of satisfying individual preferences.

From a psychological perspective, having more options is also preferable because the freedom to choose can increase an individual's sense of personal control (Rotter, 1966; in: Park & Jang, 2012). By finding a product that matches an individual's preference, he or she might feel living a life according to his or her own agenda. This ensures a personal feeling of freedom (Dowding, 1992).

Building on these notions, suppliers create as much choice as possible. Assortments are ever increasing. This is seen as beneficial to suppliers because it ensures their competitive advantage over stores that offer less variety (Hutchinson, 2005).

In the past years, researchers went beyond existing economic and psychological theories and challenged the common belief that it is always better having more options. In line with existing research, lyengar & Lepper (2000) confirmed that individuals prefer large over small assortments, but they contradict the belief that individuals buy more when given a larger assortment with options. Ironically, individuals are attracted by large assortments, however, this also seems to drive some of them away empty-handed (Jessup et al., 2009).

lyengar & Lepper (2000), were the first who offered proofed this proposition, showing that

increasing the size of the assortment can actually decrease the choice likelihood. The experiment showed that consumers shopping at a grocery store were more likely to purchase jam when they were confronted with a display of six exotic jams instead of a display of 24. However, more people had stopped at the 24-jam display. Besides decreased purchase likelihood, lyengar & Lepper found that decision making from large assortments can be very demotivating and gets often accompanied by negative consequences like regret and dissatisfaction. These negative outcomes were also found in their other study where they demonstrated that people enjoyed the process of choosing a chocolate from an extensive display more. But despite that, consumers proved more dissatisfied and regretful of the choices they made. The explanation of these negative consequences is that people feel more responsible for choices they make in an extensive assortment. They feel responsible for choosing the wrong one. Because there are so many different products, there should be one out there that matches their preferences perfectly. This results in frustration with the decision-making process and dissatisfaction with the made choices (lyengar & Lepper, 2000).

The idea that more choice apparently can lead to negative consequences is called choice overload (lyengar & Lepper, 2000) and is also known as the "Too-Much-Choice effect" (Scheibehenne et al., 2010) or the Extensive Choice Effect (Hafner, White & Handley, 2011). That too much choice has proven detrimental to our psychological and emotional well-being is explained by Schwartz (2004) as the paradox of choice. Greifeneder, Scheibehenne & Kleber (2010), mention that while consumers may often be attracted by a large assortment, an overload of options to choose from, might sometimes lead to adverse consequences. People's response to a large number of options is to feel overwhelmed (lyengar & Lepper, 2000). Although people enjoy larger assortments with greater variety more, they also felt greater frustration and difficulty with choice and were less likely to make a decision (lyengar & Lepper, 2000). Recent research has shown that more options can generate decision conflict, confusion, and frustration, leading to choice deferral (Chernev et al., 2003).

Fasolo et al. (2009) mentioned that large assortments are also <u>time consuming</u>, and better choice quality is not necessarily the result, even for consumers with ambitious plans. People may choose not to participate, not to make a purchase, not to consume.

Research of Iyengar & Lepper (2000) pointed out that however large assortments attract more attention, it did not result in higher <u>purchase behaviour</u>. In their experiment, participants of the different assortment conditions were given a discount voucher and were asked if they would buy the jam or not. Their findings conclude that 30% of the people in the small assortment condition bought jam, compared to 3% in the large

assortment condition.

An other negative consequence could possible be that participants in large and complex assortments feel more committed to the decision making process. Iyengar & Lepper (2000) mention the possibility that participants from large assortments might feel more responsible for the choices they make, because the opportunity of finding the best option is higher than in a small assortment. This means that it is a lack of their own ability when they are not able to find the best option. This may cause feelings of regret with the options they have chosen. In this case the <u>self-blame</u> would be higher in large complex assortments than in small less complex assortments.

Anticipated regret is expected to be higher when consumers are confronted with large and complex assortments. Anderson (2003) argued that an excessive number of options heightens choice uncertainty, which might increase anticipated regret and the tendency to avoid decisions. <u>Anticipated regret</u> is the extent to which participants expect to regret their choice later on. This is often accompanied by <u>making counterfactuals</u>. This means that the consumer doubts between different products, makes a decision, but already thinks: what if the other one was better?

Diehl & Poynor (2010) mention regret as a negative consequence of too much choice. Regret is the consequence of high expectations that are not fulfilled. All these negative consequences of too much choice might lead to lower satisfaction with the chosen product.

Hypothesis about main effect choice overload

H1: Complex assortments lead to more choice overload (i.e. more negative consequences and lower satisfaction) than less complex assortments.

2.2. ASSORTMENT COMPLEXITY

Assortment size has for a long time been seen as the most important driver of choice overload. However, there are several other predictors. Research has shown that assortment is not a direct result of the number of products offered (Broniarczyk, Hoyer, & McAlister, 1998). Consumer assortment perceptions are affected by the organisation of the assortment (Hoch, Bradlow, & Wansink, 1999). This organisation exists of the variety, size, density and structure of the assortment. This study is focused on size and variety.

2.2.1 ASSORTMENT SIZE

Large assortments attract more customers, because people find it more enjoyable to choose from a large amount of products (lyengar & Lepper, 2000). However, large assortments turned out to lead to more satisfying decisions only for individuals who did not experience preference uncertainty. In other situations, large assortments can result in consumer confusion (Huffman & Kahn, 1998) and demotivate consumer choice (lyengar & Lepper, 2000).

A large assortment within choice overload research is defined as a psychologically excessive number of choices. A small assortment is a psychologically manageable number of choices (Park & Jang, 2012). Large assortment conditions are conditions in which participants would have reasonably large, but not ecologically unusual number of options. Iyengar & Lepper (2000) used the same number of options as used in past research and used a minimum of 6 and a maximum of 24 products.

Park & Jang (2012) used in their research five different assortments to find out at which point more options lead to negative outcomes. They examined that the 'more options the better' counts until 22 choices. More than 22 alternatives might lead to more negative consequences like regret and choice deferral, resulting in lower satisfaction with the chosen product.

2.2.2 ASSORTMENT VARIETY

Small and large assortments differ on more than just size (Fasolo, Hertwig, Huber, & Ludwig, 2009). Attributes like colours, brands, types of products and functional benefits are defined as assortment variety (Kahn & Wansink, 2004). Shugan (1989): in Fasolo (2009) illustrates the variety with an example about ice cream. An assortment consisting of three flavours of chocolate, chocolate chip, and fudge has less attribute variability than the same size assortment consisting of the three flavours of chocolate, vanilla, and strawberry. Flavour is thus more "dense" and less variable in the first than in the second line. Large assortments are more likely than small assortments provoking choice overload with products that are very close (little variety), but not identical to other products (Kahn & Wansink, 2004).

Research also has shown that doubling the size of an assortment of replicated items increases the perceived variety by as much as 42% (Herpen & Pieters, 2002). Thus, when consumers are offered 20 bowls of five different items, for example, there is more perceived variety and more choice than if they were offered only five bowls of five

different items. This is striking, because they have the same amount of choice in both ways. In the experiment of Broniarczyk et al. (1998) they hold stock space constant, while they reduced the variety of options. This led to an increase in sales. This was possibly because offering less variety, while keeping the amount of space constant, reduced choice complexity while people still have the feeling that they have plenty of choice. Little variety thus seems to make assortments look larger but make the decision process easier.

2.3. PREFERENCE UNCERTAINTY

The effect of choice overload was not consequently observed in situations where it would be expected. Scheibehenne et al. (2010) conducted a meta analysis, which pointed out that although strong evidence of choice overload has been reported in the past, negative effects due to an increase in size are not very clear. Chernev et al. (2010) responded to this analysis that the question is not whether choice overload exists or not, but under which circumstances it occurs. Also Jessup et al., (2009) mentioned that most of this research focused on documenting the negative consequences of large assortments on choice without investigating factors that moderate this effect. To understand the effect that assortment size can have on choice, 'it will be essential to consider the interaction between the complexity of the assortment beyond the number of options available and the decision processes that people adopt', (Scheibehenne, Greifeneder & Todd, 2010). Previous research indicated that an important precondition of choice overload is preference uncertainty.

Choice overload occurs only, when consumers experience preference uncertainty (Fasolo et al., 2009). Research has demonstrated that if people have a strong preference in mind, large assortments turned out to be more effective than small assortments (Chernev et al., 2003). When consumers did not have an best option in mind, however, they have more difficulty choosing from large assortments than from small assortments and choice overload is about to occur (lyengar & Lepper, 2000).

Research of Chernev et al. (2003) pointed out that individuals who know what they want (have an ideal point in mind) are more likely to prefer large assortments than individuals without an ideal point. The explanation behind this is that individuals with an ideal point face the task of searching for the alternative that best matches their preferences. However, individuals without an ideal product in mind, face the omplex task of evaluating all the options, while at the same time forming the criteria to which the product must comply.

Hypotheses about precondition: preference uncertainty

H2: Complex assortments lead to more choice overload (i.e. more negative consequences and lower satisfaction) than less complex assortments, when preference uncertainty is high.

H3: Complex assortments lead to more choice difficulty and choice uncertainty than less complex assortments, when preference uncertainty is high.

2.4. DECISION MAKING PROCESS

The complexity of an assortment can influence choice behaviour during the decision making process. In this paragraph it is explained how the complexity affects several variables like expectations, choice uncertainty and choice difficulty.

2.4.1. EXPECTATIONS

When assortments are small, consumers also have low expectations about their ability to match their preferences. As assortment size increases, so do consumers' expectations. People overestimate their own ability to choose from large assortments and have a high expectation of finding the best option. 'When expected and perceived product offerings do not match, consumers experience disconfirmation', (Diehl & Poynor, 2010). Diehl & Poynor (2010) found that even when consumers make a purchase, the same product causes lower satisfaction when chosen from a larger rather than a smaller assortment. They explain this as an expectation-disconfirmation mechanism. When assortments are small, consumers have low expectations about their ability to match their preferences. When assortment sizes increase, so do consumers' expectations of the preference match they can achieve. However, this might be incorrect since consumers may experience greater negative expectation disconfirmation when a chosen item comes from a larger rather than a smaller set. This leads to negative outcomes like more negative consequences and lower satisfaction.

Hypothesis about expectations

H4: Complex assortments lead to higher expectations than less complex assortments

2.4.2. CHOICE UNCERTAINTY

Choice uncertainty is involved in the present study. Large and complex assortments can probably evoke more uncertainty among consumers when making a choice than less complex assortments. This choice uncertainty can be divided into two different sorts of uncertainty: shelf uncertainty and store uncertainty. Store uncertainty is the way in which consumers question the quality of the store and doubt if this is the best store to make their purchase or that other stores provide better products. Shelf uncertainty is uncertainty in front of the assortment while making a choice between different products.

