

**Purchasing for Someone Else in a B2B Context: Joint Effects of
Accountability and Choice Overload**

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Dipl.-Kff. Kathrin Schaffrath

Berichter: Univ.-Prof. Dr. oec. Daniel Wentzel
Univ.-Prof. Dr. rer. pol. Hartwig Steffenhagen

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Für Sebastian

VORWORT

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ABSTRACT

A considerable volume of research has investigated the positive, as well as negative, effects of large assortments from a consumer perspective. Despite Business-to-Business suppliers typically offering very large assortments though, similar inquiries have yet to be made in the context of professional purchase decisions. Thus, it is unclear if professional buyers suffer from the same negative effects (particularly choice overload), as consumers do, for example, reduced satisfaction when having to make a choice from a large assortment. The fact that a company's buyer is accountable for a purchasing decision is especially salient in differentiating professional buyers from consumers. Obviously, because buyers have a certain job or, more specifically, a role located somewhere in the hierarchy of a company, they will typically have a boss evaluating their job performance and, thus, holding them officially accountable.

Furthermore, research has long postulated that a typical Business-to-Business purchase decision involves more than one person, since such decisions are made in a so-called buying center. This means that people, who do not hold a higher position in the hierarchy than the buyer, may influence the buyer's purchase decision. For instance, user preferences often play an important role because users will have to work with the product purchased by the buyer and, in many cases, have relevant knowledge gained from experiencing a certain product class. However, in most companies, these users do not have the hierarchical position to evaluate the buyer's performance but can still have a strong influence on the buyer. As Doney and Armstrong (1996) postulate, "enough complaints from [the users] and a buyer may soon be out of a job" (p.58). This latter form of accountability is classified as informal.

Having identified this gap in research, this dissertation seeks to offer a contribution to the field by investigating whether negative effects from large assortments, specifically choice overload, exist in a Business-to-Business context, with a particular focus on the joint effects of assortment size and accountability. In addition, this dissertation investigates the effects of color-coding, i.e., using a certain color as a code for a certain attribute characteristic regarding the most important attribute(s) of a product. This is applied as a possible means of reducing negative effects on buyer satisfaction

which may exist in some circumstances when the buyer is choosing from a large assortment.

To achieve these goals, a conceptual framework based on various research streams, e.g., on choice overload, the concept of the buying center and accountability, is developed and the effects investigated in three experimental studies. In detail, the conceptual framework postulates that informally accountable decision makers suffer from choice overload, with the result that satisfaction with their own decision process will decrease when they have to choose from large assortments. This effect is mediated by the justifiability of the decision, with informally accountable decision makers experiencing reduced justifiability of their decision when choosing from large assortments which, in turn, reduces their satisfaction. Moreover, this negative effect will be reduced when color-coding is applied to the assortment. These results have important implications for theory and practice regarding the ways assortments should be presented to decision makers in a Business-to-Business environment.

ZUSAMMENFASSUNG

Eine Vielzahl von Forschungsarbeiten beschäftigt sich mit den positiven sowie negativen Auswirkungen großer Sortimente aus Sicht von Konsumenten. Überraschenderweise gibt es keine korrespondierenden Untersuchungen im Bereich professioneller Beschaffungsentscheidungen, obwohl Business-to-Business-Lieferanten typischerweise sehr große Sortimente anbieten. Es ist daher unklar, ob professionelle Einkäufer unter denselben, negativen Auswirkungen wie Konsumenten, d.h. „Choice Overload“, leiden und somit ihre Zufriedenheit sinkt, wenn sie aus großen Sortimenten eine Kaufentscheidung treffen müssen. Der entscheidende Unterschied zwischen der Kaufentscheidung eines Einkäufers im Vergleich zu einem Konsumenten ist die Tatsache, dass ein Einkäufer im Sinne seiner Tätigkeit für ein Unternehmen Verantwortung für seine Entscheidung gegenüber anderen übernehmen muss. Da ein Einkäufer im Rahmen seiner Anstellung bzw. Rolle im Unternehmen an einer bestimmten Stelle in der Hierarchie angesiedelt ist, hat der Einkäufer typischerweise einen Vorgesetzten, der seine Arbeitsleistung beurteilt. Er besitzt daher ein formales Verantwortungsgefühl. Darüber hinaus hat die bisherige Forschung vielfach festgehalten, dass an typischen Einkaufsentscheidungen im Business-to-Business mehr als eine Person beteiligt ist, da diese Entscheidungen in einem sogenannten „Buying Center“ getroffen werden. Das bedeutet, dass Personen, die in der Unternehmenshierarchie nicht höher gestellt sind als der Einkäufer, dennoch Einfluss auf seine Kaufentscheidung nehmen können. Beispielsweise sind Nutzerpräferenzen häufig sehr wichtig, da die Nutzer diejenigen sind, die später mit dem Produkt arbeiten müssen, das der Einkäufer gekauft hat. In vielen Fällen besitzen sie relevantes Wissen durch frühere Erfahrungen mit einer bestimmten Produktklasse. Obwohl Nutzer in den meisten Unternehmen nicht in der hierarchischen Position sind, um die Arbeitsleistung eines Einkäufers zu bewerten, können sie trotzdem einen gravierenden Einfluss auf den Einkäufer ausüben. Doney und Armstrong (1996) halten in diesem Zusammenhang fest: „enough complaints from [the users] and a buyer may soon be out of a job“ (S.58). Die hier zu Grunde liegende Form des Verantwortungsgefühls wird als informell kategorisiert.

Ziel dieser Dissertation ist es, die oben beschriebene Forschungslücke zu schließen, indem sie überprüft, ob negative Effekte bedingt durch große Sortimente, d.h.

„Choice Overload“, auch im Business-to-Business-Bereich existieren. Im Fokus stehen dabei die kombinierten Effekte der Sortimentsgröße und des Verantwortungsgefühls. Des Weiteren beschäftigt sich die vorliegende Dissertation mit den Auswirkungen von Farbkodierungen in dem Fall, dass für das oder die wichtigsten Produktmerkmal(e) einer bestimmten Merkmalsausprägung je eine bestimmte Farbe zugeordnet wird. Dies wird als mögliches Mittel zur Reduktion negativer Effekte auf die Zufriedenheit von Einkäufern angewendet, die unter bestimmten Umständen auftreten können, wenn Einkäufer eine Entscheidung für ein Produkt aus einem großen Sortiment treffen müssen. Um diese Ziele zu erreichen, wird ein konzeptionelles Modell entwickelt, das auf bestehenden Forschungsrichtungen, bspw. aus den Bereichen von „Choice Overload“, dem Konzept des „Buying Centers“ sowie dem Verantwortungsgefühl, aufbaut und welches empirisch mit Hilfe von drei experimentellen Studien untersucht wird. Im Detail postuliert das Modell, dass informell verantwortliche Entscheidungsträger unter „Choice Overload“ leiden, d.h. ihre Zufriedenheit mit ihren eigenen Entscheidungsprozessen sinkt, wenn sie auf Basis großer Sortimente entscheiden müssen. Dieser Effekt wird mediiert durch die Einfachheit mit der die entsprechende Entscheidung aus Sicht des Entscheidungsträgers gegenüber anderen begründet werden kann, so dass informell verantwortliche Entscheider, die aus großen Sortimenten etwas auswählen müssen, eine gesenkte Begründbarkeit ihrer Entscheidung erleben, die dann wiederum zu einer geringeren Zufriedenheit führt. Weiterhin kann dieser negative Effekt abgeschwächt werden, wenn Farbkodierungen auf das entsprechende Sortiment angewendet werden. Diese Effekte haben wichtige theoretische und praktische Implikationen für die Art, wie Sortimente für Business-to-Business Entscheidungsträger präsentiert werden sollten.

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1 Introduction

1.1 Problem Orientation

Imagine you have recently started to work for a new employer and your profession is buying materials for use in a hospital. On one of your first days, your boss walks over to ask you to purchase surgical suture material. He informs you of some key facts about the application of the material, before leaving the responsibility with you. Since you do not have experience with the special kind of material that is needed, you decide to search the Internet for information and look into some online product catalogues. However, you are puzzled to see that you will have to make a choice from hundreds of alternatives because of the huge assortments various suppliers offer.

After sitting at your desk trying to determine what you should do next, you decide to take a short break and get a coffee. While preparing your coffee in the kitchen you strike up a conversation with one of the doctors by coincidence. Surprisingly, she is one of the surgeons who will be using the material you have been asked to purchase. You wonder if it is a good idea to ask her about her preferences and knowledge of the material and choose to do so. Interested and happy to help, the surgeon tells you all the relevant details from her own perspective.

Back at your desk, you start searching for products again, now feeling that you can make a good choice for the surgeon who will be operating with the material. However, because the number of alternatives you have to scan through to find the few products that fit your requirements is still overwhelmingly high, you soon become frustrated sifting through all these products.

When you consider this situation of the buyer in a hospital who is about to purchase medical products that will be used by a doctor, and who has to make a choice from an assortment consisting of hundreds of products – which product will she choose and will the user be satisfied with it? Does she want to incorporate the surgeon's preferences at all? Will she be afraid of making a wrong decision from the surgeon's perspective or will she merely think about how her boss will evaluate her purchase decisions, e.g., consideration of factors like low costs? Finally, will she be satisfied with her choice and the offered assortments?

From the Business-to-Consumer (B2C) marketing literature, it is well known that consumers choosing from large assortments often suffer from so-called “choice overload” (see, e.g., Iyengar & Lepper 2000). This means that they are overwhelmed by the number of alternatives offered in large assortments and, therefore, experience cognitive overload, which can lead to frustration and confusion. As a result, consumers are no longer able to engage in detailed trade-offs between different variants from one product line or between different brands (Menon & Kahn 1995; McAlister & Pessemier 1982). Consequences for decision makers are, amongst other things, decision delay or even deferral, as well as reduced satisfaction, e.g., with the offered assortment or, after the choice, with the product itself (see for example, Chernev 2003b; Iyengar & Lepper 2000).

While these findings increase understanding of consumer reactions to large assortments, corresponding studies in the B2B sector are largely absent. Only Lakotta’s (2008) investigation made a first step in this direction by investigating the related construct of customer confusion in a B2B service setting. However, because Lakotta (2008) examined choice set formation processes and their consequences on choosing an optimal supplier, but not, for instance, decision makers satisfaction with their purchase decision, it is not clear in any degree of detail how B2B decision makers experience variety.

This amounts to a significant research gap for at least two reasons. First, in B2B firms, large assortments are the norm rather than the exception. Therefore, it seems likely that B2B decision makers will also suffer from choice overload or a similar phenomenon. However, research has also shown that consumers appreciate large assortments under certain circumstances. For example, when consumers have a clear idea of their ideal product in mind, they are highly satisfied with large assortments because the probability of finding a product matching their preferences is higher when more alternatives are offered (Chernev 2003b). It could, of course, be possible that B2B buyers react in a similar way. Research has also shown that the way in which assortments are presented makes an important difference to consumers (see, e.g., van Herpen & Pieters 2007; Diehl 2005; Morales et al. 2005; Broniarczyk, Hoyer & McAlister 1998). For instance, van Herpen and Pieters (2007) revealed that people do not experience strong negative consequences when choos-

ing from large assortments that are color-coded. By applying color-coding, the characteristics of the most important attribute(s), e.g., different flavors of a product are given certain colors, so that consumers can easily see which products are worth trading off against each other and which are not. Again, no similar studies for the B2B context exist, making it unclear how professional buyers would react to techniques like color-coding. As a consequence of this paucity of research, it is worth investigating not only reactions to assortment sizes, but also certain forms of assortment presentation.