Hypothesis about choice uncertainty

H5: Complex assortments lead to higher choice uncertainty than less complex assortments.

2.4.3. CHOICE DIFFICULTY

Former theories suggest that people have difficulty managing complex choices. The proposition is that people have more difficulty choosing from large and complex assortments. The difficulty of making a choice is a predictor of negative consequences and dissatisfaction with the chosen product (Iyengar & Lepper, 2000). Difficult choice and decision making evokes emotions such as disappointment and regret.

Hypothesis about choice difficulty

H6: Complex assortments lead to higher choice difficulty than less complex assortments.

2.5. MODERATING CONSUMER CHARACTERISTICS

Consumer characteristics that possibly moderate the occurrence of choice overload are described in this paragraph. People contain personal characteristics to a greater or lesser extent. Some of these characteristics have proven to be of influence on the extent to which choice overload occurs. There are two different personal characteristics involved in this research. The degree of counterfactual thinking and hedonic / utilitarian shopping orientation.

2.5.1. COUNTERFACTUAL THINKING

Counterfactual thinking is defined by Epstude & Roese (2007) as 'evaluative thoughts about imagined alternatives to past events, typically associated with various negative emotions'. These are described as the 'if only' thoughts, people experience after making a choice. According to Sagi & Friedland (2007), theories propose that 'regret is proportional to the difference between the outcome of the option chosen and the expected outcome of the next best alternative that one may have chosen instead'. Research is conducted and supported that the larger the number of alternatives and the more diverse those alternatives are, the stronger the regret that an unsatisfying choice would cause (Sagi & Friedland, 2007). Roese & Summerville (2005) suggest that the top

six largest regrets in life are those which offer the greatest amount of choice and opportunity. Hafner, White & Handley (2011) mention that more choices generate more available opportunities and consequently a greater amount of counterfactual possibilities. These different researchers mainly focused on the effect of large assortments on making counterfactuals and experiencing anticipated regret. However, the present study is moreover based on the belief that counterfactual thinking is a personal characteristic in which individuals differ. This proposition leads to the hypothesis that the degree to which an individual experiences counterfactual thinking often in daily life, is possibly moderating the choice overload effect.

Hypotheses about counterfactual thinking

H7a: Complex assortments lead to more choice overload (i.e. more negative consequences and lower satisfaction) when participants score high on counterfactual thinking than when participants score low on counterfactual thinking.

H7b: Complex assortments lead to more choice difficulty and choice uncertainty when participants score high on counterfactual thinking than when participants score low on counterfactual thinking.

2.5.3. SHOPPING ORIENTATION

Literature often makes a distinction between utilitarian and hedonic shopping orientation. Utilitarian means the need for buying products and the search for functional product goals. In this case, shopping starts with a task or mission and the benefit depends on whether the mission is fulfilled or completed efficiently (Babin, Darden, & Griffin, 1994).

Hedonistic motives are related to fun and entertainment. The reason hedonistic consumers love shopping is because they enjoy the shopping process. Hedonic motivation refers to consumption behaviour in search for happiness, fantasy, awakening, sensuality, and enjoyment. The benefit of hedonic motivation is experiential and emotional. Shopping behaviour is no longer just a boring task or a mission to complete (Babin et al., 1994). Unlike utilitarian shoppers, they do not need to have a plan in mind before starting their shopping trip.

Hypotheses about hedonic / utilitarian shopping orientation

H8a: Complex assortments lead to more choice overload (i.e. more negative consequences and lower satisfaction) when participants have an utilitarian shopping orientation than when participants have an hedonic shopping orientation.

H8b: Complex assortments lead to more choice difficulty and choice uncertainty when participants have an utilitarian shopping orientation than when participants have an hedonic shopping orientation.

2.6. RESEARCH MODEL

The different aspects discussed in the theoretical framework, come together in this conceptual research model.



Fig. 1. Conceptual research model

According to previous literature, the question is not if choice overload exists, but when it occurs. To gain new insights about determinants of choice overload, a group discussion was organised. The aim of this preliminary study was to reveal more insights in different determinants of choice overload. Which determinants already found are most important? And are there unknown determinants? The initial idea was to conduct this research within the deodorant market instead of the hairstyling market. Aim of this preliminary study was also to find out whether the deodorant market was an appropriate market to do research in.

3.1. DESIGN

This qualitative preliminary study was focussed on further exploring choice overload determinants. The chosen method is a structured focus group, because this is an effective way to gain insights and different thoughts about topics with divergent experiences, ideas and opinions. Groups offer the ideal setting to let participants answer questions in an active way, taking the discussion in-depth and in a potentially enjoyable way (Colucci, 2007).

The focus group consisted of two parts. Part one was about choice overload in general and part two was about choice overload within drug stores and the deodorant market.

	Questions	Time
Part 1	 Do you experience choice overload in the supermarket or drug store? When do you experience choice overload? With what kind of products do you experience choice overload? 	40 min.
Part 2	 Do you experience choice overload when buying deodorant How do you choose your deodorant? (ranking) Do you experience choice overload with other products in the drug store? How would you prevent choice overload? 	40 min.

Table 1. Overview of the structured focus group

3.2. PROCEDURE

One week before the group discussion took place, participants received an email with explanation about the group discussion. They received information prior to the focus group and were asked to pay extra attention to their shopping behaviour that week:

Retailers and manufacturers hold on to the belief that more choice is better. That is why the extent of different products in supermarkets and drug stores is still increasing. You can find a large amount of chips, desserts, creams etc. to choose from in your daily supermarket.

I want to discuss with you and others how you make a choice, if you find it difficult to make choices or what your experience in the supermarket or drug store is. It is about your earlier shopping experiences and about your choice behaviour.

Please pay extra attention to your shopping behaviour in a drug store or supermarket this week.

The researcher welcomed everyone and explained that the group discussion existed of two different parts. Permission to record the group discussion was asked and given to the researcher. The first part revealed the general belief about choice overload and choice stress in supermarkets and drug stores. Participants were asked if, when and with what kind of products they experience choice overload. The duration of this part was 40 minutes.

The initial idea was to conduct research within the deodorant market. The second part of the focus group study was therefore used to test if the deodorant market was a good market to do research in. After a ten minute break, participants received a small piece of paper. This paper was a list of attributes from deodorant like colour, packaging, price, discount, scent, usability and design. Participants were asked to rank these attributes from most important to least important according to the ranking method of Colucci (2009). After participants ranked the different attributes, the researcher asked participants about their ranking. Then a discussion took place about their choice behaviour within the deodorant market. The researcher also asked if the participants experienced choice overload within deodorant and specific other personal care categories as well. The duration of this part was approximately 40 minutes.

3.3. PARTICIPANTS

Two group discussions were organised and attended by a total of 15 women. 8 women attended the first group, 7 attended the second group. Ages ranged from 18-29 (M=25). Most of these women have studied at the University of Twente and live in Amsterdam

and Utrecht. They are employed, but do not have children yet. The participants were all responsible for their own groceries and shoppings. They were told that they participated in a group discussion about their shopping behaviour in supermarkets or drug stores.

3.4. ANALYSIS

The two focus groups were recorded with a voice recorder. The two audio files were listened to several times and important quotes were listed and translated to English. Thereafter, the researcher put all the quotes of the two different groups together and investigated if there were visible trends and patterns. Consequently, the data was divided into different categories, for example the three types of products choice overload occurs in.

3.5. RESULTS

Results are described in the same way as the procedure took place. First, the results about the general part of choice overload are discussed and thereafter the results of the second part about choice overload within deodorant and drug stores is discussed.

3.5.1. CHOICE OVERLOAD IN GENERAL

Existence of choice overload

Thirteen participants (n=15) experienced choice overload in daily life. They mentioned <u>having doubts</u> about which product is best or fits their preferences best. It results in realising that they spend <u>more time</u> in the supermarket or drug store than they want to.

" I think to myself: what am I doing, just make up your mind! I get <u>frustrated</u> that I don't know what to pick and just walk another round in the supermarket. Meanwhile I realise that I am standing here way too long".

"In my neighbourhood there is only a small supermarket and I don't like the fact that they do not always have the products I want, but I am a disaster with choices so I think this supermarket is just fine for me. When I go to the Albert Heijn XL (one of the largest supermarkets in the Netherlands) I go crazy."

Two participants did not experience choice overload:

"I am a very structured person. I know what I want, and never go to a supermarket unprepared." "I always buy the same products and don't get influenced by other products."

They only buy what they need and always buy the same products. They do not feel distracted from other products, because they only focus on the one they want. These participants also mention that it is probably a matter of *personality* as well.

"I think it is in my personality to not be <u>curious</u> about other products when I already have found one that works fine."

"Going to the supermarket is a waste of my time. I want to get out of there as quick as possible and when I am unfamiliar with a product I need and there are plenty of them I just randomly pick one of the cheaper ones."

Experience with choice overload

Participants mention that choice overload occurs when they do not have a plan before doing groceries.

"I am very sensitive for choice overload when I don't exactly know what I want."

They for example only know that they want to eat dinner, but not what. It is easier when they already know what they are going to eat, because then they get less influenced by other attractive products in the supermarket. One participant mentioned that her boyfriend always experiences choice overload when he has to buy <u>something for her</u>:

"When he is not sure which product he needed to bring I receive pictures on my cell phone from different products because he does not know which one to choose."

Product group for choice overload

1. Choice overload occurs most often with products like wine, bread, hairstyling, potato chips, cookies and deserts. Products where there are plenty of, but the <u>differences are</u> <u>small</u> or only dependent on the kind of mood you are in:

"I sometimes experience that there are so many different flavours of potato chips in the supermarket that I just don't know what to buy, because I don't have a clear preference at that moment."

2. Choice overload also occurs with products people are unfamiliar with:

"I never buy hairspray and when I needed one, I saw so many of them. Fixation, extra fixation or ultra fixation. They al do different things and I just didn't know which one to buy." Another participant mentions: "When I am happy with a product I just buy it again, but when <u>I need to buy a new product</u>, that's when it becomes difficult."

3. Choice overload also occurs with products that just not matter that much.

"When I need to buy garbage bags or toilet paper there seems to be a whole aisle full of different products. It is exhausting because these kind of products are not the ones I want to invest time in."

3.5.1. CHOICE OVERLOAD WITHIN DEODORANT MARKET

To answer how participants made their choice for deodorant, a ranking of different attributes like colour, packaging, price, discount, scent, usability and design was made. Brand was ranked as number 1, followed by scent (2) and price/discount (3). Eleven participants found themselves very brand loyal within the deodorant assortment:

"With deodorant, I always buy the same product and when it is not available I search for a similar deodorant." "I always buy the same deodorant, because I know this product works properly." "I always have three deodorants I often pick".

3.5.3. PREVENTION OF CHOICE OVERLOAD

Solutions for choice overload were <u>removing deodorants and reduce the size of the</u> <u>assortment.</u> However, participants did not like the idea that products they often buy are suddenly not available anymore. Other solutions are to <u>categorise the assortment</u> like Dutch supermarkets already do with wine. The participants also protected themselves for choice overload:

"I started making shopping lists, because otherwise I am standing too long in the supermarket".

"When I put on my shopping list that I need something to nibble but not exactly what, choice overload occurs immediately. Potato chips, cookies, I just can't make a choice!"

They also try to make choices easier to buy the promotions, the cheapest ones or products they have tried before.

3.5.4. CONSEQUENCES OF CHOICE OVERLOAD

Besides spending too much time, buying the wrong product is also what many participants mention, when talking about negative consequences. One participant said that she often thinks: *"I wish that I had chosen that other flavour of potato chips"*. Most of the participants can identify themselves with her example but more often <u>experience it in drug stores</u>, because that kind of products are more expensive and the usage time is <u>longer</u>.

"It takes longer to find the right one, because the risk of choosing the wrong one is higher."

"When I buy products that don't meet my expectations, I can't just throw it away because that is a waste of my money and the product, so I just use it and get remembered of buying the wrong product every day."

3.6. CONCLUSION

Consequences of too much choice are that participants realised spending too much time in the supermarket and drug stores. This is because they often have doubts about the product they should choose. And this leads to frustration. Participants do not always experience choice overload. The highest chance for choice overload to occur is when they have unclear preferences or when they have to buy a product for someone else. Participants mention that choice overload mostly occurs:

1. Products where there are plenty of and differences are small. 2. With a new and unfamiliar product or product category. 3. With products that not matter that much (i.e.

garbage bags).

It is also a matter of personality since not all participants experience choice overload. Some of the participants like to try new products or are more curious about what else is available than other participants. Some participants just buy what they always buy and are not influenced by a large amount of different products.

An interesting finding is that choice overload happens to occur more in drug stores than in supermarket, because the risk of buying the wrong product is higher. Not only because of a higher price, but also because the average usage time of these products is longer.

3.6. IMPLICATIONS FOR MAIN RESEARCH

3.6.1. HAIRSTYLING AS A RESEARCH FIELD

The ranking revealed that participants base their choice mainly on the brand, then scent and then price/discount. Participants shown to be very brand loyal within the deodorant market. Almost all participants have a solid brand they always buy. It is important to them that the deodorant works and they do not switch labels often. Most participants do not experience choice overload within this product category. Choice overload does not occur when participants already have a strong preference for what product to buy and besides that, it is not possible to smell the scent or see the price within the main experiment. Therefore, it is questioned if the deodorant segment is a good research field.

Participants mentioned hairstyling as a category where they do experience choice overload. It is a product you do not buy every week and there are so many of them. The variety is large, as there are mousses, sprays, gels and so on. The high price results in a higher risk when buying the wrong product. The outcomes of this preliminary study indicate that deodorant is not the right market for this research. That is why this research will focus on the hairstyling assortment.

As mentioned above, there are three different kinds of products where choice overload occurs. Hair styling is often a combination of the first two categories. Products where there are plenty of, and where differences are small (1) and an assortment where unfamiliarity is often high as well, because women do not buy hairstyling as often as other personal care products.

3.6.2. FROM FOCUS GROUP TO MAIN STUDY

Important determinants that came forward from the input are translated into research scales for the main research

	Focus group	Main research
If consumers	It is a matter of personality if it occurs	Hedonic / Counterfactual thinking
experience choice overload	They have doubts	Choice Uncertainty
	They spend more time	Perceived time
	They get frustrated	Perceived choice difficulty
When	When they do not know what they want	Preference Uncertainty
	When they have to buy for someone else	Scenario with assignment to buy for a friend
With what kind of products	Unfamiliar products	Hair styling - relatively unfamiliar if compared to other personal care assortments
	Assortments where differences are small	Hair styling assortment

Table 2. Translation from focus group determinants towards main study variables

4. METHOD

This chapter covers the method of the pre-test and the main experiment. 4.1 focuses on the pre-test that was conducted to test certain variables in advance of the main study, 4.2 focuses on the procedure, participants, stimulus materials and the measures of this online 2x3 experiment.

4.1. PRE-TEST

To conduct a reliable research, a pre-test was held on beforehand. Besides preference uncertainty, dominance seemed to be an important precondition for choice overload as well (Jessup et al., 2009). A dominant product is a product that differs significantly from other products in the assortment and therefore stands out between the rest. Within assortments, dominant items will be processed and appreciated first, and then the remaining items can be identified (Kahn & Wansink, 2004). The different assortments are pre-tested so that dominant products could be removed from the assortment.

Besides that, this pre-test also focuses on the assortment variety. Because variety was not tested in this way before, it is checked if these manipulated assortments with less and more variety are actually seen this way.

The participants (N=10) were sent an email with the request to fill in a short online questionnaire. The ages of participants ranged from 19-26 (M=23).

4.1.1. STIMULUS MATERIALS

Variety

There were two versions of assortments developed within the three size ranges (i.e. large, medium and small). One version has a larger variety than the other version. This means more different brands, types of products, more functional benefits and less equal products. How the size and variety of the assortments is constructed exactly is explained in paragraph 4.3.2. In this pre-test, participants were confronted with pictures of equally large assortments (see fig. 2 and fig. 3 for the small assortments) and had to choose which assortment was offering more variety.

Dominance

lyengar & Lepper (2000) tried to exclude dominance by asking participants in a pre-test what their most favourite and least favourite jams were. The jams that were mentioned multiple times were removed from the experiment. A similar pre-test is done for the

current study. After participants decided which assortment offered more variety, participants had to choose the product that got their attention immediately. Fig 2. and fig 3. illustrate the stimulus material of the two small assortments.

Which product in assortment 1 and 2 got your attention immediately? And would you choose this product as well?



Fig 2: Small assortment, large variety

Fig. 3: Small assortment, little variety

Which one of the two assortments is offering greater variety to choose from?

Assortment 1
Assortment 2
They both offer the same variety

4.1.2. RESULTS

Variety

In all the three different size categories, the large variety assortment was seen as offering more variety than the little variety assortment by the majority of the participants. In the medium group, three participants found that the two assortments offered the same amount of variety. In the other conditions, all participants agreed that the second assortment offered more variety.

Dominance

On behalf of the dominant products participants had to mention, it was tracked whether the same products were often mentioned by different participants. Especially in the medium assortment, participants filled in the same products. If a specific product was mentioned more than two times, it was rated as a dominant product.

Condition	Dominant products
large size / large variety	Taft ultra
large size / little variety	-
medium size / large variety	Wella flex
medium size / little variety	Gliss Kur (black)
small size / large variety	-
small size / little variety	-

Table 1. overview of dominant products pre-test

Further comments

Participants further suggested that some pictures of products are of less quality than others, which made them automatically less dominant. Participants also mentioned that they had to scroll down to see the whole assortment in the case of the large assortment. That made products on the lowest shelf less visible than others.

4.1.3. IMPLICATIONS FOR MAIN STUDY

The image size of the large assortments was reduced, so that participants did not have to scroll the page to see the whole assortment. The Taft tube with gel that was rated dominant in the large assortment/large variety condition was in the pre-test the only tube in the assortment. It is moved and combined with two other tubes of gel to make it less dominant. The black Gliss Kur hairsprays were removed from the medium size / little variety assortment and the Wella Flex range was reduced to keep the influence of dominant products as low as possible. Finally, more variety is brought into the medium assortment, as three people considered that both medium assortments offered the same variety.

4.2. MAIN EXPERIMENT

4.2.1 DESIGN & PARTICIPANTS

To examine the influence of assortment complexity (size and variety) on choice overload, a 2 (large vs little variety) * 3 (large size vs medium size vs small size) online between subjects experiment was conducted.

It resulted in an online questionnaire with six different conditions respondents randomly were assigned to. A total of 309 individuals started the questionnaire. The data of 61 respondents was not used in this study, as these participants stopped early in the

questionnaire or answered the control question with being a man instead of a woman. there were no male products included in the hairstyling assortment, therefore only women could participate in this study. This resulted in a dataset of 258 respondents (100% female) that included participants aged from 15 to 58 years (M=24, SD = 5,55).

	Assortment Size		
Assortment Variety	Large size	Medium size	Small size
Large Variety	Group 1 (N= 39)	Group 3 (N= 47)	Group 5 (N= 40)
Little Variety	Group 2 (N= 45)	Group 4 (N= 45)	Group 6 (N= 40)

Table 2: Distribution of the participants

4.2.2. PROCEDURE

Participants were recruited via status updates posted on Facebook, via private messages with email or Facebook and via an online forum of the consumer television show Radar or an online forum of the magazine Elle girl. After an invitation to participate in the study, respondents were randomly assigned to one of the six online conditions. By starting the questionnaire, participants were asked to imagine that they were in a drug store and had to buy a hairstyling product for their friend who was giving a party that night. After the participants read the scenario, they could push a button which displayed; 'enter the store'. After clicking, one of the six different assortments was shown on the screen and they had to make a decision which product they would pick. Thereafter, different variables were measured, like perceived variety, choice difficulty, regret and expectations. In the last part, demographic information was asked from the participants. When they finished the questionnaire they could leave their personal information, therewith they could win a beauty box worth €35,-. For the complete questionnaire, see appendix 2.

4.2.3. STIMULUS MATERIALS

Hairstyling products are less frequent bought than many other personal care products. This implies that many consumers are not so familiar with the assortment and preference uncertainty is higher than with other assortments from a drug store like shampoo or deodorant. Participants were given the assignment to buy a product for a friend of whom they do not know the preference. In this way, the choice is less often based on earlier experience than when they had to buy a product for their own use.

Scenario

A good friend of yours is giving a party tonight and is very busy with all the preparations, when she finds out that she really needs a new hairstyling product to do her hair tonight. She asked you whether you could make a quick stop at the drugstore to bring her a new hair styling product, as she does not have time to go by herself. Once you arrived at the store, you realise that she did not tell you her preference and decide to call her. Unfortunately you cannot reach her. You decide to walk into the store anyway and choose a product. "Click here to enter the store and to go to the hair styling assortment"

Independent variables

Size

Research pointed out that 23 products or more make it for consumers difficult to choose and increase the probability that choice overload will occur. This study used three different sizes. For the large size group, there was chosen for the largest size possible, considering the fact that the whole assortment must be visible on screen without scrolling the page. This is 60 products. The medium assortment existed of less than 23 products (20 products). The small assortment existed of 8 products.

Variety

The hair styling segment has great variety. Variety was determined by the amount of different brands, different types of products (i.e. mousses, gels and sprays) and functional benefits of the products (i.e. volume-, gloss-, fixation-, curls- and other types of sprays). In an assortment with less variety, less different products were presented. This means that some products were presented several times within an assortment. The colours are more similar there is less variety in brands and functional benefits. The following figures (fig 4-9) present the manipulated assortments.