Second, industrial buyers face a very different decision and purchase process than typical consumers, in that the former are usually held accountable for their decisions and any consequences they have. Accountability refers to a person's (implicit or explicit) expectation that she will be called to justify her actions at some point in time and/or give reasons for her decisions (Lerner & Tetlock, 1999). In a typical B2B purchase process, a professional buyer has to make a purchase decision for a product that will be used by someone else. Often, a purchase decision is made in a so-called buying center, which refers to several people with different roles and obligations having to conduct a purchase decision together. This is not to say that these different people are on the same hierarchical level, but rather that they have *some form* of influence on the purchase decision. The most important roles in a typical buying center are the buyer and the user of the product (Choffray & Lilien 1978; Sheth 1973). A buyer deciding on a product will, in most cases, feel accountable for her decision, as she is normally not the user of the product purchased. Put differently, imagine a person whose job it is to make the right decision when purchasing products for other people, which she herself will never use. The question arises, what will happen if she is offered a large range of almost identical products (i.e., substitutes) to choose from?

Despite the fact that accountability has been recognized as a key construct in understanding industrial buying processes, there is no research examining how accountability affects reactions to different assortments. In the context of B2B purchase decisions, two kinds of accountability can be distinguished: official and informal accountability (Doney & Armstrong 1996). Official accountability is based on hierarchical structures in an organization and means that buyers anticipate having to justify

their decisions to others who “possess the legitimate authority to evaluate their job performance” (Doney & Armstrong 1996, p.58). In other words, employees expect to give explanations and justifications to their bosses. While official accountability is easy to imagine, informal accountability might, at first glance, appear unusual in a B2B setting. However, Doney and Armstrong (1996) were able to show that informal accountability exists in a large number of firms. It took the form of buyers who felt a sense of being evaluated by subordinates, colleagues or peers who did not possess any legitimate authority over them, and who they wanted to please in some way. Thinking back to the example above of a buyer in a hospital, the buyer would feel accountable for the suture material she buys for the surgeons working in the hospital, i.e., the users of the product. The surgeon the buyer speaks to is neither her boss nor in a hierarchical position to evaluate her job performance, but still she wants to make a purchase that fulfills this surgeon’s needs and make a decision that satisfies the surgeon. Users, such as the surgeon in this example, can be very powerful and, as Doney and Armstrong (1996) postulate, “enough complaints from them and a buyer may soon be out of a job” (p. 58).

Importantly, research by Polman (2012) showed that accountability in general and the number of options offered interact to effect the satisfaction of decision makers by generating choice overload. Nonetheless, Polman (2012) did not distinguish between official and informal accountability or investigate purchase decisions, but rather choices of university courses. He therefore used a student sample and it remains unclear how far these effects hold true for B2B decision makers. In summary, it is worthwhile examining these effects in detail.

Against this background, the purpose of this dissertation is to gain a better understanding of the reactions of industrial buyers to exceedingly large assortments. First, it is necessary to show how different types of accountability affect initial evaluations of large assortments and more down-stream consequences, such as buyer satisfaction. Second, assuming that a large number of B2B firms cannot, or do not want to, reduce the size of their assortments, it is important to examine how buyer reactions to large assortments can be improved through certain techniques of assortment presentation, specifically color-coding. Ultimately, this research seeks to improve the

understanding of the joint effects of choice overload and accountability and to extend the existing research on color-coding.

1.2 Research Question and Structure of this Dissertation

The purpose of this dissertation is to show that choice overload can exist in B2B purchase decisions when choices from large assortments have to be made. Furthermore, it seeks to demonstrate that color-coding is a possible method of reducing negative effects of large assortments on decision makers. Thus, the joint or, in other words, interactive effects of assortment size, or, respectively, assortment presentation and accountability, are investigated with three empirical studies. The focal construct is the satisfaction of the decision makers with their own decision making process, since this project is interested in the perspective of the buyer. The dissertation also seeks to reveal the underlying psychological construct that leads to reduced satisfaction when the buyer has to choose from a large assortment, i.e., justifiability is investigated as a mediator. For the purpose of the empirical investigation of the described effects, a conceptual framework is developed that builds on existing literature from the fields of general effects of variety on decision makers and especially choice overload, the field of B2B purchase decisions, research on accountability as well as the joint effects of accountability and assortment sizes and research on assortment presentation. More specifically, this dissertation aims at answering the three following research questions:

1. Does choice overload exist in B2B settings, where buyers are not users of the products they purchase but are held accountable for their choices?
2. Do different forms of accountability, i.e., informal and official accountability, have different effects on the decision satisfaction of a buyer, especially when choices from large assortments have to be made? In other words, do large assortments affect the satisfaction of buyers subject to informal accountability differently from those held officially accountable? And if so, what is the underlying psychological mechanism that drives these effects?

3. How can decision satisfaction be improved when decision makers experience low levels of satisfaction arising from the joint effects of choice overload and accountability? Put differently, is color-coding a promising means of enhancing decision satisfaction in these circumstances?

The dissertation is structured as follows. Chapter 1 gives an introduction to the topic and proposes several research questions to be investigated in the course of the dissertation. Chapter 2 reviews the relevant literature from several research streams and concludes by offering a conceptual model that integrates these different fields. On this basis, several hypotheses are developed for empirical investigation in Chapter 3. To empirically prove these hypotheses, a total of three experiments are conducted. These studies use different samples (B2B buyers and B2C decision makers), as well as different focal assortments and products, to broaden the theoretical and practical impact of the results. Details on the design, methods and results from the experiments are documented in Chapter 4. Finally, Chapter 5 concludes by summarizing these results, discussing their implications for research and management, while also acknowledging the limitations of the studies, before identifying promising directions for future research. This structure is summarized in Fig. 1-1.

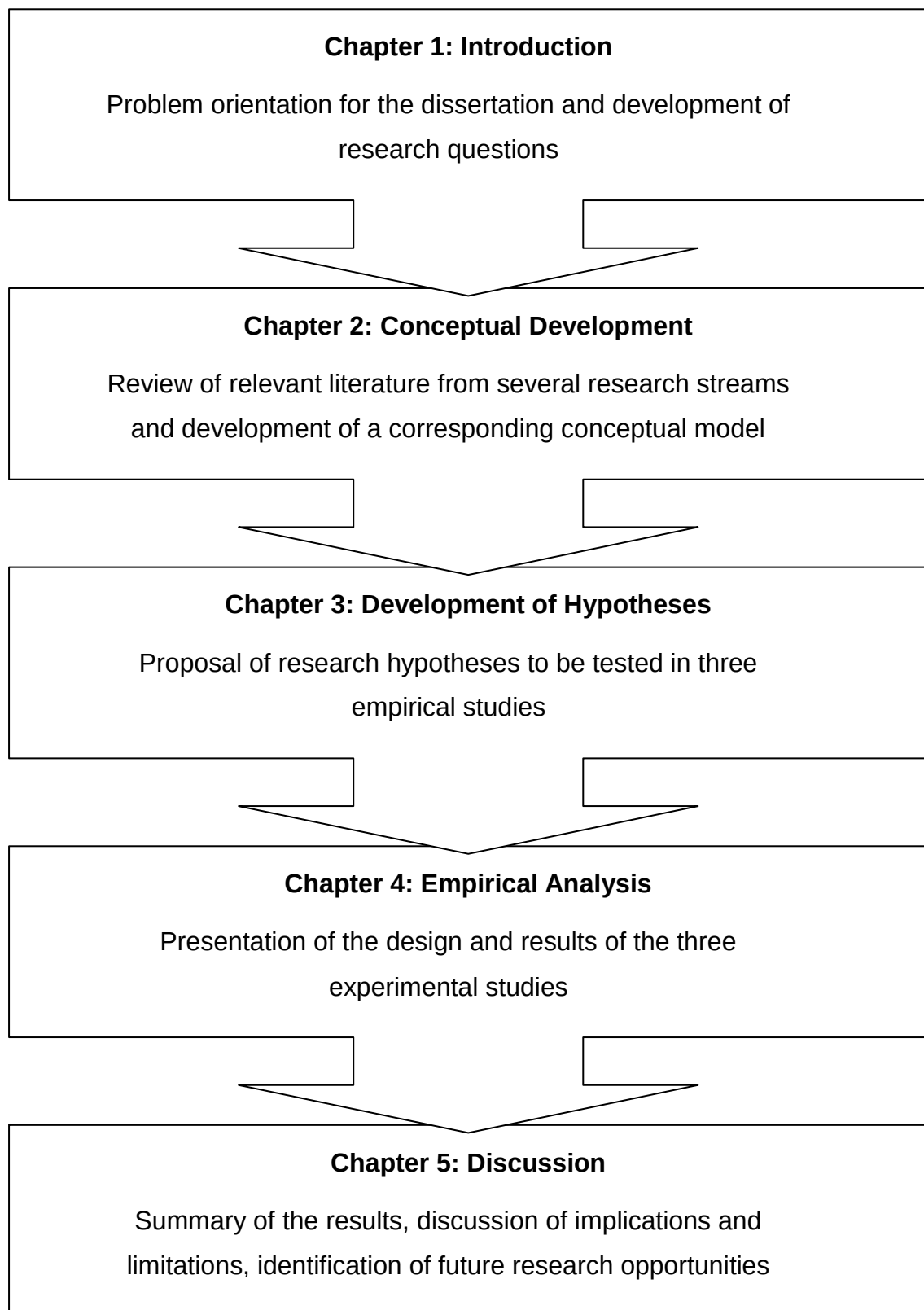


Fig. 1-1: Structure of this dissertation

2 Conceptual Development

This chapter provides a review of selected literature from the fields of variety seeking and choice overload, business-to-business purchase processes, accountability, including the joint effects of choice overload and accountability and different forms of assortment presentation. By combining contributions within each of these research streams a conceptual model for the dissertation is ultimately developed, followed by the construction of hypotheses for the empirical research in chapter 3. Importantly, the review of relevant literature in this chapter is not intended to offer a complete overview of all related research results and/or connected research streams, but instead, to give a focused summary of the most important findings from prior research which has particular relevance for the research questions at hand.

2.1 Research on the Effects of Assortment Size

The following sections will review literature on the effects of different assortment sizes, specifically, small versus large assortments, from a B2C perspective, since there is a dearth of work from the B2B perspective. Section 2.1.1 will summarize important findings on the positive effects of large assortments on decision makers, before explaining the negative effects in section 2.1.2

2.1.1 Positive Effects of Variety

An extensive volume of research in the fields of marketing and psychology has analyzed the effects that the number of alternatives (low versus high) to choose from has on consumer behavior (for literature reviews see Chernev 2011 and also McAlister & Pessemier 1982). What seems quite intuitive and well known from previous research is that an assortment offering plenty of variety appears attractive to consumers at first glance. A high number of options to choose from are appealing because consumers can anticipate finding their favorite product within the offered options (see, for example, Iyengar & Lepper 2000; Chernev 2003a).

Occasionally, consumers also directly use large assortments to seek variety. There are numerous reasons for this, including: the need for stimulation or a desire to try out something new (Menon & Kahn 1995), a keenness to show others that an open-

mind is being adopted by a consumer (Ratner & Kahn 2002; Ariely & Levav 2000), an uncertainty about their own future consumption preferences when buying several products for future consumption (Simonson 1990). Based on Givon (1984), it is assumed that variety seeking does not have to depend on a change in one's actual preferences. That is, a consumer can still have the same favorite brand or product, but switch from it in a given situation. For example, imagine a person that prefers coffee to tea. Right after consuming one, or perhaps several, cups of coffee, she will choose a cup of tea not because coffee is no longer her favorite, but simply because she wants to drink an alternative at that moment (for a similar example with soft drinks see Menon & Kahn 1995).