Fig. 4. Assortment group 2 (Large variety x large size condition)



Fig. 5. Assortment group 2 (Large size, little variety)



Flg 6. Assortment group 3 (Medium size, large variety)



Flg 7. Assortment group 4 (Medium size, little variety)



Flg 8. Assortment group 5 (Small size, large variety)



FIg 9. Assortment group 6 (Small size, little variety)

4.2.4. MEASURES

Different variables were set up to measure the influence of the manipulated independent variables size and variety. First the perceived size and perceived variety are discussed, then the dependent variables about the decision making process, whereafter the satisfaction and several consequences are discussed. Finally, the different moderators are discussed.

Perceived size

Participants were asked to estimate (without going back to the page), how many different products the assortment existed of. This was an open ended question, asked to test if the differences in variety are noticed by participants since more similar products should lead to higher perceived size.

Perceived variety

Participants were asked to indicate on a 7 points Likert scale if the assortment provided a good amount of items (4), too few items (1) or too many (7) (lyengar & Lepper, 2000). This is used to check if the size differences are significant.

Decision making process

Expectations

Before participants had chosen a product, they were asked to indicate their expectations about the quality of the products, the hair styling expertise of the store and about the ability to find what they are looking for. This was measured by a 3-item scale (α = .77). The participants indicated on a 7-point Likert scale to which extent they agreed with the three statements (1=totally disagree, 7 = totally agree):

This assortment gives me high expectations about the quality of the products.

I belief that this store has a good expertise in the field of hairstyling.

♦When I see this assortment, I expect to find what I am looking for.

Choice difficulty

To examine if choice difficulty differs between the six conditions, perceived choice difficulty was measured by a 3-item scale of Iyengar & Lepper (2000)(α = .82). The participants indicated on a 7-point Likert scale to which extent they agreed with the three statements (1=totally disagree, 7 = totally agree):

To what extent did you feel frustrated when making a choice?

To what extent did you find it difficult to make a choice?

Did you spent more time to find the right product than you would normally want?

Choice uncertainty

By measuring the choice uncertainty while making a choice, it is possible to find out if a large assortment is related to a higher choice uncertainty. This was measured by a 4-item scale, however the internal consistency of the scale was too low (α = .55). An explanation for the low internal consistency is that choice uncertainty was measuring two different factors: store uncertainty and shelf uncertainty. Apparently uncertainty about the store does not necessarily mean uncertainty about the products on the shelf. Participants might be very certain about the store and the product the store offers, but on the other hand still doubt between the different items on the shelf. This led to the following division:

Shelf uncertainty: Did you hesitate between different products on the shelf?

Store uncertainty ($\alpha = .86$):

1. Did you rather go to a different store to find out if they have better products?

2. Are you convinced that there are better products available in other stores?

The participants indicated on a 7-point Likert scale to which extent they agreed with the statements (1=totally disagree, 7 = totally agree).

Consequences

Anticipated regret

Anticipated regret measured to what extent participants feel that they are going to regret their choice. Participants indicated on a 7-point Likert scale to which extent they agreed with the statement (1=not at all, 7=very much):

To what extent do you feel that you are going to regret your choice?

Choice deferral

Choice deferral measured how likely it would be that participants would have walked empty-handed out of the store if this was a normal situation and they had the opportunity to just buy nothing because they did not know what kind of product to choose. Participants indicated on a 7-point Likert scale to which extent they agreed with the statement (1=not very likely, 7=very likely):

How likely is it that you would have walked out of the store in real life because you did not know what to choose? (1= not very likely, 7= very likely)

Counterfactual thinking (DV)

There is a difference between counterfactual thinking as a personal characteristic and counterfactual thinking that occurs during the choice making process. The difference is, that counterfactual thinking as a dependent variable (DV), does not measure the personality of a person but the counterfactuals the participant made on behalf of the

choice he just made. The participants indicated on a 7-point Likert scale to which extent they agreed with the statement (1=totally disagree, 7 = totally agree): *If I could do it over again, I would probably have chosen a different product.*

Purchase intention

When you get the chance to choose between your chosen hairstyling product or the value of the product in money, what do you choose? It was measured if participants in the large group condition significantly had chosen for money more often because they find it more difficult to choose a product. The participants had two options (1= the value, 2 = the product).

If you had the choice between receiving the picked hairstyling product or receiving the value of the product, what would you choose?

Satisfaction

The participants indicated on a 7-point Likert scale the extent to which they were satisfid with their chosen product. The participants indicated on a 7-point Likert scale to which extent they agreed with the statement (1=totally disagree, 7 = totally agree): *I am satisfied with the product I have just chosen*

Moderators

Preference uncertainty

As mentioned before, participants had to imagine buying a product for a friend, to decrease the amount of participants who based their choice on earlier experience. However, participants can still rely on earlier experiences while making a choice (i.e. the friend the participant had in mind always uses product x, or the participant always uses the product and knows it is a good product for the friend as well). With an open ended question was asked why participants had chosen their selected product. These answers made it possible to divide the participants in a group who based their choice on earlier experience and did not perceive uncertainty and a group of participants who did not have a strong preference in mind based on earlier experience. This variable was tested as a moderator to check if it is really a precondition for choice overload according to the literature.

Which product have you chosen?

Why did you choose this product? (open ended)

Counterfactual thinking

Different scales were used to measure the personality of the participant. The extent to which a respondent genuinely regrets choices afterwards and often imagines what

happened if things turned out different. It is possible that individuals who regret their choices more often react differently on a large assortment than individuals who never regret their choices. This was measured by a 4-item scale (α = .75) of Schwartz (2002). The participants indicated on a 7-point Likert scale the extent to which they considered the four statements (1=totally disagree, 7 = totally agree):

♦ Whenever I make a choice, I am curious about what would have happened if I had chosen differently.

Whenever I make a choice, I try to get information about how the other alternatives turned out

When I made a choice, I never look back

When I made a choice which turned out well, it still feels like a wrong choice when I find out that there was a better option available.

Hedonic / utilitarian shopping orientation

If individuals enjoy shopping can be an important mediator of choice overload. It is possible that individuals who find shopping a hassle and shop because they have to react different to choosing from a large assortment than individuals who enjoy shopping. This is measured on an 8-item scale developed by Babin et al. (1994) with four utilitarian statements and four hedonic statements (α = .86). The participants indicated on a 7-point Likert scale the extent to which they considered the 8 statements, for example (1=totally disagree, 7 = totally agree):

✤ I enjoyed this shopping trip for its own sake, not just for the items I may have purchased.

I get disappointed when I have to go to another store(s) to complete my shopping.

5 . R E S U L T S

In this chapter the results of the online 2x3 between subjects experiment are discussed in the order of dependent variables, as they were presented in the method part. First the perceived size and perceived variety are discussed, then the dependent variables about the decision making process are measured, whereafter the satisfaction and several consequences are discussed. The main effects of size and variety towards these different dependent variables are measured together with the interaction effect of those two independent variables. In the last paragraph, interaction effects of the different moderators are discussed.

5.1. PERCEIVED SIZE

To test if the dependent variable *size* produced the desired effect, participants were asked to answer whether they felt having enough options to choose from on a 7-points Likert scale (1= too few items, 4= a good number of items, 7 = too many items). If the manipulation produced the pre-conceived effect, participants in the large size conditions scored significantly higher than the medium and small size conditions and the medium size conditions respectively scored higher than the small size conditions. Table 3 shows the results of this check.

Size	Μ	Std. Deviation	Ν
Large	4,80	1,49	84
Medium	3,99	1,69	92
Small	3,32	1,48	81

Table 3. Perceived size

A 2x3 one way analysis of variance (ANOVA) was used to investigate the significance of the impact that support had on the perceived size in the different size conditions. The ANOVA was statistically significant, indicating that the perceived size was influenced by the actual size, F(2,254) = 18,56, p < 0.001. Post hoc analyses with Tukey's HSD revealed that there was a significant difference between all the three size conditions meaning that the differences between large and medium, large and small and medium and small are all significant.

5.2. PERCEIVED VARIETY

To find out if the dependent variable variety produced the desired effect, participants were asked to estimate the amount of different products they were confronted with earlier

in the experiment. There were more identical and replicated products in the little variety condition and less variability in attributes such as colour, claims and brands compared to the large variety condition. Because products in the little variety condition look more similar, it is according to previous literature expected that the little variety group is estimated larger. The little and large variety groups are compared within every size condition. Table 4 shows the estimated size of the assortment.

Size	Variety	M (estimated number of items	Std. Deviation	Ν
Large	Large	42,05	11,88	37
	Little	47,30	12,34	44
Medium	Large	17,84	6,64	45
	Little	20,00	4,05	40
Small	Large	6,85	1,81	41
	Little	7,08	1,59	37

Table 4. Perceived size, influenced by variety

As table 4 shows, the estimated number of items is higher in all the little variety groups compared to the large variety groups. This proves that size and variety interact with each other. The perceived size is influenced by variety. To test significance, a 2x3 one way analysis of variance (ANOVA) was used to investigate the impact that support had on the variety towards the estimated amount of products in the three different size conditions, respectively large, medium and small. The ANOVA was statistically significant, indicating that the estimated amount of products was influenced by the variety , *F*(5,238) = 201,04, *p* <0.001. The little variety condition (M=47,30, SD=12,34) caused a higher perceived number of products than the large variety group (*M*= 42,05, *SD*=11,88) in the large size group. It is thus proven that variety influences the perceived assortment size. However, there were no significant differences between the other two size conditions. It is possible that variety plays a larger role in large than in medium and small assortments.

5.3. DECISION MAKING PROCESS

Three variables about the decision making process were measured. Expectations measured if participants got higher expectations from more complex assortments, choice difficulty measured to what degree participants experienced difficulties while making a choice. Choice uncertainty measured to types of uncertainty, how uncertain participants are about the store and how uncertain they are about their choice.

5.3.1. EXPECTATIONS

Hypothesis: Complex assortments lead to higher expectations than less complex assortments

A factorial 2x3 analysis of variance (ANOVA) was used to investigate the effect of assortment complexity (size * variety) towards expectations. No interaction effect was found F(2,240)=.25, p=.778. However, direct effects for size, F(2,247)=7.72, p=.001 and variety, F(1,251)=6.77, p=.010 towards expectations were found. Results show that choices from large variety assortments (*M*=4.98, *SD*=1.12) result in significantly greater expectations than choices from little variety assortments (*M*=4.60, *SD*=1.67).

Posthoc analyses with Tukey's HSD, revealed that choices from large assortments (M=5.16, SD=1.16) lead to greater expectations than choices from medium (M=4.68, SD=1,11, p=.016) and small assortments (M=4.53, SD=1.12, p<.001). Complex assortments indeed lead to higher expectations than less complex assortments.

5.3.2. CHOICE DIFFICULTY

Hypothesis: Complex assortments lead to more choice difficulty than less complex assortments

A factorial 2x3 analysis of variance (ANOVA) was used to investigate the effect of choice complexity (size * variety) towards choice difficulty. No interaction effect was found, F (2,250)= 1.63, p=.198. Also no direct effects of size or variety were found. There is no indication to assume that consumers are finding it more difficult to make a decision from complex assortments than from less complex assortments.

5.3.3. CHOICE UNCERTAINTY

Hypothesis: Complex assortments lead to more choice uncertainty than less complex assortments

A factorial 2x3 analysis of variance (ANOVA) was used to investigate the effect of choice complexity (size * variety) towards choice uncertainty (i.e. shelf uncertainty and store uncertainty). No interaction effect was found, F(2,250)=.44, p=.645. However, there was found a direct effect of size on store uncertainty, F(2,250)=8.37, p<.001.

Posthoc analyses with Tukey's HSD revealed that decision making in large assortments led to less store uncertainty (M=2.02, SD=1.42) than medium (M=2.98, SD=1.72, p=.006)

assortments and small assortments (M=2.81, SD=1.78, p<.001). This result contradicts the hypothesis that complex assortments lead to more store uncertainty.

5.4. CONSEQUENCES

There were four possible consequences of too much choice measured. Anticipated regret measured if participants expect that they are going to regret their choice. Choice deferral measured how likely it is for participants that they would have walked out of the store empty-handed. Counterfactual Thinking (DV) measured if participants would do it over again and choose something else if they had the chance. At last, The variable purchase intention let participants choose between two options. If they had the choice, would they choose to receive the value of the product, or would they choose to receive the product?

Hypothesis: Complex assortments lead to more negative consequences than less complex assortments.

5.4.1. ANTICIPATED REGRET

A factorial 2x3 analysis of variance (ANOVA) was used to investigate the effect of assortment complexity (size * variety) towards anticipated regret. No interaction effect was found F(2,252)=.03, p=.973. Also no direct effect of variety nor size towards anticipated regret was found. This indicates that there is no reason to assume that consumers perceive more anticipated regret after choosing from complex assortments than after choosing from less complex assortments.

5.4.2. CHOICE DEFERRAL

A factorial 2x3 analysis of variance (ANOVA) was used to investigate the effect of assortment complexity (size * variety) towards choice deferral. No interaction effect was found F(2,251)=.30, p=.745. No direct effect of variety on choice deferral was found, however, a direct effect of size, F(2,251)=6.41, p=.002 towards choice deferral was found.

Posthoc analyses with Tukey's HSD, (p=.023), revealed that choices from large assortments (M=2.06 SD=.174) lead to significantly less choice deferral than choices from medium (M=2.90, SD=.168, p=.005) and small assortments (M=2.69, SD=.178, p=. 047). No significant effects were found between the medium and small assortment groups. This means that consumers in the small and medium assortment group leave the store more likely empty-handed than consumers in the large assortment group.

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5.4.3. COUNTERFACTUAL THINKING (DV)

A factorial 2x3 analysis of variance (ANOVA) was used to investigate the effect of assortment complexity (size * variety) towards counterfactual thinking (DV). No interaction effect was found F(2,251)=4.98, p=.008. No direct effect of variety was found, however there was found a direct effect of size, F(2,251)=6.41, p=.002 towards counterfactual thinking (DV).

Posthoc analyses with Tukey's HSD revealed that choices from large assortments (M=2.39 SD=.153) lead to significantly less counterfactual thinking (DV), than choices from medium (M=2.93, SD=.147, p=.015) and small assortments (M=3.03, SD=.156, p=. 027). No significant effects were found between the medium and small assortment groups.

5.4.4. PURCHASE INTENTION

A Pearson's chi-square test of contingencies ($\alpha = .05$) was used to evaluate whether purchase intention is related to the assortments' size and variety. The chi-square test was statistically significant for purchase intention and size, *x2* (2,N=257)=6.92, *p*=031. The smaller the size, the lower the purchase intention. This means that participants in the smaller size group would more likely choose for the money instead of the product than participants in the large size group.

The results of the different consequences imply that there is no reason to assume that complex assortments lead to more negative consequences than less complex assortments. On the contrary, in three out of four consequences, complex assortments lead to more positive results instead of more negative results.

5.5. SATISFACTION

Complex assortments, the decision making process and eventually the consequences people experience lead to more or less satisfaction with the chosen product. This item measured to what extent participants were satisfied with their chosen product.

Hypothesis: Complex assortments lead to lower satisfaction than less complex assortments.

A factorial 2x3 analysis of variance (ANOVA) was used to compare the effect of assortment complexity (size * variety) towards satisfaction. There was no main effect of

variety on satisfaction, F (2,252) = 3.85, p=.051, however, the effect of size on satisfaction was statistically significant, F (2,252) = 4,25, p=.015.

Post hoc analyses with Tukey's HSD revealed that large assortments lead to greater satisfaction (M=5,56, SD=1.05) than medium (M=5,14, SD=1,07, p=.005) assortments. There was no significant difference between large and small assortments. The results reveal that participants who choose from large assortments, perceived higher satisfaction with the chosen product than participants who choose from medium and thus less complex assortments.

5.6. MODERATOR EFFECTS

In this paragraph, the moderating effects of preference uncertainty, counterfactual thinking and shopping orientation are measured. Preference uncertainty exists of two groups, participants who had no experience with the assortment and participants who based their choice on experience and are familiar with the assortment. To test the moderating effect of counterfactual thinking and shopping orientation, these variables were first transformed from continuous variables to categorical variables. New variables were computed by a median split which divided the variables into a relatively high and a relatively low score group. The different ANOVA's were conducted with using this new variables.

5.6.1. PREFERENCE UNCERTAINTY

Hypothesis: Complex assortments lead to more choice overload (i.e. more negative consequences and lower satisfaction) than less complex assortments when preference uncertainty is high.

Consequences

A factorial 2x3 analysis of variance (ANOVA) was used to compare the interaction effect of assortment complexity (size * variety) and preference uncertainty towards any of the consequences (i.e. choice deferral, anticipated regret, counterfactual thinking, purchase intention). An interaction effect was found between size, variety and preference uncertainty towards counterfactual thinking (DV), F(2,227)=3.48, p=.033. The interaction effects are shown in fig. 10. In fig. 10, variety is plotted on the x-axis and counterfactual thinking (DV) on the y-axis. Size is shown with separate lines and there is are plots for the low and high preference uncertainty group. At first sight, high preference uncertainty leads to more extreme values than low preference uncertainty. When preference uncertainty is high, participants from the large and small group seem to perceive more counterfactual thinking when variety is little. And when variety is little, participants in the large assortment groups experience more counterfactual thinking than the medium group



in little variety, while they perceive less counterfactual thinking than the medium group when variety is large.



Fig. 10. Interaction effect of size, variety and preference uncertainty on counterfactual thinking (DV)

To find out which parts of the figures are significant, cases were split into two variety groups and then were split again into two preference uncertainty groups. The different parts of the figure were tested separately. Post hoc analyses with Tukey's HSD revealed that no significant differences were found in the low preference uncertainty group. Large variety together with low preference uncertainty tested insignificant for size (p=.078) towards counterfactual thinking (DV). The same effect was also insignificant for little variety (p=.647).

When looking at the right figure with the high preference uncertainty group, there was found a significant interaction between the large (M= 3.38, SD=1.40) and medium group (M=2.00, SD=1.06, p=.006) and large variety towards counterfactual thinking (DV). The right side of the figure (little variety) was not significant (p=.076). This implies that when preference uncertainty is high and variety is large, participants of the medium size group made significantly more counterfactuals (i.e. they would do it rather over again) than the large size group.

Satisfaction

A factorial 2x3 analysis of variance (ANOVA) was used to compare the effect of assortment complexity (size * variety) towards satisfaction and interaction with the precondition preference uncertainty. The interaction effect of size, variety and preference uncertainty on satisfaction was statistically significant, F(2,229) = 3,28, p=.039. In fig. 11, variety is plotted on the x-axis and satisfaction on the y-axis. Size is shown with separate lines and there is are plots for the low and high preference uncertainty groups.



Fig. 11. Interaction effect of size, variety and preference uncertainty on satisfaction

Despite the fact that size had a positive main effect on satisfaction, fig. 11 shows at first sight that individuals who feel highly uncertain about their preference are in general less satisfied with their choice, compared to participants who based their choice on earlier experience. Especially in the little variety conditions, high preference uncertainty seems to lead to lower satisfaction, while the contradict effect is shown when preference uncertainty is low.

To find out which parts of the figures are significant, cases were split into two variety groups and then were split again into two preference uncertainty groups. The different parts of the figure were tested separately. Post hoc analyses with Tukey's HSD revealed that no significant differences were found in the low preference uncertainty group. Large variety together with low preference uncertainty tested insignificant for size (p=.318) towards satisfaction. The same effect was also insignificant for little variety (p=.123).

When looking at the right figure with the high preference uncertainty group, there was found a significant interaction between the large (M= 5.76, SD=1.25) and medium group (M=4.86, SD=1.28, p=.046) and large variety towards satisfaction. The right side of the figure (little variety) was not significant (p=.594). This implies that when preference uncertainty is high and variety is large, participants of the medium size group were significantly less satisfied than the large size group. Thus, the large size means in the high preference uncertainty group are lower compared to the means in the low preference uncertainty group which concludes that preference uncertainty indeed moderates the choice overload effect. However, satisfaction is still significantly higher in the large size group than in the medium size group.

Hypothesis: Complex assortments lead to more choice difficulty and choice uncertainty than less complex assortments when preference uncertainty is high.

Choice difficulty

A factorial 2x3 analysis of variance (ANOVA) was used to compare the interaction effect of assortment complexity (size * variety) and preference uncertainty towards choice difficulty. No interaction effects were found.

Choice uncertainty

A factorial 2x3 analysis of variance (ANOVA) was used to compare the interaction effect of assortment complexity (size * variety) and preference uncertainty towards choice uncertainty. No interaction effects were found.

5.6.2. COUNTERFACTUAL THINKING

Hypothesis: Complex assortments lead to more choice overload (i.e. more negative consequences and lower satisfaction) when participants score high on counterfactual thinking than when participants score low on counterfactual thinking.

Consequences

A factorial 2x3 analysis of variance (ANOVA) was used to compare the interaction effect of assortment complexity (size * variety) and counterfactual thinking towards any of the consequences (i.e. choice deferral, anticipated regret, counterfactual thinking, purchase intention). An interaction was found between size and counterfactual thinking towards counterfactual thinking (DV), F(2,229)=4.52, p=.012. In fig. 12, counterfactual thinking is plotted on the x-axis and counterfactual thinking (DV) on the y-axis. Size is shown with separate lines.