Set against this background, it becomes clear that in cases where consumption is repeated several times, consumers do not solely choose their favorite alternative, but also other options. This can be explained on the basis that consumers are unsure of their own future preferences, as mentioned before. Consumers choose more varied options and not only their favorite product when they have to decide what to consume in a certain future period, e.g., the whole next week, at one single shopping trip. In other words, simultaneous choices for sequential consumption increase the number of different products from the same category that a consumer chooses (Simonson 1990). Furthermore, variety is sometimes incorporated into decisions because, in retrospect (i.e., when remembering the situation later), consumers value a varied consumption sequence more than one with less variety. It is important to note that consumers in this case do not move away from their favorite because of satiation. The switch happens, although consuming a higher number of alternatives reduces the pleasantness of the experience, while being in the situation of consumption. Put differently, when a clear favorite exists and an intended switch occurs, only the memory of the situation, not the consumption experience itself, is influenced to be more pleasant. Still, this can sometimes be a strong enough reason for a consumer to switch products or brands (Ratner, Kahn & Kahnemann 1999).

What is the downstream psychological mechanism behind this behavior? Why do people switch away from products they are satisfied with, and which are perhaps even their favorite? As already mentioned, sometimes people have a need for stimulation. How strong this need is, or in which situations consumers explicitly expe-

rience this need, e.g., by feeling bored, depends on their “optimal level of stimulation (OSL)” (Menon & Kahn 1995, p. 286). Stimulation, in turn, can stem from choosing certain objects and/or the choice situation itself, for example, how stimulating the assortment offered in a supermarket is perceived to be by a certain person. As a personal optimum exists, stimulation through varying product choices individually and stimulation through the number of products offered by a producer or retailer are compensatory in nature. This means that a shopping situation, which is stimulating because a greater variety is offered by a retailer for example, can lead to more stable brand choices and, vice versa, more stable brand choice can flow from a larger number of options offered (Menon & Kahn 1995). It ought to be born in mind, however, that situations do not only exist where stimulation appears to be low or moderate, but also where stimulation is too high, even for those consumers with a high OSL. Under these conditions, consumers will try to avoid being confronted with the source of stimulation, be it a certain product category or supermarket shelf, or even a whole store, perhaps by avoiding supermarkets that offer too much variety (Raju 1980).

That said, it seems intuitive to limit the number of options offered to a certain amount, while still giving consumers the opportunity to vary their choices. In that vein, Morales et al. (2005) investigated the effects of limiting the number of options while still offering a large assortment. By offering consumers the possibility to use an online filter to reduce the number of options they see from an originally large assortment, they ensured that consumers still had a high number of variants to choose from without having to scan through all of the products. Although consumers were allowed to see all options if they wanted, taking a shortcut to the sub-category of products they were looking for, their satisfaction declined when products were filtered. Furthermore, they perceived the assortment as a whole to offer less variety, although the overall number of options was held constant in comparison to a control group, which just saw the whole assortment without any filtering. Ultimately then, the attractiveness of the assortment was lowered by the filter. This is especially interesting because Morales et al. (2005) used a large assortment offering 32 options to choose from. The next section will proceed to outline the negative effects of variety, before section 2.4 provides more details on the effect of filters and other forms of presentation for large assortments.

2.1.2 Negative Effects of Variety

All of the results discussed above lead to the conclusion that offering more variety has a negative, as well as positive, outcome. Supporting this, a famous study by Iyengar and Lepper (2000, Study 1) demonstrated that shoppers, when confronted with a promotional booth in a supermarket which offered jams to try, displaying either twenty four or six variants of jam, a significantly higher number of people stopped for the larger assortment. However, the same study revealed that this pattern reversed when it came to actual purchasing behavior, so that only 3 % of consumers who were offered the larger number of options purchased one of the jams of the focal brand, while almost 30 % of shoppers offered only six alternatives bought a jam. So, high variety of an assortment can be attractive when choosing *between* assortments, but not always when it comes to choosing among products *within* a certain assortment. At first glance, offering a large assortment may appear advantageous, but firms ought to be cautious of the effects that can stem from the number of variants they offer and situations where variety has negative effects on consumers.

Regarding the definition of boundary conditions that shed light on circumstances, where (and where not) the offered variety has positive effects, Chernev (2003b) was able to show a difference in the consumer's perception of assortment size depending on the preference structure of the particular consumer. A consumer holding well-defined preferences, or, in other words, has an available ideal point regarding the attributes of a product, enjoys choosing from a larger assortment and can form stronger preferences from this choice and, thus, appreciates variety. However, a consumer who has uncertain preferences and does not actually know which combination of attribute characteristics best fulfills her needs, will be more satisfied when choosing from a smaller assortment. In the latter case, the consumer is likely to experience cognitive overload when required to choose from many alternatives (Chernev 2003b).

This so-called choice overload, where the consumer has too many options to choose from, leading to cognitive overload, can have different effects, often referred to as overchoice effects (see, e.g., Gourville & Soman 2005). These effects can take various forms. For instance, a consumer can end up delaying her decision for a certain amount of time, or even totally desisting from buying one of the offered

products. Alternatively, in the case where the buyer makes a final choice and purchases at product, she can still feel unsatisfied and come to regret her decision afterwards (see Chernev 2003b; Iyengar & Lepper 2000). These effects often stem from (anticipated) regret, meaning that when a consumer has a very large number of alternatives to choose from, she feels that she cannot be sure to make the right decision. By choosing one option, she has to reject all other options at the same time, which makes her feel uncomfortable; indeed, she might be truly afraid of choosing the wrong product. Even more so in the case of a large assortment, the buyer has to reject a very high number of seemingly good options, which can increase her regret when choosing a certain alternative, independent of the true value of the chosen alternative, i.e., if she has chosen the best option or not (Iyengar & Lepper 2000; Som & Lee 2012). As explained earlier, this underlying process is especially relevant for decision makers with uncertain preferences (Chernev 2003b).

To summarize, it is necessary to distinguish between not only the different motivations for consumers strongly favoring variety, and thus a large assortment, but also the different kinds of decision makers. When a person knows exactly what kind of product she wants to buy, it is much easier for her to make trade-offs between existing alternatives and pick a good, if not ideal, product than in cases where she is unsure about what an ideal alternative would actually look like.

Furthermore, to assess alternatives easily, they have to be comparable, or, in other words, alignable, in the first place, meaning that all options will have different attribute characteristics, but in total share the same attributes or, in other words, products can be compared along one dimension (Gourville & Soman 2005). If attributes as a whole have to be compared in a way that one can choose an attribute only by sacrificing another and thus requiring trade-offs between the dimensions, the assortment is classed as non-alignable. An example of an alignable assortment would be a comparison amongst several car audio systems that all have the same features, such as USB connection, and only differ in their physical placement of the USB port. Comparing, however, different game consoles on the basis of exclusive features (i.e., one game console offers one feature and the other game console another feature instead) would be a non-alignable assortment. In the latter example, the consumer has to decide if she wants a game console that can play Blu-ray discs *or* a game

console that has voice control. Thus, her decision for one console and the corresponding feature, e.g., voice control, is ultimately a decision against the other feature, e.g., playing Blu-rays.

Both cognitive overload and anticipated regret are enhanced when an assortment is non-alignable, making overchoice effects likely (Gourville & Soman 2005). Regarding satisfaction with the choice *process* (not the outcome, i.e., the chosen product), or so-called decision satisfaction, alignable options enhance satisfaction, while non-alignability decreases satisfaction. The same pattern as for non-alignable assortments holds true for a limitation in the available number of options from a given set with equally attractive options. This is due to the ease of comparison when the given options are alignable and, contrastingly, the complexity of comparison for non-alignable alternatives, as demonstrated by Zhang & Fitzsimons (1999). However, in the study just cited, the authors only used relatively small numbers of options to choose from (e.g., three brands with ten attributes each). As a consequence, their results are not clear regarding how limiting the number of options would affect satisfaction when the assortment is larger. This point will be returned to in greater detail in section 2.4.1.

Similar to Gourville and Soman's (2005) study, Chernev (2005) showed that the likelihood of purchase for products from non-complementary assortments is higher than from complementary assortments. The definition of complementary is similar, though not identical, to non-alignability, since options are characterized by having features from different dimensions, while a non-complementary assortment would offer trade-offs along one dimension, i.e., among the different characteristics of one attribute, which amounts to an alignable assortment. The difference regarding the definition lies in the point that non-alignable products are distinguished by having one feature and, at the same time, not having all the other features by which other products are characterized (Gourville & Soman 2005). Complementary assortments, however, offer several different combinations of these features. By way of illustration, a car offering sport seats *or* a leather steering wheel would be characterized as having non-alignable features, while it would be characterized as complementary when it would principally be possible to order a car with both features in a certain package of features, where perhaps another package combines other features.

Importantly, Chernev (2005) revealed that consumers were more likely to defer a choice from a large assortment when it was characterized by complementary options compared to an assortment characterized by non-complementary options. Therefore, the choice can be seen as being more difficult, mirroring the results of Gourville and Soman (2005) in regards to non-alignable assortments.

All studies mentioned above focus on decisions in a business-to-consumer (B2C) context. The question arises as to how far, if at all, these results can be transferred to a business-to-business (B2B) setting. The next section will first explain typical B2B purchase processes and compare these to a B2C context, while focusing on purchase decisions from large assortments and possible overchoice effects. Second, findings on the factors important in influencing B2B purchase decision will be summarized, including, for example, the risk of making a certain purchase.

2.2 Research on Business-to-Business Purchase Processes

Regarding consumers, Holbrook and Hirschman (1982), in a heavily cited article, have advanced that constructs like emotions, feelings, and even fantasies, can drive consumer behavior under certain conditions, for instance when buying a piece of fashion clothing or a ticket to a musical show. It is obvious that these contexts differ considerably from purchasing situations in a B2B context which involve a professional buyer who may have to buy, for example, machine tools. Nonetheless, in both B2C and B2B, there can be situations where decisions are mostly made due to cognitive analyses and rational reasons, along with an extensive information search, where people base their choices on rational reasons (Holbrook & Hirschman 1982; Hillier 1975; Shafir, Simonson & Tversky 1993).

What constitutes an important difference is the number of people involved in decision making processes. B2B purchase decisions are often formed in a buying center, which involves a number of different people, such as the user of a certain product, a professional buyer and a manager who confirms the decision (Choffray & Lilien 1978; Sheth 1973; Wind & Webster 1972; Webster & Wind 1972). According to Webster &

Wind (1972), typical roles include: *users* of the products and services purchased; *buyers* who handle the formal purchase process and negotiate with suppliers; *influencers* who offer some relevant knowledge and influence the purchasing process directly or indirectly; *deciders* who formally make a decision, e.g., a manager with control over a budget; and *gatekeepers*, who control the dissemination of information within the buying center. Importantly, multiple roles can be held by one person (Webster & Wind 1972). In addition to these roles, Bonoma (1982) introduced the *initiator*, who is the person to first recognize a certain need for a product.

In an extreme situation, a buying center could consist of one person that is the user of a product or service and makes a decision on her own, e.g., an engineer purchasing, and afterwards using, particular software for blueprinting. When she has a budget and authority to make certain purchase decisions without assistance or asking for anyone else's permission, it is possible that she buys the software without talking to anyone else about it. However, in most companies this will not be the case. Purchases will be made with at least a professional buyer, a user and/or initiator who articulates a specific need. Even if the buyer has the authority to decide over a certain amount of money on her own, users will, in most cases, be further involved (officially or unofficially) in the decision making process because ultimately they are the ones using the product and have relevant knowledge of the purchase.¹ Therefore, this dissertation focuses on buyers and users, the most important of the roles when it comes to purchase decisions. Details about the underlying relational processes between those different roles will be explained from the buyer's perspective in section 2.3.1.