Fig. 12. Interaction effect of size, variety and counterfactual thinking on counterfactual thinking (DV)

To find out which part of the figure is significant, cases were split and a one way analysis of variance (ANOVA) was used to test the influence of size on counterfactual thinking (DV) within the low and high counterfactual thinking groups separately.

Post hoc analyses with Tukey's HSD revealed that within the low counterfactual thinking

group, large assortments lead to less counterfactual thinking (DV) (M=2.12, SD=1.12) than small (M=2.94, SD=1,64, p=.013) assortments. Medium assortments (M=2.24, SD=1.16) lead to less counterfactual thinking (DV) than small assortments (M=2.94, SD=1,64, p=.043). Effects within the high counterfactual thinking group were not significant. However, in the high counterfactual thinking group, the means of the medium and large group are a lot higher which indicates that people who experience counterfactual thinking in daily life, experience it more often now as well, especially in the large and medium group. The reason that there is no large difference between the small condition group within the two counterfactual thinking groups might be explained by the fact that the amount of products is so small that even participants who normally do not experience counterfactual thinking are experiencing it here.

No interaction effects between size, variety and counterfactual thinking towards any of the other consequences was found.

Satisfaction

To test if participants who score high on counterfactual thinking experience lower satisfaction after choosing from complex assortments a factorial between groups analysis of variance (ANOVA) was used to investigate the interaction effect between size, variety and counterfactual thinking on satisfaction. No interaction effect was found F(2,230) = 1.33, p=.266.

Hypothesis: Complex assortments lead to more choice difficulty and choice uncertainty when participants score high on counterfactual thinking than when participants score low on counterfactual thinking.

Choice difficulty

A factorial 2x3 analysis of variance (ANOVA) was used to investigate the interaction effect between assortment complexity (size * variety) and counterfactual thinking on choice difficulty. The ANOVA was statistically insignificant, indicating that there is no reason to assume that consumers who score high on counterfactual thinking have more difficulties with choosing from complex assortments than others, F(1,251) = 1.295, p=. 256.

Choice uncertainty

Whether participants who score high on counterfactual thinking experience more choice uncertainty with choosing from complex assortments is tested with a one way 2x3 analysis of variance (ANOVA). There was found an interaction effect between size and counterfactual thinking towards store uncertainty, F(1,242)= 3.61, p=.028 which confirms

that there is an interaction between size, counterfactual thinking and store uncertainty. In fig.13 the degree of counterfactual thinking is plotted on the x-axis and store uncertainty on the y-axis. The different lines represent the three different size conditions.



Fig. 13. Interaction effect between counterfactual thinking and size towards store uncertainty

To find out which part of the figure is significant, cases were split and a one way analysis of variance (ANOVA) was used to test the influence of size on counterfactual thinking (DV) within the low and high counterfactual thinking groups separately.

Post hoc analyses with Tukey's HSD revealed that within the low counterfactual thinking group, large assortments lead to lower choice uncertainty (M=1.82, SD=1.24) than small (M=2.69, SD=1,92, p=.005) assortments. Post hoc analyses with Tukey's HSD revealed that within the high counterfactual thinking group, large assortments also lead to lower choice uncertainty (M=2.42, SD=1.69) than small (M=3.69, SD=1.71, p=.015) assortments.

Fig. 13 implies that participants with a high score on counterfactual thinking perceive more store uncertainty in all the three size conditions. Even in the large condition 'high counterfactual thinkers' are significantly more concerned about the offered assortment by the retailer. They would rather go to a different store significantly more than people with a low score on counterfactual thinking.

5.6.3. SHOPPING ORIENTATION

Hypothesis: Complex assortments lead to more choice overload (i.e. more negative consequences and lower satisfaction) when participants have an utilitarian shopping orientation than when participants have an hedonic shopping orientation.

Consequences

A factorial 2x3 analysis of variance (ANOVA) was used to compare the interaction effect of assortment complexity (size * variety) and shopping orientation towards any of the consequences (i.e. choice deferral, anticipated regret, counterfactual thinking, purchase intention). An interaction effect was found between size, variety and shopping orientation towards counterfactual thinking (DV), F(2,227)=4.45, p=.013. In fig. 14, variety is plotted on the x-axis and counterfactual thinking (DV) on the y-axis. Size is shown with separate lines and there is a plot for the utilitarian group (left) and one for the hedonic group (right).



Fig 14. Interaction effect between shopping orientation, size and variety towards counterfactual thinking (DV)

To find out which part of the figures are significant, cases were split into two variety groups and then were split again into the hedonic and the utilitarian group. The different parts of the figure were tested separately. Post hoc analyses with Tukey's HSD revealed that a significant interaction was found in the utilitarian group. Large variety in the utilitarian group tested significant between the large (M=3.14, SD=1.40) and medium group (M=4.18, SD=1.27, p=.004) towards counterfactual thinking (DV). The same effect was insignificant for little variety (p=.249). This implies that when variety is large and participants have an utilitarian shopping orientation, participants of the medium size group made significantly more counterfactuals (i.e. they would do it rather over again) than the large size group.

When looking at the right figure with the hedonic group, there was found a significant interaction between the large (M= 2.27, SD=1.00) and medium group (M=3.78, SD=1.80, p=.004) and little variety towards counterfactual thinking (DV). The same effect was insignificant for large variety (p=.133). This implies that when variety is little and participants have an hedonic shopping orientation, participants of the medium size group made significantly more counterfactuals (i.e. they would do it rather over again) than the large size group.

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No interaction effects between size, variety and preference uncertainty towards any of the other consequences was found.

Satisfaction

To examine if participants with an utilitarian shopping orientation, experience lower satisfaction after choosing from complex assortments than participants with an hedonic shopping orientation, a factorial between groups analysis of variance (ANOVA) was used. The ANOVA investigates the interaction effect between assortment complexity (size, * variety) and hedonic/utilitarian shopping orientation on satisfaction. An interaction effect was not found, F(2,229)=2.39, p=.094.

Hypothesis: Complex assortments lead to more choice difficulty and choice uncertainty when participants have an utilitarian shopping orientation than when participants have an hedonic shopping orientation.

Choice difficulty

It is tested if participants with an utilitarian shopping orientation experience more choice difficulty during choosing from complex assortments than participants with an hedonic shopping orientation. A 2x3 one way analysis of variance (ANOVA) was used to investigate interaction between shopping orientation and assortment complexity (variety * size) on choice difficulty. The ANOVA was statistically significant, indicating that there is an interaction effect between the three variables towards choice difficulty, F(2,227)=5.42, p=.005. In fig. 15, variety is plotted on the x-axis and choice difficulty on the y-axis. Size is shown with separate lines and there is a plot for the utilitarian group and one for the hedonic group. The plots show that individuals with an utilitarian shopping motivation in general. Moreover, they perceive more difficulty with making a choice in the assortments with large varieties. However, individuals with an hedonic shopping orientation seem to have more trouble with little variety in large assortments.



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To find out which part of the figures are significant, cases were split into two variety groups and then were split again into the hedonic and the utilitarian group. The different parts of the figure were tested separately. Post hoc analyses with Tukey's HSD revealed that the interactions in the utilitarian group were insignificant for large variety (p=.921) and little variety (p=.396) towards choice difficulty,

When looking at the right figure with the hedonic group, there were found significant interaction effects in both the little and large variety group. A significant interaction between the large (M= 1.80, SD=.83) and medium group (M=3.04, SD=1.37, p=.032) and large variety towards choice difficulty was found. A significant interaction between the large (M= 4.52, SD=1.14) and small group (M=2.68, SD=1.59, p=.008) and little variety towards choice difficulty was also found. This implies that when variety is large and participants have an hedonic shopping orientation, participants of the medium size group had significantly more difficulty than the large size group with making a choice. Within the little variety group, participants of the small size group had significantly more difficulty than the small size group had significantly more difficulty than the large size group had significantly more difficulty than the small size group had significantly more difficulty than the small size group had significantly more difficulty than the small size group had significantly more difficulty than the small size group had significantly more difficulty than the small size group had significantly more difficulty than participants of the large size group with making a choice.

Choice uncertainty

A factorial 2x3 analysis of variance (ANOVA) was used to investigate the interaction effect between size, variety and shopping orientation towards choice uncertainty. The ANOVA was statistically insignificant, indicating that there is no reason to assume that utilitarian consumers perceive higher choice uncertainty with choosing from complex assortments than hedonic consumers. The ANOVA was statistically insignificant for choice uncertainty, which contains store uncertainty, F(1,250)=1,72, p=.191 and shelf uncertainty, F(1,251)=.40, p=.529).

Hypothesi s	Description	Confirmed
1	Complex assortments lead to more choice overload (i.e. more negative consequences and lower satisfaction) than less complex assortments.	Not confirmed
2	Complex assortments lead to more choice overload (i.e. more negative consequences and lower satisfaction) than less complex assortments, when preference uncertainty is high.	Partly confirmed

5.7. SUMMARY OF HYPOTHESES

Hypothesi s	Description	Confirmed
3	Complex assortments lead to more choice difficulty and choice uncertainty than less complex assortments, when preference uncertainty is high.	Not confirmed
4	Complex assortments lead to higher expectations than less complex assortments	Confirmed
5	Complex assortments lead to higher choice uncertainty than less complex assortments.	Not confirmed
6	Complex assortments lead to higher choice difficulty than less complex assortments.	Not confirmed
7a	Complex assortments lead to more choice overload (i.e. more negative consequences and lower satisfaction) when participants score high on counterfactual thinking than when participants score low on counterfactual thinking.	Partly confirmed
7b	Complex assortments lead to more choice difficulty and choice uncertainty when participants score high on counterfactual thinking than when participants score low on counterfactual thinking.	Partly confirmed
8a	Complex assortments lead to more choice overload (i.e. more negative consequences and lower satisfaction) when participants have an utilitarian shopping orientation than when participants have an hedonic shopping orientation.	Partly confirmed
8b	Complex assortments lead to more choice difficulty and choice uncertainty when participants have an utilitarian shopping orientation than when participants have an hedonic shopping orientation.	Partly confirmed

Table 5. Overview of tested hypotheses.

6. DISCUSSION

What is the influence of assortment complexity on the occurrence of choice overload and what is the role of counterfactual thinking and shopping orientation? In this chapter, the research question is answered. This chapter will state the major findings of the study and explain their meaning. In paragraph 6.1, results and used techniques will be compared with other studies from the field, highlighting the differences and similarities. Limitations together with suggestions for future research and practical implications are described in paragraph 6.2.