Sheth (1973) introduced a regularly cited model revealing several important influencing factors on B2B purchase decisions. A slightly adapted version of the model is shown in Fig. 2-1. It is worth noting that this early model already differentiates between purchase decisions a buyer conducts independent of others and those that are formed by a group of people. As can be seen in Fig. 2-1, regardless of whether a decision is made autonomously by a buyer or is arrived at as a group, several other

¹ Also other models of the buying center than the one of Webster and Wind (1972) exist, e.g., Witte's (1976) model or the buying network model (Johnston & Bonoma 1981), which are, however, not described in the context of this dissertation since they principally include the same relevant roles of buyer and user as well.

people influence the purchasing process through their expectations. Later research has also proven empirically that the distinction between an individual and group decision in the case of a B2B purchase is not dichotomous, but rather, that even when one individual (usually the buyer), is authorized to make a decision on her own, others will have varying influence on that decision, for example users (see, e.g., Doney & Armstrong 1996).

Furthermore, it is especially important to consider the kind of purchase a company is planning. Among other dimensions, this depends on the risk that a certain purchase carries (see Fig. 2-1). Risk, in turn, depends strongly on the newness of the buying task. Situations include the purchase of something totally new to the company (new task), a straight rebuy of a well known product, or something in between, which is called modified rebuy. A modified rebuy is qualified by a known product or product category, but typically a change of the supplying firm (Robinson, Faris & Wind 1967).

Tab. 2-1 describes these purchase situations in more detail in the so-called buyclass framework. It is important to note that the size of the buying center, amongst other aspects including speed of decision making, depends strongly on the kind of purchase task. For example, when a new task has to be conducted, the buying center typically involves more people and takes more time for decision making than when a (straight or modified) rebuy is made (Anderson, Chu & Weitz 1987; Dholakia et al. 1993). Since risk normally includes a perceptual component, it is imaginable that a degree of risk can flow from the assortment itself, e.g., the anticipation of regret when an assortment is large, linked to the fear of choosing the wrong option out of a vast number of seemingly similar products.

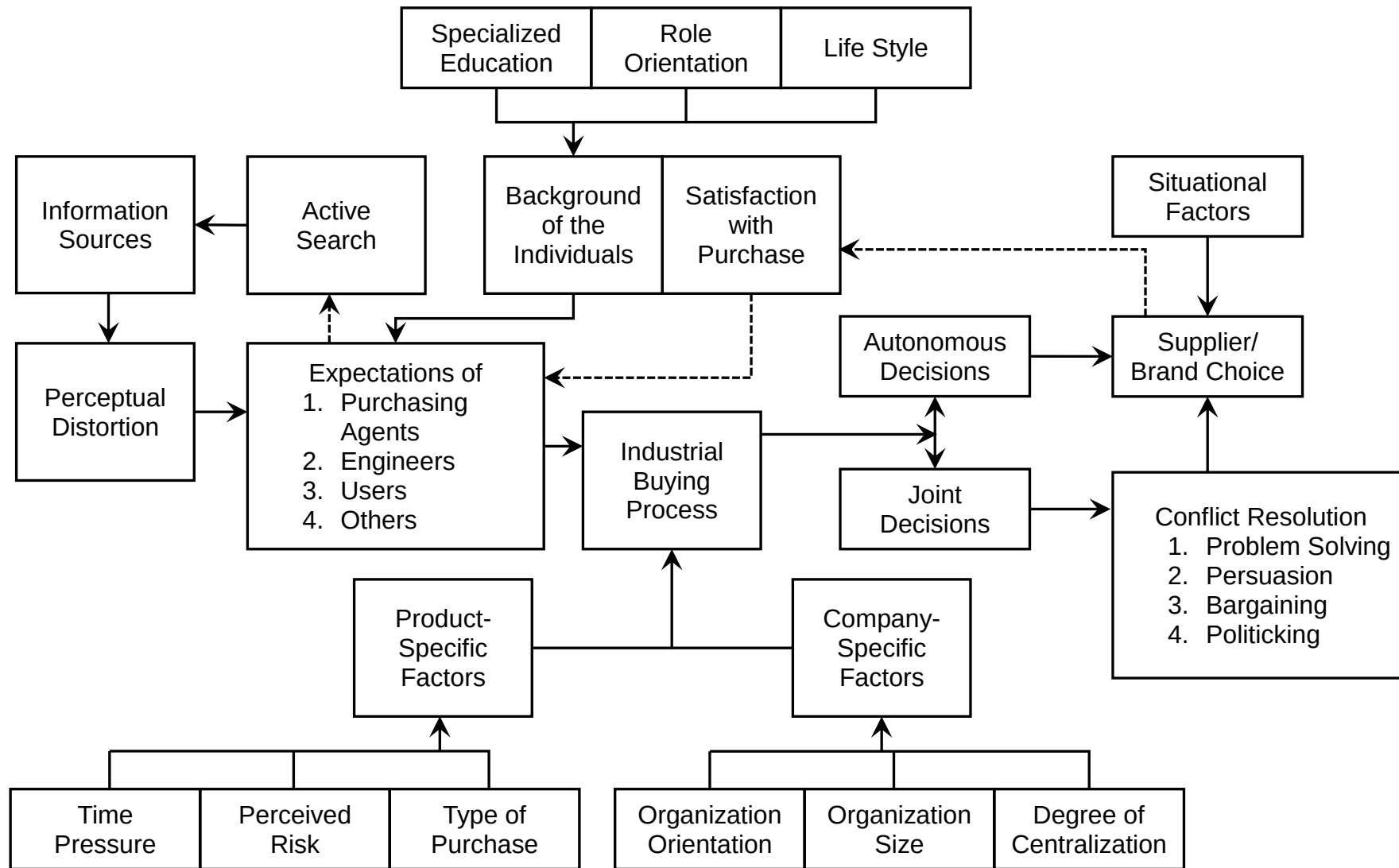


Fig. 2-1: Model of industrial buyer behavior (slightly adapted from Sheth 1973, p. 51)

Bunn (1993) built on the categorization of buying situations in the buyclass framework of Robinson et al. (1967) and developed a more detailed version describing a total of six different buying situations. In her re-worked framework, two kinds of modified rebuy situations exist: a simple and a complex modified rebuy, which differ according to buyer power and size of the choice set. However, with size of the choice set, Bunn (1993) refers to the number of possible suppliers in the market, whereas in this dissertation the focus is on the number of products offered by one supplier. Given that the only other variable on which the two modified rebuy situations differ is buyer power, which is not of primary interest in the context of this research, the two forms of modified rebuy situations are not explicitly distinguished in the further course of this dissertation. Thus, a modified rebuy refers to both forms, as in the situation described by Robinson et al. (1967) and which subsumes Bunn's (1993) classification.

<i>Type of Buying Situation (Buyclass)</i>	<i>Newness of the Problem</i>	<i>Information Requirements</i>	<i>Consideration of New Alternatives</i>
<i>New Task</i>	High	Maximum	Important
<i>Modified Rebuy</i>	Medium	Moderate	Limited
<i>Straight Rebuy</i>	Low	Minimal	None

Tab. 2-1: Buyclass framework (Robinson et al. 1967, p. 25)

A construct related to risk is purchase importance, referring not only to the financial importance of a purchase, but also the general influence it has on an organization (Bunn & Perreault Jr. 2006; Park & Bunn 2003). For example, when employees have to learn how to work with new software, this can be an important purchase, even if this software is not expensive. Importance is also sometimes conceptualized as a factor underlying the perceived risk of a purchase (Kohli 1989). Purchase importance could, among other effects, be shown to directly influence information search and

whether decision makers consider the long-term effects of a purchase (Hunter, Bunn & Perreault Jr. 2006; Park & Bunn 2003). The size of the buying center, that is, the number of people involved in a purchase process, is also usually greater when the purchase is important (Reve & Johansen 1982).

Complexity of the purchase decision, e.g., a difficult evaluation task regarding the product alternatives being offered, also influences the purchase process. It leads, per definition, to the need for a greater amount of information to conduct a decision (McQuiston 1989), with a complex product category, requiring more effort to trade-off the available alternatives and reach a final purchase decision. Presumably, this should also be true for large assortments, especially when the purchase can be classified as important because the increased number of options makes the decision more difficult, or, in other words, complex. However, these effects should also exist for B2C decision makers when circumstances are similar, i.e., complexity and importance are high, as will be explained in more detail in section 2.3.2.1.

It is important to note that B2B decision makers often face a lot of rules and formal requirements they have to fulfill when making purchase decisions, which can have an influence on the selection of a particular supplier and/or product (Hunter et al. 2006; Johnston & Lewin 1996; Wilson, McMurrian & Woodside 2001). This should lead to a certain amount of information needed to conduct a decision according to these requirements. For example, sometimes buyers have to apply a standardized process that necessitates collecting several bids from different suppliers before they are allowed to make a final decision as to which product and/or supplier they will choose (Wilson et al. 2001). As a result, this can further increase complexity of a purchase task.

As strictly organized and rational B2B decision processes may appear so far, they are still conducted by human beings, as the described effects of complexity show. Mudambi (2002) has shown that different buyer clusters exist. One of these clusters, labeled “branding receptive” (p. 530), is influenced by factors like reputation and brand image of a supplier firm. Brand image, however, does not have to be driven solely by emotions, but can convey certain associations with high quality products (Bendixen, Bukasa & Abratt 2004). Thus, it can be, at least partly, rational to choose well-known brands as they can function as a heuristic for reducing perceived risk.

However, a brand as a cue for quality is, as stated before, only a decision heuristic and therefore not solely rational. In this context, Brown et al. (2011) were able to show that for very low and very high risk products, decision makers often depend on well-known brands so that the risk-brand sensitivity relationship is U-shaped. That said, brands should be most important for straight rebuy and new task purchase decisions, but not for modified rebuy situations.

The results mentioned above show that of course some differences between B2C and B2B decision making exist, but that these differences are not as strong as one might expect and that many constructs, such as branding, are not solely relevant in a B2C or B2B context. Rather, in both situations, decision-making involves human beings with certain characteristics. Lakotta (2008) even showed that in a B2B context, customer confusion (a construct similar to consumer confusion) could exist for certain purchase decisions. This leads to the conclusion that some constructs from a B2C context can be transferred to a B2B context because the underlying psychological mechanisms are similar in certain circumstances. Recall, however, that in B2B decision making more people are regularly involved, which accounts for an important difference compared to B2C product choices. The following section will now explain why this is important and identify the relevancy of the psychological construct of accountability in this context. Afterwards, the conceptual connection to large assortments will be discussed in more detail.

2.3 Research on Accountability

The next sections will summarize research results on accountability because of its significant role in decisions involving others. As stated before, the most important difference between B2C and B2B decision making in the context of this dissertation is that B2B decisions involve several people while B2C decisions are often conducted based solely on an individual's preferences.

2.3.1 Definition and Forms of Accountability

The psychological construct of accountability “refers to the implicit or explicit expectation that one may be called to justify one’s beliefs, feelings, and actions to others” (Lerner & Tetlock 1999, p. 255, based on the earlier work of Scott & Lyman 1968,

Semin & Manstead 1983 and Tetlock 1992). It is important to note that people giving justification for their actions or decisions are subject to consequences which can be positive or negative, depending on the extent to which the justification satisfies the person judging it (Lerner & Tetlock 1999). Furthermore, several different forms of accountability exist, ranging from the mere presence of other people who can see what one is doing to a situation where individuals have to explain their own behavior and give reasons for their decisions or are evaluated based on their actions (Lerner & Tetlock 1999). In the context of B2B purchase decisions, the last two forms of accountability are especially relevant because either predefined rules for behavior exist (e.g., a standardized buying process) and/or a buyer will be explicitly asked by her boss, why she decided to buy a certain product.

While these distinctions are based on the consequences of accountability, there are several other differences in the forms that accountability can take. Most obviously, accountability can exist pre- or post-decisional, meaning that the individual at hand either notices the existence of accountability for her decision before action is taken or after she has already made a particular decision. This difference, as can be easily imaged, has the potential to lead to different behavioral consequences (Tetlock 1992). A professional buyer is aware that she is held accountable for decisions because she is formally employed and paid to make purchases for a certain company, making accountability present pre-decision. In light of this, for the purposes of this dissertation only research regarding pre-decisional accountability is considered relevant.

Another distinction made often in regards to accountability is its content, i.e., process and outcome accountability. For process accountability only the process employed to come to a decision matters, for example, the search for a certain amount of relevant information. In contrast, and as suggested by the label, outcome accountability refers to achieving the right consequences, e.g., choosing the right product, without considering the decision process (Langhe, Osselaer & Wierenga 2011; Ossege 2012). However, it is important to note that this distinction is not exclusive. For B2B purchase decisions, it can be assumed that in most cases buyers are held accountable for the process *and* the outcome simultaneously (Doney & Armstrong 1996). In terms of the process, as explained, most B2B purchase decisions have rules attached, like

a requirement to consider a specific minimum number of possible suppliers before selecting one. Because companies are, by their very nature, profit-oriented, the outcome, for instance, how much money was spent on which purchase, matters at the same time.

Accountability can also be characterized in terms of the individual(s) to whom accountability is owed, from which it is possible to distinguish between official and informal accountability. The former refers to the need to justify actions to superiors who have “legitimate authority to evaluate [someone’s] job performance” (Doney & Armstrong 1996, p. 58), based on labor contracts and organizational hierarchies. Informal accountability, in contrast, is a sense of having to justify decisions to subordinates, colleagues or peers. In this case, no legitimate authority exists but the decision maker still feels a need to satisfy others with her decision (Doney & Armstrong 1996).

In a B2B purchase process, official accountability can result from the boss of a buyer, in the assessment of whether the buyer has made the right decisions according to a predefined process. Informal accountability, however, may flow from a user who is interested in the buying decision for a certain product. For example, buyers may feel accountable to a user because they know that it is worthwhile satisfying the user’s needs, such as when the user has experience of a product’s quality.

2.3.2 Research on Different Effects of Accountability

The next section will deepen the understanding of accountability by considering selected effects arising from the various forms of accountability. Having done so, initial findings on the interactive effects of accountability and assortment sizes will then be outlined.

2.3.2.1 Behavioral Consequences of Decisions Involving Others

Decisions for which a person is held accountable, by definition, incorporate at least one other person because the decision maker has, or at least feels, a need to justify her actions to somebody. Therefore, it is interesting to have a further look at the research on situations where other people play a role in a person’s decision making.

Several studies found that it can be positive to incorporate other people in an individual's decision, in other words, to ask someone for advice, on the basis that advisors can balance their information search better, enabling them to look at conflicting information in greater detail and reach a better decision (Jonas & Frey 2003; Jonas, Schulz-Hardt & Frey 2005; Kray & Gonzalez 1999). This does not, however, hold true in all cases. When advisors in an experiment had to not only give advice, but also make a binding decision for someone else – making them strongly accountable for their decision – they were affected by a confirmation bias. This means that they searched more for information confirming than conflicting their initial preference regarding what would be best for their client. As such, they did not reach any better decisions than people deciding on their own, since these often suffer from the same bias (Jonas et al. 2005). These results also hold true for group decisions in homogeneous groups, i.e., a confirmation bias could be shown for groups who initially agreed on a topic (Schulz-Hardt et al. 2000) and groups with non-counterfactual mindsets (Kray & Galinski 2003). As a consequence, people often use defensive bolstering, where they give more arguments that confirm their view than challenge their choice in order to demonstrate to others that their decision was right (Jonas et al. 2005; Lerner & Tetlock 1999; Mojzisch et al. 2008).

These findings illustrate the importance of noting that accountability does not automatically lead to better decisions. This is especially worth mentioning in light of early research that suggested that holding people accountable for their actions could be a possible way of preventing certain biases (see Arkes 1991). Importantly, accountability can, for instance, be shown to deepen the processing of information and, thus, leading to more accurate evaluations and reduced biases, e.g., primacy effects (Kruglanski & Freund 1983). Through these detailed evaluation processes, cognitive load is enhanced when people are held accountable (Lerner & Tetlock 1999).

However, it has since become clear that not all forms of accountability affect decision makers the same way. Research has already investigated the differences of process and outcome accountability in various settings. Process accountability has often been shown to lead to a more in-depth processing of information and, consequently, when a certain amount of relevant information was available it has led to better decisions (see Lerner & Tetlock 1999 for a review on early studies; see also De Dreu

et al. 2006), while outcome accountability has revealed negative effects on decision quality (e.g. Siegel-Jacobs & Yates 1996). Importantly, Siegel-Jacobs and Yates (1996) demonstrated that people under both forms of accountability tried to reach better decisions, and thus were *motivated* to make accurate choices. Despite that, process accountability led people to consider more information, sometimes even irrelevant information (Siegel-Jacobs & Yates 1996).

However, if process accountability has positive effects, does not only depend on the kind of information considered, but also on the conditions of the specific decision task. Langhe, Osselaer and Wierenga (2012) showed that the complexity of the task forms an important boundary condition because process accountability only improves judgments when the task is easy compared to when it is complex, and requires a holistic approach to evaluation.

It is also possible that people held accountable for a decision try to suppress their own preferences, confirming instead the expectations of the person holding them to account and appearing to share their opinion, an effect known as acceptability heuristic (Tetlock 1992). Another effect also related to the perceptions of the accountability holder, is prosocial behavior or so-called preemptive self-criticism, by which people incorporate more alternatives, and engage in multidimensional thinking, to defend their view against anticipated criticism from others. However, it is interesting to note that despite including more arguments and counterarguments into their decision making process, people engaging in such behavior do not reach better decisions (Lerner & Tetlock 1999; Ossege 2012). This can stem from political behavior to protect one's self through demonstrating to others that one has made the right decision, outweighing the positive effects of a more thoughtful evaluation of alternatives (Ossege 2012).

In a similar vein, decision makers sometimes engage in a symbolic information search, reviewing a large amount of information just to show that their decision was right. Doney & Armstrong (1996) surveyed professional buyers and found that both official and informal accountability has a tendency to enhance symbolic information search. Buyers held accountable for the process of decision-making, however, analyzed information more extensively without engaging in symbolic search. Those buyers only accountable for the outcomes of their decisions, not the process,

engaged in neither symbolic search behavior, nor extensive analysis of information (Doney & Armstrong 1996). An earlier study by Fandt and Ferris (1990) demonstrated that accountability interacts with ambiguity and self-monitoring, leading to the conclusion that people manipulate information for reasons of self-impression. For example, when accountability is strong and ambiguity is low, information is presented in a way that seems convincing, creating an image that the right decision was made. Accountability in Doney and Armstrong (1996)'s study can be assumed to be high because buyers were asked about real experiences and not hypothetical scenarios, making it plausible that buyers used the amount of information they searched to signal accuracy in their decision making processes.

The question arising now is whether a large number of alternatives, offering a lot of information to base a decision on, is helpful for decision makers being held to account, or whether it has certain drawbacks, such as overchoice effects like reduced satisfaction with one's choice. If the latter is the case, it would be interesting to see if these effects differ from those for individual decision makers who are not held to account, and also if these effects vary under different forms of accountability. The next section seeks to shed some light on these considerations.

2.3.2.2 Joint Effects of Accountability and Choice Overload

Tetlock (1992) stated that decision makers held to account sometimes defer decisions (when possible) if they become complex and negative consequences from a wrong choice are likely. This effect appears similar to research findings on choice overload: If possible, decision makers try to avoid an uncomfortable decision, in this case from a large assortment, by delaying it or not deciding at all (see 2.1.2). Building on this idea, Polman (2012) analyzed the relationship between accountability and choice overload regarding satisfaction. In his study, students chose courses for the next semester either for themselves or for another student. Those students who were held accountable (i.e., were told that they would have to justify their choices to their professor afterwards), experienced less satisfaction when choosing from a large versus a small number of alternatives, regardless if the decision was for themselves or someone else. For students who were not held to account, this overchoice effect only applied when they had to decide for themselves while they were more satisfied

with a larger number of alternatives when choosing for another student (Polman 2012, Study 5).

Cognitive load and, correspondingly, choice overload, could possibly be increased by accountability because, as research has demonstrated, decision makers held to account, in some cases at least, engage in careful elaboration of alternatives, and, thus, invest greater cognitive effort (Chaiken 1980; Kruglanski & Freund 1983; Lerner & Tetlock 1999). This cognitive effort could lead to negative consequences when a large number of alternatives have to be considered. Put differently, overchoice effects are magnified by accountability because additional cognitive effort is required. It is arguable that this increased effort could lead to more stimulation and, thus, individuals with high OSL should experience positive effects from the combination of accountability and a large assortment. However, it ought to be remembered that even for those who appreciate a highly stimulating environment, optimal stimulation is not the highest possible stimulation. Rather, at some point they will experience overstimulation, as explained in 2.1.1. Importantly, in Polman's (2012) study, the students held accountable were told that they would have to justify their course selection to their class' professor afterwards. It is not clear, therefore, if the subjects felt officially or informally accountable. They could have seen their professor as either someone who could legitimately judge their decision (official accountability) or, alternatively, as someone more similar to a peer or colleague without legitimate authority over themselves (informal accountability). These different views might have influenced the underlying process, leading to more or less satisfaction, for example, by affecting how motivated the students were to elaborate on their course selection and, in turn, how satisfied they felt about the size of their course options. In this vein, it is worth keeping in mind that larger choice means more cognitive effort is required for an evaluation of the different alternatives.

This raises the question of the extent to which different forms of accountability foster cognitive effort and choice overload when one has to make a decision to buy a certain product. It is self-evident that only pre-decisional accountability can lead to increased evaluation effort compared to situations without accountability. Regarding differences of process and outcome accountability, the former, in particular, should lead to more cognitive effort when evaluating alternatives. Nonetheless, as stated

before, in many situations people are held process *and* outcome accountable at the same time, i.e., simultaneously (Doney & Armstrong 1996). Notably, Polman (2012)'s research did not distinguish between these two forms of accountability.

In a B2B context, people have to make the right decision and, at the same time, explain how they arrived at it. Thus, in a B2B purchase situation, both forms of accountability can be inseparably combined. This should lead to a strong feeling of accountability and, as a result, heightened effort when trading-off alternatives. Especially, when the assortment one has to choose from, is complex, e.g., when alternatives are distinguishable through non-alignable or complementary attributes cognitive effort is increased further and, of course, as the number of alternatives grows, effort is as well. It is not clear, however, from previous research if this raised effort always leads to reduced satisfaction. It is possible to imagine situations where cognitive effort is high due to official accountability, but satisfaction with the decision process remains high although the process is challenging because deep elaboration on a decision is considered part of doing a good job.