6.1. CONCLUSION

Contrary to research of lyengar & Lepper (2000), but in line with several other experiments (Scheibehenne, Greifeneder, & Todd, 2010), this study was not able to find a main effect of high assortment complexity on negative consequences and lower satisfaction (i.e. choice overload effect). Contradict to the choice overload effect, the outcomes confirm classical economic theories that suggest that more choice leads to better satisfaction and positive consequences (Jessup et al., 2009).

Different outcomes in the past led to a discussion about the existence of choice overload. Chernev et al. (2010) concluded that the question is not whether choice overload exists, but under which circumstances it occurs. An important precondition for choice overload that came to light was preference uncertainty. In this study, the reason participants answered for choosing their chosen product, was used to make a division based on experience. This resulted in two groups, a group with high preference uncertainty (no experience) and a group with low preference uncertainty (experience). Moderator effects of preference uncertainty on the choice overload effect were measured and confirmed.

Despite the fact that size had a direct positive effect on satisfaction, this interaction effect showed indeed that individuals with high preference uncertainty are less satisfied with their choice and experienced more counterfactual thinking (DV) after making a choice than participants who based their choice on earlier experience. However, the decreased satisfaction compared to individuals without preference uncertainty was still higher than the satisfaction obtained from smaller assortments. Moreover, the satisfaction obtained from smaller assortments. Moreover, the satisfaction obtained from smaller assortments uncertainty was perceived. This is a very interesting finding, because it implies that choosing from smaller assortments is not making things easier, as previous literature mentioned. People with preference uncertainty perceive more difficulties making choices in general and not only in the more complex assortments. The exact same result was found for counterfactual



thinking (DV) as well. It can therefore be questioned how important assortment complexity is in predicting difficulties in choice behaviour.

An important other part of this study was to investigate the role of different personal characteristics in explaining the choice overload effect. Shopping orientation, counterfactual thinking and variety seeking were taken into account. There were no significant results found with variety seeking which implies that the degree of variety seeking does not moderate choice overload (see appendix 2).

The degree of counterfactual thinking and shopping orientation have shown interesting results. An interaction was found between size and counterfactual thinking towards counterfactual thinking (DV). This interaction effect showed that in the low counterfactual thinking group, experienced counterfactual thinking was also low and highest for the small group condition. This means that participants who normally do not look back at choices did not look back at choices here as well. This group only scored high on counterfactual thinking (DV) in the small condition and an explanation for this might be that the choice in the small size condition is so limited that participants who normally do not regret their choices, now do. However, in the high counterfactual thinking group, the means of the medium and large group are a lot higher which indicates that people who experience counterfactual thinking in daily life, experience it now as well, especially in the large and medium group. In other words, complex assortments have a negative influence on counterfactual thinking (DV) in the high counterfactual thinking group.

Individuals with a high score on counterfactual thinking also perceived significantly more store uncertainty. This implies that even in the large condition, these participants still doubt whether an other store would offer better options. These participants are looking for the best possible option and whether they have many or few options, they are still looking for more.

Results about hedonic and utilitarian shopping orientation revealed that participants with an utilitarian shopping orientation experienced lower satisfaction after choosing from complex assortments, than participants with an hedonic shopping orientation. They also experienced more difficulty during choosing from complex assortments and were less satisfied with their decision than participants with an hedonic shopping orientation. When variety is large and participants have an utilitarian shopping orientation, participants of the medium size group made significantly more counterfactuals (i.e. they would do it rather over again) than the large size group. Participants with an hedonic shopping orientation made more counterfactuals in the little variety group. An explanation could be that utilitarian participants would rather do it over again because there was too much choice and hedonic participants would do it over again and regret their choice because there was too little variety.

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Besides the interaction effects, additional analyses (see appendix 2) showed that there were strong main effects of shopping orientation and counterfactual thinking towards decision making behaviour and satisfaction. This means that the personal characteristics are strongly related with negative outcomes of choice, even without the assortment complexity taken into account. Participants who scored high on counterfactual thinking were for example significantly less satisfied and had significantly more difficulty, compared to participants who scored low on counterfactual thinking. It is therefore supposed that personality plays a larger role than the assortment complexity in explaining the choice overload effect.

6.2. LIMITATIONS AND FUTURE RESEARCH

Although this study provided clear results about choice overload, there are several limitations to this study. The hairstyling assortments used in this study contained familiar brands and existing products as in real assortments. It is therefore difficult to exclude preference. Participants were asked to purchase a product for a friend to decrease the chance that they would depend on earlier experience while making a choice. Participants did not get any information about the hair type of the friend, because that would make the decision process easier and would give them a direction which would close several items of the assortment out (i.e. if they knew that the friend had curls, they would only look at a few products). However, because participants did not know anything about the friend, they often took a certain friend in mind, and bought what that person always buys.

Suggestions for future research are a comparison study between an experiment with a familiar assortment and the same experiment with an unfamiliar assortment (i.e. non existing brands and no real products) to find out how important preference uncertainty is for the choice overload effect. It is also interesting to find out if participants who experience high preference uncertainty are more relied on cues like price tags and promotions and what the product fields are that participants have highest preference uncertainty.

Because assortment complexity goes beyond the assortment size, this research also included variety. However, variety is less concrete than size and harder to manipulate. Size can be divided in large, medium or small, but variety contains the number of different products, the similarity of the products, variety of the claims on the product. It is hard to decide what large variety and little variety exactly mean. Literature showed that little variety made assortments look larger then they are, so this was used to check if variety was good manipulated. But is this a good way to measure it? Little about this is known. Moreover, literature is not consistent about which one, little or large variety, is



causing more choice overload. Results of this study are also not consistent. In some cases large variety seems to lead to more choice difficulty and the other time little variety is causing more difficulties. That most results were found with size and not with variety does not necessarily mean that variety does not play a role within the assortment complexity.

When it comes to size, other studies only used small and large assortments. This study choose for a medium assortment as well, to find out what happens in the middle. When taking a closer look at the interaction effects, sometimes there was a significant effect between large and medium and sometimes between medium and small. It does not always make sense why sometimes the one size group is significant and the other is not. Especially the medium assortment group was not always very predictable. Future research can be done to investigate how these assortment sizes work. Perhaps a more qualitative study, to find out how individuals feel about choosing from different assortment sizes.

A shortcoming of this research is that it was difficult to create a real decision process. In this study was chosen for a product that people would not want to test or smell in the store, like shower gel. However, also with these kind of products, people normally would grab a product, read it, perhaps read the back, put it back and take a different one. In this research participants could only see the products and were not able to read the back or touch the products. Some of the products were also better readable than others. This could have influenced the results and could have made the visual aspect more dominant in the decision making process than it would normally be. Moreover, density in a store (i.e. people or objects) normally influences decision behaviour as well, just as price would be an important factor in deciding. These factors were not taken into account in this study. This study could have led to different outcomes than other experiments, because it has measured cognitive preferences instead of actual behaviour like for example in the experiment of lyengar & Lepper (2000).

Future research within drug stores can try to better simulate the decision making process so that people can touch and read the different products. A more time consuming experiment is then advised, so that consumers can be asked about counterfactual thinking and regret after they bought and used the product. Then it is possible to investigate if there are significant differences between regret and satisfaction scores between the different conditions based on assortment complexity. It is also possible to conduct this research in a more easy to conduct field first, to find out how different factors are related. In a restaurant, people often have to choose from large menus and develop expectations about the chosen dish. An hour later they already know if their choice met their expectations and if they experience regret and would have chosen something else if they could do it over again. It is then interesting to examine the influence of the amount

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and variety of choices the restaurant offered towards regret, satisfaction and negative consequences. Outcomes can be translated into a research design within drug stores which is less easy to conduct because it is harder to simulate the original decision making process.

Finally, it is difficult to measure regret and negative consequences right after participants made a choice. Most people experience regret after testing the product. Expectation disconfirmation for example was difficult to measure, because participants normally would not know if a product meets their expectations until their friend tried it and likes it. Different previous experiments solved this to choose chocolate or other food as product, because then participants could taste it and counterfactual thinking and regret could be measured afterwards. However, assortments in drug stores are very interesting to do research in, because participants of the preliminary study revealed that they regret their choices in drug stores most, because of high costs and larger usage times than products from supermarkets. Participants of the focus group indicated that they experience more choice overload in drug stores than in supermarkets because of the higher risk.

Outcomes of the preliminary study showed that deodorant was not a very good product category to do research in, because participants were too brand loyal in this category and did not necessarily experience negative consequences because of choice overload here. A practical implication for companies is to know how the decision process for the consumers of the product categories they are active in works exactly. It is advised to do extensive target group analysis and not only collect demographics, but also include a few personality scales. If it becomes clear that many participants experience high choice uncertainty and difficulty within the category it is important to make the assortment more convenient for consumers. For example, lists with top 10 products or categorisation of products can work to get structure in large assortments and let assortments look less large. It could possibly lead to higher satisfaction and less negative consequences like choice deferral and regret.

An other interesting field to do research in is online shopping. Online advertisements are all about the largest amount of products the company is offering. A single search for dresses at *zalando.nl* will come up with 1500 dresses. A well known advantage of online shopping is that it is less time consuming , however there is so much choice that choice overload can occur easily.

Despite the fact that choice overload occurred when preference uncertainty was high, this study revealed that the absolute number of satisfaction was still highest in the large conditions. It seems that consumers like having more choice and take the time consuming process for granted. Participants of the preliminary study explained that it is

sometimes frustrating to spent five minutes on deciding which flavour of chips to buy, but it is at least just as frustrating to stand in a supermarket or drug store where they do not offer the product you are looking for. It is therefore not directly advised to companies to reduce their assortment.

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APPENDICES

APPENDIX 1: QUESTIONNAIRE

Beste lezer,

Met het invullen van deze vragenlijst help je mij afstuderen voor de master Marketing Communication aan de Universiteit Twente! Het onderzoek gaat over keuzegedrag op de winkelvloer, in dit geval de drogisterij.

Hoelang het duurt om de vragenlijst in te vullen is afhankelijk van jouw keuzegedrag, maar hou rekening met ongeveer 10 minuten.

Er zijn geen foute antwoorden. De gegeven antwoorden zijn tevens anoniem en zullen niet voor andere doeleinden worden gebruikt.

Alvast ontzettend bedankt voor je medewerking!

Chantal Nomden

SCENARIO (lees dit goed):

Een vriendin van je geeft vanavond een feestje en is erg druk bezig met alle voorbereidingen. Ze heeft je gevraagd of je op weg naar haar huis een korte stop bij de drogist kan maken. Ze heeft namelijk een hairstyling product nodig zodat ze haar haar goed kan stylen voor het feestje. Je bent aangekomen bij de drogist als je je bedenkt dat ze geen voorkeur heeft doorgegeven. Je besluit haar even te bellen, maar helaas kun je haar niet bereiken. Je loopt toch maar de winkel binnen om een product uit te kiezen.

Je staat nu voor het hairstyling assortiment om een product uit te kiezen.