It seems plausible that the distinction between informal and official accountability does affect the extent to which an individual experiences accountability. In a B2B setting at least, official accountability ought to be most salient and strong, for example when a person has to justify a decision to her boss. Informal accountability, on the other hand, should still increase cognitive effort in decision-making compared to a situation without accountability, such as when someone only has to decide for herself. If, for instance, a professional buyer wants to satisfy a user of a product who does not have legitimate authority over her, the buyer will still put some effort in her decision, perhaps trying to adopt the user's perspective and make additional trade-offs with the user in mind. Of course, making a wrong or sub-optimal decision does not have as serious consequences for the buyer as would be the case if the user was her boss, responsible for formally evaluating her performance.

It is important to acknowledge that these processes are not exclusive to B2B settings. Official accountability, or something very similar, can even be seen when a mother asks her child to go to the supermarket and buy the groceries for dinner. If the child does not buy what has been asked for, its mother will not be able to cook the planned dinner and become angry, in which case the child will have to deal with

its mother's negative emotions as a consequence of its own actions. Since the mother can be said to hold a sense of legitimate authority over her child, this situation could be classified as official accountability from the child's perspective. Informal accountability in a B2C setting could also arise, for example, when deciding between two kinds of chocolate to buy as a present for a friend. No serious consequence from choosing one chocolate over the other will arise, but more effort will still be put into this decision-making when compared to choosing a chocolate for one's own consumption.

It also seems that the cognitive effort stemming from decision situations under accountability will surely increase further when there is considerable item choice because more trade-offs have to be made. Importantly, how much effort a decision maker invests also ought to vary depending on the form of accountability involved. This effort will, in turn, influence how easily the decision can be justified to others because it is easier to provide compelling reasons when possible alternatives have been carefully evaluated (Shafir et al. 1993). Finally, the decision maker's own satisfaction with the decision process, i.e., decision satisfaction, will be influenced by justifiability (Heitmann, Lehmann & Herrmann 2007). Fig. 2-3 outlines these underlying processes and the corresponding conceptual model and Fig. 2-2 shows the detailed effects of the interaction of assortment size and accountability on justifiability, which mediates the relationship with decision satisfaction, demonstrating that when justifiability is enhanced, satisfaction is raised too. As explained before, it can be assumed that officially accountable decision makers have more motivation and, in turn, invest more cognitive effort into decision making, therefore experiencing a higher justifiability of their own decision.

A point worth engaging with now is how firms could help their customers to feel better with their decisions, given that when they are held accountable for decisions they experience less satisfaction. How can a buyer be sure to have chosen the right alternative when there are so many products to review and trade-off against each other? And even when a decision has been made, regret can arise due to the belief that a better option existed. This seems to be especially true in situations of informal accountability when the motivation for a detailed trade-off of alternatives is relatively low. It is, therefore, important to simplify trade-offs between alternatives for these

cases so that decision makers can feel more comfortable about their own decisions and, consequently, more satisfied afterwards. This could, among other possibilities, be achieved by lowering the cognitive effort involved in comparing alternatives in an assortment. The next section will consider the possibility of guiding decision makers through large assortments through the adoption of different forms of presentation so that buyers do not experience cognitive or, more specifically, choice, overload.

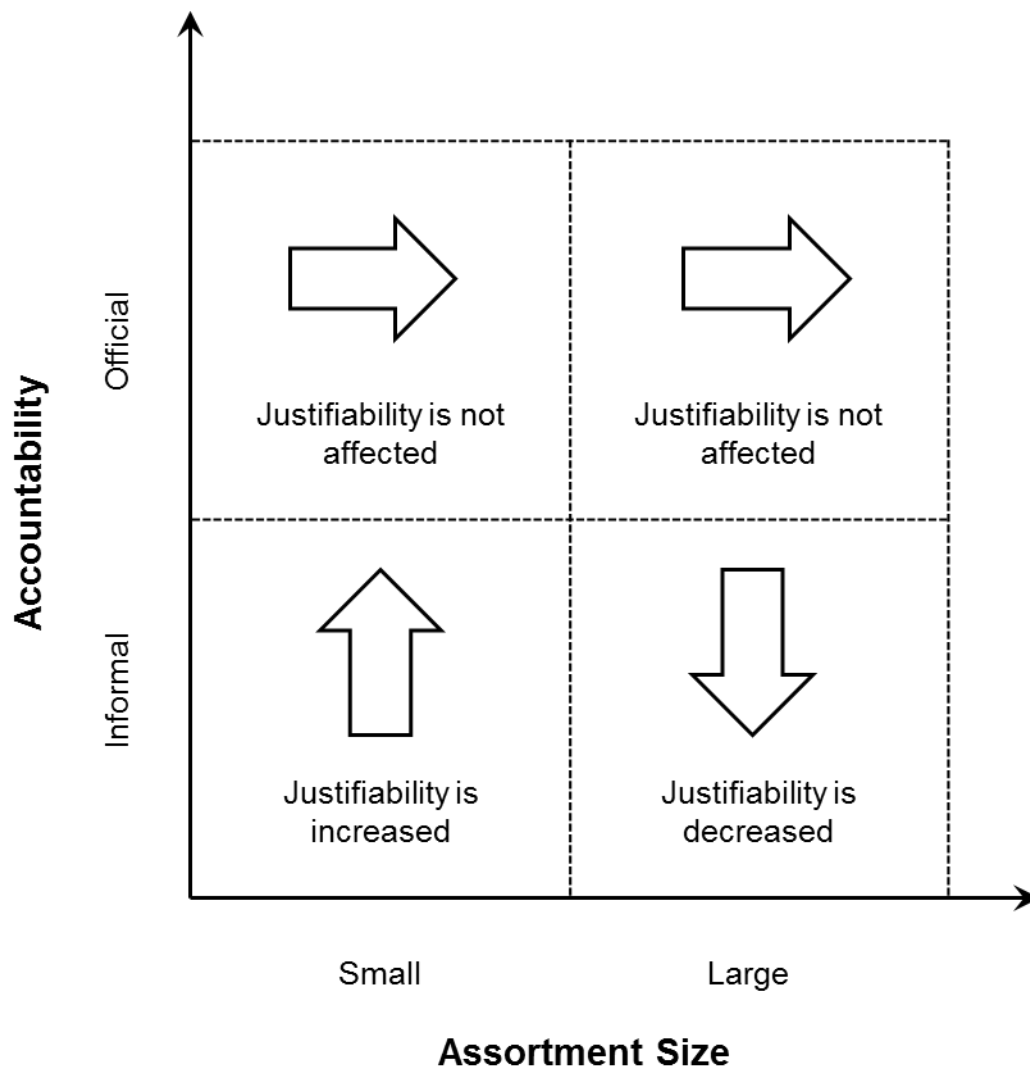


Fig. 2-2: Impact of assortment size and accountability on justifiability

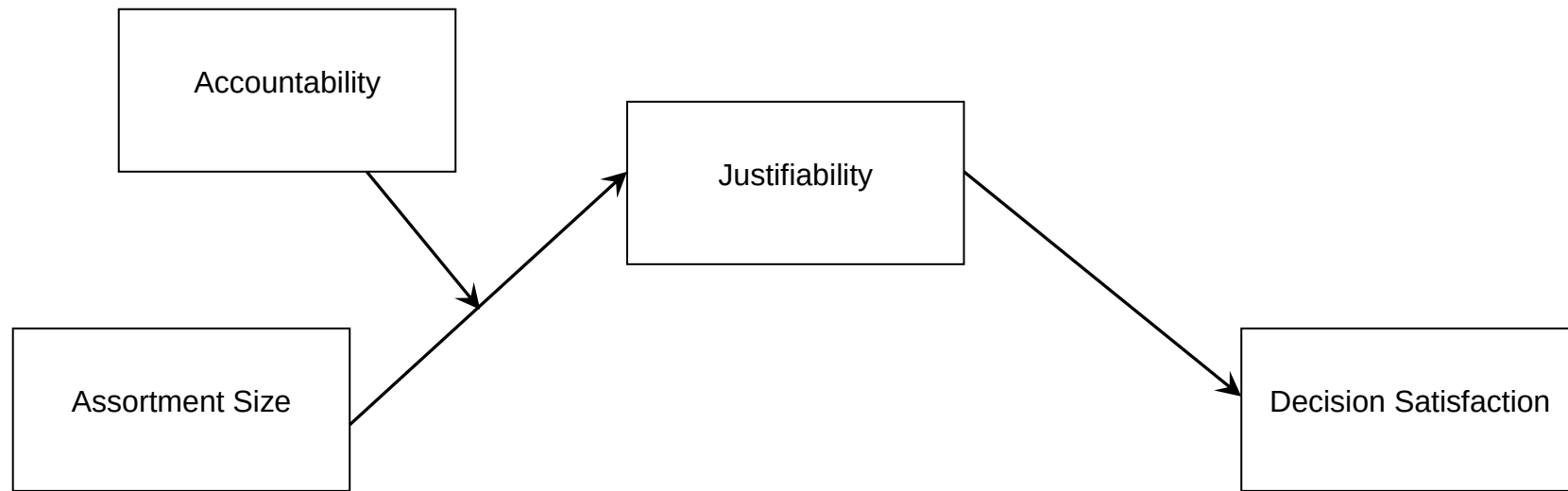


Fig. 2-3: Conceptual model illustrating the effects of assortment size

2.4 Research on Different Forms of Assortment Presentation

This chapter will provide an overview of different selected forms of assortment presentation, in light of changing variety perceptions and/or satisfaction of decision makers. Though many forms of assortment presentation exist, those selected and described in this chapter are limited to a small number that appear promising to solve the central problem of this dissertation: how to increase decision satisfaction for informally accountable decision makers choosing from large assortments in B2B settings. Importantly, and as reasoned above, buyers can experience reduced satisfaction when cognitive effort is raised, which, in turn, means that satisfaction can be increased by reducing the effort required in making a certain decision or, in other words, making a decision more mentally convenient (Shugan 1980; van Herpen & Pieters 2007). Based on this, forms of assortment presentation that could facilitate decision-making by reducing cognitive effort are the focus of this chapter. Tab. 2-2 provides a platform for such a discussion by giving an overview of the different kinds of assortment presentation that will be taken into account.

<i>Form of Assortment Presentation</i>	<i>Effects on Decision Makers</i>	<i>Exemplar Studies</i>
Reduction of the number of items offered while making use of symmetry or other physical forms of presentation	Perception of variety can be held constant, be reduced or increased	Broniarczyk et al. (1998) Kahn & Wansink (2004) Hoch, Bradlow & Wansink (1999)
Use of online filters to facilitate the search of suitable alternatives	Satisfaction with the assortment is reduced; choice quality can be reduced	Morales et al. (2005) Diehl (2005)
Categorization through labels or colors	Satisfaction can be increased and decision making costs and effort can be reduced	Mogilner, Rudnick & Iyengar (2008) van Herpen & Pieters (2007) Nagengast, Heidemann & Rudolph (2013)

Tab. 2-2: Overview of different forms of assortment presentation

2.4.1 Physical Changes of Assortment Presentation

A lot of research exists which considers retailers' possibilities to structure and present assortments in ways that influence consumers' perceptions, e.g., signaling more variety than is actually offered in an assortment (see, for example, Broniarczyk et al. 1998; Morales et al. 2005). Several studies have shown that retailers can reduce assortment size by eliminating items from a certain product category that are not bought frequently (Boatwright & Nunes 2001; Dreze, Hoch & Purk 1994; Broniarczyk et al. 1998). When shelf-space for the category is held constant after the elimination

of certain products, consumers do not perceive less variety amongst the options remaining. Consumers will still choose to buy from that particular retailer as long as their favorite option is among the available alternatives (Broniarczyk et al. 1998). As a result of the number of alternatives to trade-off being reduced, cognitive effort and, correspondingly, the potential for choice overload, should also be lowered. This approach, however, supposes that buyers already know what their ideal product looks like. Furthermore, when reducing the number of items it must be ensured that only those not bought frequently or by key customers are eliminated from choice. Since B2B customers are more diverse in their needs than B2C customers (Homburg 2012), this is not a realistic solution in many cases.

Importantly, Hoch, Bradlow and Wansink (1999) demonstrated that a) assortment presentation can not only foster perception of variety, but also lower perceptions under certain circumstances and b) that satisfaction with the assortment offered by a retailer can vary according to certain ways in which the assortment is presented. For instance, when engaging in analytic processing, consumers perceive an organized assortment to offer more variety than an unorganized assortment, while it is the opposite way around for consumers who engage in holistic processing. Similarly, van Herpen and Pieters (2002) illustrated that variety perceptions based on the attribute-level and, thus, comparing the different characteristics of the attributes for several products, are higher than variety perceptions on the product-level, i.e., comparing the product as a whole to other products from the same category, while using the same assortment in both cases.

Interestingly, Broniarczyk and Hoyer (2010) highlight that albeit being conceptually different, the models of Hoch et al. (1999) and van Herpen and Pieters (2002), produce similar results regarding assortment size perception from a mathematical point of view. However, as revealing as these results may be, they do not appear in a form that can realistically be implemented to reduce cognitive effort of decision makers in practical B2B settings. If the buyer processes the products in a holistic manner or on the attribute-level, remains unclear and hard to alter in a B2B purchase decision.

Kahn and Wansink's (2004) work developed this one step further by analyzing assortment organization forms in greater detail. They showed that the symmetry of

an assortment influences consumption behavior, with consumers choosing more sweets when the assortment is asymmetric, as compared to symmetric, in its organization. Furthermore, organized assortments increase the number of sweets eaten when compared to disorganized assortments. These effects stem, at least partly, from the differing perceptions of variety of the assortments offered. However, in their research, Kahn and Wansink (2004) did not include an analysis of satisfaction with the different assortments and choices.

Indeed, it is important to note that these studies were interested in consumption quantities, not in decisions for single products, and therefore it is not clear whether participants felt satisfied with their decisions or not. However, in practice it will not be possible to show a symmetric assortment to a buyer in a B2B setting when alternatives for presentation have to be doubled in order to do so, as conducted by Kahn and Wansink (2004) in their research. This is especially so because prior studies have shown that redundant items in an assortment can have negative effects on consumers' evaluations of the assortment as a whole, in a B2C retail context at least (Boatwright & Nunes 2001). Thus, there would be a high risk that a buyer would not choose a supplier offering an assortment with redundant options and choose to switch to a competitor.

2.4.2 Changes of Assortment Presentation by Using Filters

Another promising form of assortment presentation is a filter, which is often used in online environments. Typically, at the very least a B2B buyer knows the product category she is looking for. In other words, when searching a supplier's website or online shop, she could enter into a mask what she wants to buy, e.g. sealings, and the results would be filtered by that category, so that she only sees results for sealings or, with a more granular filter, sealings for certain applications. Morales et al. (2005, Experiment 3) used this kind of filtering technique in an experiment with students who had to choose a certain kind of bag. As mentioned already in section 2.1.1, participants reported that they perceived the assortment to contain less variety when it was filtered compared to conditions without the filter. This could lead people to be less likely to choose a retailer or producer offering such a filter in the first place because the assortment appears less attractive (Morales et al. 2005; Iyengar & Lepper 2002).

In fact, participants in the study by Morales et al. (2005) reported less satisfaction with the assortment when they were confronted with the filter. Although cognitive overload can be reduced with the filter, a supplier should be careful when deciding whether to adopt such filtering techniques in practice, since they reduce the attractiveness of an offered assortment, which could lead buyers to switch to another supplier. In a B2B context, this is especially important for new task situations where a buyer evaluates suppliers and products in detail.

Diehl (2005) also analyzed how filters influence consumer satisfaction. In her studies, options were not only filtered but also ordered from “best” to “worst” based on their fit with the presumed preferences of consumers reviewing the alternatives. Surprisingly, Diehl’s results revealed that consumers made worse choices when compared to those made without ranking the alternatives, choice quality was reduced, meaning that how good the chosen alternative matched the consumers’ preferences. It is worth noting that this effect was even stronger when consumers had a higher accuracy motivation. Their choices were even worse in these cases (Diehl 2005, Study 3). This result is important because accountability, especially official and/or process accountability, can lead to similar processing as accuracy motivation because people held to account officially and/or by process are motivated to reach accurate decisions, as already explained in chapter 2.3.2.1. In line with this reasoning, filters and ordered lists recommending the seemingly best options do not appear to be a solution to reduce cognitive load that increases buyer’s satisfaction in a B2B context.

2.4.3 Changes of Assortment Presentation by Using Categorization Techniques

It has been demonstrated that labeling categories inside an assortment can increase decision makers perception of variety and, as a consequence, improve their choice satisfaction, even when the categories are uninformative, i.e., labeled A, B, C, etc. (Mogilner et al. (2008)). However, this effect only holds true for decision makers who have limited experience with the focal product category. Since product categories in the studies of Mogilner et al. (2008) were magazines and coffee, it can be assumed that most participants have bought a similar product at least once before, even if they

did not buy it frequently from these categories. In a B2B context, this would amount to a modified rebuy decision process. In contrast, this kind of purchase process could lead B2B decision makers to investigate the options offered more thoroughly than consumers considering simply their own preferences would because buyers are held accountable for their decisions and financial risk is generally higher in B2B settings it is not clear, therefore, whether these processes would hold true for B2B buyers. Furthermore, since buyers are not the users of a product, meaning that only satisfaction with the decision process, not with the chosen product, is relevant in this context, it is again unclear if categories could be a means of helping the buyer to make and then justify a decision, thereby increasing satisfaction with it.

In a similar vein to categorization, van Herpen and Pieters (2007) investigated how assortment presentation could influence anticipated identification and decision-making costs for an assortment and, consequently, reduce cognitive effort involved in the decision. They used different forms of color-coding to make differences between the alternatives offered, more salient and easier to process. In detail, they compared color-coding on item level to color-coding on attribute-level. Item-level coding refers to a form of making each single product distinguishable from the other products offered in an assortment by assigning a certain color to each item. On attribute-level, only the most important attribute of a product category is coded with a certain color. In other words, all products with the same characteristic of this attribute are coded with the same color, e.g., all chocolate bars with dark chocolate are labeled with the same red color and all chocolate bars with whole milk chocolate are assigned with the same blue color. The authors were able to show that for large assortments, color-coding on attribute-level led to reduced anticipated identification and decision-making costs. As discussed before, this equals a reduction in cognitive effort used to trade-off alternatives against each other. Focal product categories in the studies of van Herpen and Pieters (2007) were potato chips and chocolate, which most participants should have been fairly familiar with. However, as fictitious assortments were used in the study's decision situations they are close to a modified rebuy task. It is, however, unclear if there was a positive effect on decision satisfaction since this construct was not investigated by van Herpen and Pieters (2007), leaving open a promising avenue for research that will be addressed in this dissertation.

Importantly, color-coding at attribute-level can be considered very similar to categorization as investigated by Mogilner et al. (2008) because it adds information to an assortment that helps to identify and distinguish alternatives. Colors are very easy to process and should have an advantage over categorization by names. It has also been shown in previous research that colors reduce search costs and help consumers orientate themselves when confronted with an assortment (Nagengast, Heidemann & Rudolph 2013).

In light of these findings of the salience of color in purchase settings, this dissertation investigates color-coding as a possible means of increasing satisfaction of buyers. As outlined earlier, because large assortments are typical in B2B settings, color-coding will be implemented on attribute-level, i.e., for coding the most important attribute(s), in line with the results of van Herpen and Pieters (2007). Importantly, color-coding is most promising in circumstances where decision makers are held informally accountable because this can reduce decision satisfaction when the assortment they have to choose from is large, as explained in section 2.3.2.2. The proposed effects and underlying processes of attribute-level color-coding under informal accountability are shown in detail in Fig. 2-4.

The experimental studies in this dissertation focus on modified rebuy situations. A straight rebuy, per definition, would not need an evaluation of alternatives and a new task decision process would not benefit as much from an attribute-level coding or other means of categorization. This is because decision makers do not know which attributes are important for the decision and would have to process alternatives in a very detailed manner, regardless of assortment presentation. A modified rebuy, on the other hand, presents a situation where a decision maker has *some* experience with the product category, but chooses to buy from a new supplier and is thus confronted with a new assortment. This is a realistic scenario that could occur occasionally for an experienced buyer in practice. In this case, color-coding at the level of the most important attribute(s) seems to be a promising way to help the decision maker identify the relevant products from the assortment offered and, by doing so, make the decision more mentally convenient. In other words, cognitive effort will be reduced and overload will be decreased, while a large number of alternatives can still be offered. Significantly, an assortment under these conditions can include a high

number of options, which means it appears attractive to the decision maker. It is worth noting that in a modified rebuy decision an ideal point does not necessarily exist, with the result that overchoice effects are likely to occur, whereas this will not be the case for a straight rebuy.

Another distinction worth making is between decision makers under official and informal accountability. While those held officially accountable should be highly motivated to evaluate alternatives in detail, and thus should not benefit much from color-coding, those under informal accountability are not as strongly motivated and will therefore benefit from a mentally convenient assortment presentation. Fig. 2-5 shows the effects of assortment presentation, namely color-coding and accountability, on decision satisfaction for choices from large assortments. The next chapter will develop detailed hypotheses regarding the conceptual model.

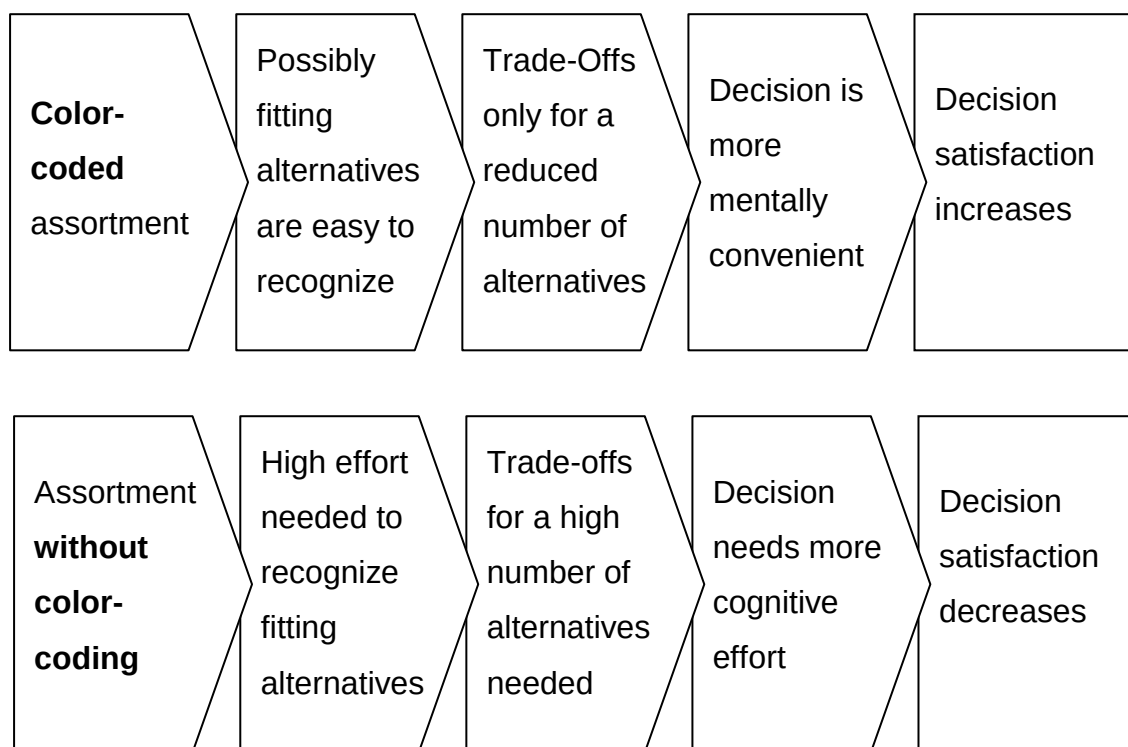


Fig. 2-4: Effects of attribute-level color-coding on decision satisfaction under informal accountability