NB: Niet alle producten zijn even duidelijk leesbaar en je kunt ook geen producten pakken om de achterkant te lezen. Dit is niet erg. Kies op basis van deze mogelijkheden



- 1.Dit assortiment geeft mij hoge verwachtingen van de kwaliteit van de producten (Helemaal niet mee eens Helemaal mee eens)
- 2.lk geloof dat deze winkel een goede expertise heeft op het gebied van hairstyling producten (*Helemaal niet mee eens Helemaal mee eens*)
- 3. Als ik dit assortiment zie, verwacht ik te kunnen vinden wat ik zoek (Helemaal niet mee eens Helemaal mee eens)
- 4.Op welke rij bevindt het product dat je gekozen hebt zich? (de bovenste rij is rij 1)
- 5.Op welke positie bevindt het product dat je gekozen hebt zich? (bijv. tweede van links)
- 6.Waarom heb je dit product gekozen?
- 7.Hoelang ben je voor je gevoel bezig geweest met het maken van de keuze?*Helemaal* niet lang Heel erg lang
- 8.Had je het gevoel dat je genoeg opties had om uit te kiezen? Veel te weinig opties - veel te veel opties
- 9. In hoeverre vond je het moeilijk een keuze te maken voor je vriendin?
- 10. In hoeverre kon je plezier beleven aan het uitzoeken van een geschikt product?
- 11.In hoeverre was je meer tijd kwijt met het uitzoeken van een product dan je normaal gesproken had gewild?

12.In hoeverre voelde je je gefrustreerd tijdens het maken van een keuze?

13. Twijfelde je tussen verschillende producten op het schap?

14. Hoe zeker ben je ervan dat je het goede product hebt gekozen?

15. Was je liever nog naar een andere drogist gegaan om te kijken wat ze daar hebben?

16.Ben je ervan overtuigd dat er bij een andere drogist nog betere producten liggen?

17.In hoeverre heb je het gevoel dat je spijt gaat krijgen van je keuze?

- 18.Als je een schatting doet (zonder terug te gaan naar de pagina), hoeveel verschillende producten stonden er dan op het schap?
- 19.Altijd als ik een keuze maak, ben ik nieuwsgierig naar wat er gebeurd zou zijn als ik anders had gekozen
- 20.Altijd als ik een keuze maak probeer ik informatie te verkrijgen over hoe andere mogelijkheden zijn uitgepakt
- 21.Als ik een keuze heb gemaakt die goed uitgepakt heeft, voelt het nog steeds als een verkeerde keuze als ik erachter kom dat er nog een betere optie was geweest
- 22.Als ik een beslissing heb gemaakt, kijk ik niet meer achterom
- 23.1k vind het moeilijk om te shoppen voor een vriend/vriendin
- 24.Als ik aan het shoppen ben, vind ik het lastig kleding te vinden die ik echt mooi vind
- 25.Een video huren of downloaden vind ik erg lastig. Ik heb altijd moeite de beste te vinden
- 26.lk ben groot fan van rankings (top 10 films etc.)
- 27.Vergeleken met andere dingen die ik kan doen, vind ik tijd besteden aan shoppen echt fijn
- 28.lk raak gefrustreerd als het shoppen voor mijn gevoel te lang duurt
- 29.1k shop niet omdat het moet, maar omdat ik dat zelf wil
- 30. Tijdens het shoppen koop ik geen andere dingen dan de dingen die ik nodig heb
- 31. Tijdens een shopping trip voel ik de opwinding van het vinden van het juiste product
- 32.lk raak teleurgesteld wanneer ik naar meer dan 1 winkel moet om alles te halen wat ik nodig heb
- 33.lk vind shoppen erg leuk, niet alleen voor de producten die ik misschien aanschaf.
- 34. Als een bezoekje aan de winkel snel voorbij is, voel ik me er goed over.
- 35.1k ben tevreden met de producten die ik net heb gekozen
- 36.Als ik het opnieuw mocht doen zou ik misschien toch een ander product kiezen

37.Hoe groot is de kans dat je in het echt was weggelopen uit de winkel omdat je niet kon kiezen?

38.Als achteraf blijkt dat ik het verkeerde product heb gekozen, dan komt dat doordat:

Er geen betere optie bij zat

Lk niet in staat was om een betere keuze te maken

Ik zou iemand anders aanbevelen zijn haarstylingsproducten bij deze winkel te kopen.

🗖 nee

🗖 ja

Als je mag kiezen tussen het ontvangen van jouw uitgekozen stylingsproduct of het verkrijgen van de waarde van jouw gekozen product, wat kies je dan?

Het product

Het geld

🗖 Leeftijd

U Woonplaats

Emailadres

Geslacht (controle vraag)

APPENDIX 2: ADDITIONAL ANALYSES OF MAIN EFFECTS VARIABLES

PREFERENCE UNCERTAINTY

Hypothesis: High preference uncertainty leads (compared to low preference uncertainty) to lower satisfaction

A one way between groups analysis of variance (ANOVA) was used to investigate the participants' satisfaction in the two different preference uncertainty groups. The ANOVA was statistically significant, indicating that participants with a high preference uncertainty (i.e. participants that were not familiar with the assortment) (M=5.06 ,SD= 1.214), were less satisfied with their choice than participants with a low preference uncertainty (M=5.55, SD=.946), F(1,255) = 12.830, p <0.001.

Hypothesis: High preference uncertainty causes (compared to low preference uncertainty) more difficulty during the process of making a choice

A one way between groups analysis of variance (ANOVA) was used to investigate the perceived choice difficulty between the participants who were familiar with the assortment and based their choice on experience, and the group with high preference uncertainty. The ANOVA was statistically significant, indicating that the group with high preference uncertainty (M=4.24, SD=1.31) experienced more difficulty during the decision making process compared to low preference uncertainty (M=3.73, SD=1.22), F(1,253) = 10.484, p=.001.

COUNTERFACTUAL THINKING

Hypothesis: A high score on counterfactual thinking results (compared to low counterfactual thinking) in higher choice difficulty

A one way between groups analysis of variance (ANOVA) was used to investigate the perceived choice difficulty between the group of participants who was familiar with the assortment and based their choice on experience, and the group with high preference uncertainty. The ANOVA was statistically insignificant, indicating that there was no statistical difference between the two groups on perceived choice uncertainty, which consists of store uncertainty, F(1,250) = .229, p=.633 and shelf uncertainty, F(1,254) = 1.936, p=.165.

Hypothesis: High counterfactual thinking results (compared to low counterfactual thinking) in lower satisfaction

A one way between groups analysis of variance (ANOVA) was used to investigate a direct effect of counterfactual thinking on satisfaction. In this way it is possible to test if Participants who score high on counterfactual thinking feel less satisfied with their choice compared to participants who score low on counterfactual thinking A division is made between people who scored high and low on the counterfactual thinking scale. ANOVA was statistically significant, indicating that participants with a high score on counterfactual thinking (M=5.12, SD=1.03), were less satisfied with their choice than participants with a low score on counterfactual thinking (M=5.46, SD=1.16), F(1,253) = 6.023 p=.015.

VARIETY SEEKING

Hypothesis: No variety seeking behaviour results (compared to variety seeking behaviour) in high choice difficulty & high choice uncertainty

To test if no variety seekers experience more choice difficulty and choice uncertainty with choosing from complex assortments than variety seekers, a one way between groups analysis of variance (ANOVA) was used to investigate perceived choice difficulty and choice uncertainty between variety seekers and no variety seekers. The ANOVA was statistically insignificant for choice difficulty (F(1,249)=1.938, p=. 165) and choice uncertainty, which contains store uncertainty (F(1,249)=1.415, p=.235) and shelf uncertainty (F(1,250)=.134, p=.715).

Hypothesis: No variety seeking behaviour results (compared to variety seeking behaviour) in lower satisfaction

To test if no variety seekers are less satisfied with their choice compared to variety seekers, a one way between groups analysis of variance (ANOVA) was used to investigate the relation of variety seeking behaviour on satisfaction. The two groups existed of people who scored high and low on variety seeking behaviour. ANOVA was statistically insignificant, indicating that both groups are equal and there is no reason to assume that no variety seekers are less satisfied with the decision than variety seekers, F(1,51)=1.125, p=.290.

SHOPPING ORIENTATION

Hypothesis: An utilitarian shopping motivation results (compared to an hedonic shopping orientation) in higher choice difficulty & higher choice uncertainty

It is tested if participants with an utilitarian shopping orientation experience more choice difficulty during choosing from complex assortments than participants with an hedonic shopping orientation. A one way between groups analysis of variance (ANOVA) was used to investigate interaction between shopping orientation and assortment complexity (variety * size) on choice difficulty. The ANOVA was statistically significant, indicating that there is an interaction effect between the three variables towards choice difficulty. F (2,227)=5.422, p=.005. In fig. 16, variety is plotted on the x-axis and choice difficulty on the y-axis. Size is shown with separate lines and there is a plot for the utilitarian group and one for the hedonic group. The plots show that individuals with an utilitarian shopping motivation perceive more choice difficulty than individuals with an hedonic shopping motivation in general. Moreover, they perceive more difficulty with making a choice in the assortments with large varieties. However, individuals with an hedonic shopping orientation seem to have more trouble with little variety in large assortments.



Fig 16. Interaction effect between shopping orientation, variety and size towards choice difficulty

The difference between the hedonic shopping orientation and the utilitarian shopping orientation in choice difficulty is also significant. A one way between groups analysis of variance (ANOVA) measured the main effect of shopping orientation on perceived choice difficulty. F(1,250) = 6.555, p=.011. The extent of which an individual perceived choice difficulty is significantly higher in the utilitarian group (*M*=4.19, *SD*=1.269) than in the hedonic group (*M*=3.78, *SD*=1.290).

Participants with an utilitarian shopping orientation experience more choice uncertainty during choosing from complex assortments than participants with an hedonic shopping orientation. A one way between groups analysis of variance (ANOVA) was used to investigate the perceived choice uncertainty between the group with an utilitarian shopping orientation and the group with an hedonic shopping orientation. The ANOVA was statistically insignificant for choice uncertainty, which contains store uncertainty (F (1,250)=1,717, p=.191) and shelf uncertainty (F(1,251)=.398, p=.529).

Hypothesis: An utilitarian shopping orientation results (compared to an hedonic shopping orientation) in lower satisfaction

Participants with an utilitarian shopping orientation are less satisfied with their choice compared to participants with an hedonic shopping orientation. A one way between groups analysis of variance (ANOVA) was used to investigate the relation of hedonic/ utilitarian shopping orientation on satisfaction. ANOVA was statistically significant, indicating that participants with an hedonic shopping orientation (M=5.52, SD=1.044) are more satisfied with their choice than participants with an utilitarian shopping orientation (M=5.11, SD=1.16), F(1,252)= 8.526, p=.004.