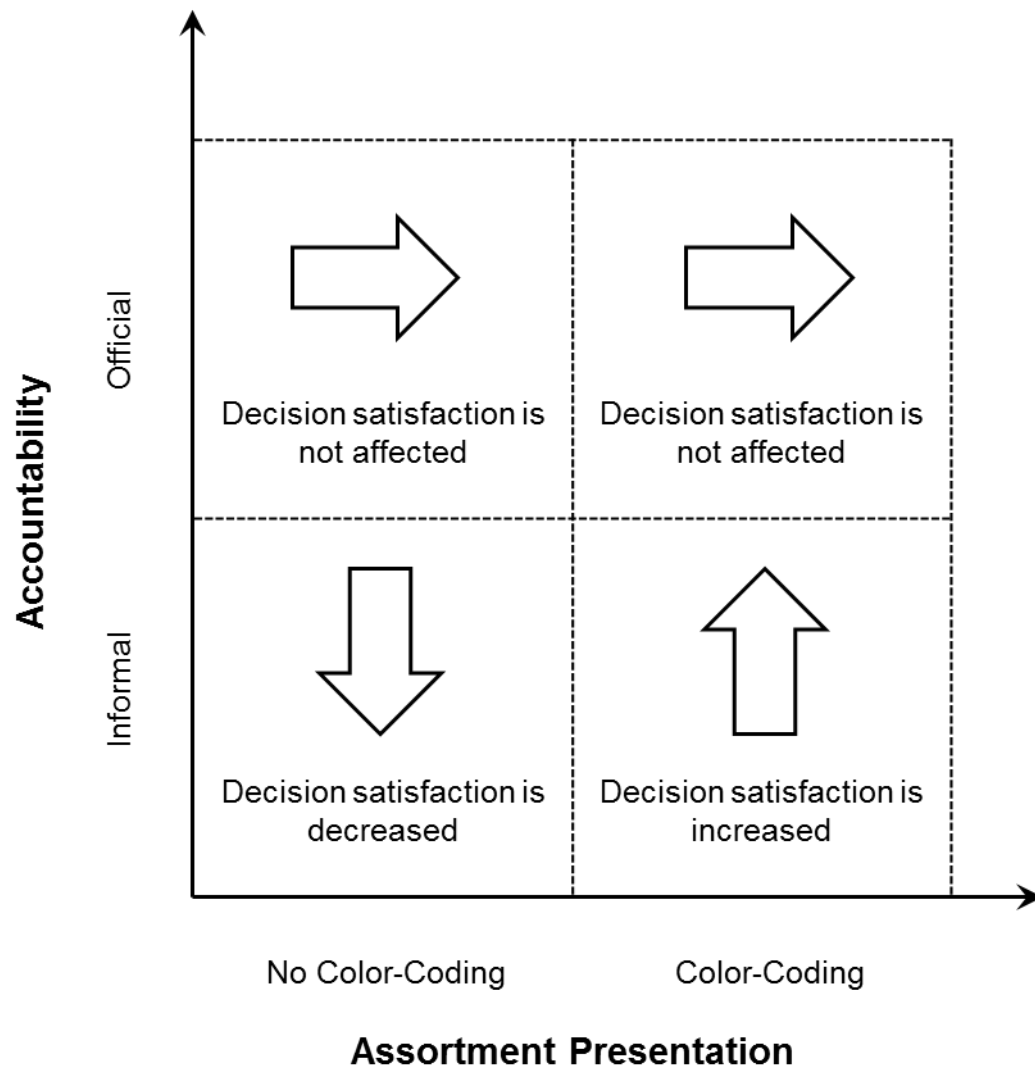


Fig. 2-5: Impact of assortment presentation and accountability on decision satisfaction (large assortments)

3 Development of Hypotheses

3.1 Testing Choice Overload under Accountability

Polman (2012) revealed that choice overload, resulting in diminished satisfaction when choosing from a large number of options, occurred in situations where people make a decision for someone else and are held accountable for that decision. However, as already explained, Polman (2012) did not distinguish between different forms of accountability. Thus, taking a first step, this dissertation seeks to shed greater light on how assortment size and accountability interact by incorporating official versus informal accountability into research on the effects of assortment size (small compared to large).

As argued earlier, official accountability should strengthen the motivation of an individual to closely consider the alternatives offered, even when an assortment is large, mirroring extensive information search under official accountability (Doney & Armstrong 1996). Although cognitive effort is enhanced, satisfaction of decision makers should not be reduced because they know that their job is to have a closer inspection of the details. Large assortments appear attractive due to an expectation that the ideal product is amongst the options offered (Iyengar & Lepper 2000), and the decision-maker ought to feel comfortable with a large assortment. However, given that a small assortment – at least one that offers products fitting one's preferences or given specifications well – creates less elaboration effort, a buyer should feel equally satisfied with such an assortment.

For informally accountable decisions makers, the situation appears to be different. As already explained, in a B2B context at least, informal accountability should not be as salient as official accountability due to less serious consequences flowing from a colleague's evaluation compared to the performance evaluation of a boss. Because of this, a decision maker under informal accountability should not be as motivated to make detailed trade-offs between alternatives, compared to a decision maker under official accountability. Thus, when an informally accountable decision maker is offered a large assortment, she will be less satisfied because she can anticipate that considerable cognitive effort will be required to compare the products, while, at the

same time, she will be reluctant to invest this effort. Against this background, remember that the person to whom the decision maker feels accountable to does not have legitimate authority over her. Therefore, in most cases, she is unlikely to be highly motivated to match this person's preferences perfectly, but rather seeks an easy way to satisfy that person. Since a small assortment, by definition, does not have as much potential for trade-offs between alternatives as a large assortment, the decision for a product becomes less demanding and, in turn, satisfaction with the decision making process should increase.

These explanations ultimately lead to the following two hypotheses:

H1A: When decision makers are held officially accountable, they will experience equal decision satisfaction when choosing from small and from large assortments.

H1B: When decision makers are held informally accountable, they will experience more decision satisfaction when choosing from small than from large assortments.

What is of further interest is the underlying process that explains how the interaction of accountability and assortment size influences satisfaction with a decision process (decision satisfaction). Digging deeper, a construct closely tied to accountability is justifiability. When someone is held accountable, by definition, they expect to have to explain their decisions in some way or, in other words, they know that they will have to justify their actions to someone else. This can lead to a choice goal in the form of trying to maximize the justifiability of a decision (Bettman, Luce & Payne 1998; Heitmann et al. 2007). Justifiability, then, strongly depends on the assortment offered because choices from some assortments should be easier to justify than choices from certain other assortments. For example, it is easy to explain a decision relating to a product when it dominates the other products around it that also share the same relevant characteristics (Bettman et al. 1998). Furthermore, justifiability influences decision satisfaction positively because when a decision is easy to justify individuals

are likely to get the impression they have chosen the right product (Heitmann et al. 2007). This should be particularly relevant when a person's goal is to reach a decision that is easy to justify but, simultaneously, is reluctant to engage in the effort required to process the alternatives. In other words, decision makers under informal accountability will experience different effects of assortment size on decision satisfaction because justifiability ought to differ when choosing from a small versus large assortment. This is due to the fact that these decision makers are not motivated to make detailed trade-offs between the offers from a large assortment and, thus, do not reach high justifiability easily when they are faced with a large number of options to choose from (Shafir et al. 1993). It is apparent that these decision makers do not want to invest much cognitive effort, yet they will still want to raise the justifiability of their decision because of a sense of accountability.

Officially accountable decision makers are motivated to put high cognitive effort into decision making, regardless of the size of the assortment offered, and, therefore, they should experience equally high justifiability and, in turn, decision satisfaction, from both small and large assortments. This can be explained by the fact that they will scan for alternatives that potentially align with their goals and preferences, and will engage in detailed trade-offs between these relevant alternatives. Consequently, it allows them to give good reasons for their choice, increasing the justifiability of their decision, irrespective of the total number of alternatives offered.

These different processes under the two forms of accountability just described lead to the following hypothesis:

H2: Justifiability will mediate the interactive effect of assortment size and accountability on decision satisfaction.

Since satisfaction can fall under certain circumstances (when assortments are large and the decision maker is informally accountable), the next section will deal with hypotheses based on raising satisfaction through color-coding as a possible means of reducing the negative effects from large assortments.

3.2 Testing the Effects of Color-Coding under Accountability

On the question of how decision satisfaction with large assortments for informal accountable decision makers can be enhanced – since those decision makers were postulated to be less satisfied – color-coding has already been introduced as a promising idea. As van Herpen and Pieters (2007) showed, color-coding on attribute-level can improve the ease of decision making when assortments are large. Of further interest is how this will affect decision satisfaction and how color-coding interacts with different forms of accountability. The focus of this research is confined to large assortments since small assortments are easy to process and, therefore, do not require special forms of presentation to strengthen the satisfaction of decision makers.

As previously explained, officially accountable decision makers ought to be highly motivated to evaluate all options offered in detail, regardless of assortment size. As a consequence, they will not benefit from color-coding because it does not offer them further information about the products. It only makes important product characteristics more obvious. On the other hand, color-coding should be helpful for informally accountable decision makers because they are less encouraged to evaluate all alternatives in depth when a large number of options are offered. Benefitting from the ease and convenience offered by color-coding, these decision-makers should be more satisfied (van Herpen & Pieters 2007; Shugan 1980). Recall that color-coding on attribute-level makes it easy to see at first glance which products boast the relevant characteristics, indicating quickly which items should be investigated further, speeding up the process and reducing search costs. It is only for these products that trade-offs have to be made (van Herpen & Pieters 2007; Nagengast et al. 2013).

It is also worthwhile investigating the comparative impact of accountability on decision makers and the situations they face. How will a decision maker feel who is deciding on her own and is not incorporating preferences of others in her decision, to which she is accountable? She ought to experience more convenience and ease when making such a decision compared to accountable decision makers. Furthermore, it will be remembered that this dissertation focuses on modified rebuy situa-

tions and, thus, on situations qualified by a moderate purchase risk (Robinson et al. 1967). Therefore, a non-accountable decision maker does not have to fear the very serious consequences that might arise from a wrong decision, albeit she does not make a totally habitual decision. Compared to situations with accountability, the decision maker has no need to justify her decision to someone else and should, therefore, anticipate less serious consequences from the decision. Returning to consider the impact of color-coding, this situation suggests that because the decision is already relatively convenient without the coding, that satisfaction will not be improved by the introduction of such a technique. The decision maker does not have to explain her decision afterwards and, because of this, does not have to engage in a detailed trade-offs of all alternatives in order to give good reasons for a decision. Instead, she can quickly scan through the alternatives and pick the one that is intuitively preferred. Also, because the decision maker only has to incorporate her own preferences, it should be relatively easy to find an alternative well suited to these, as she does not have to recall the preferences of someone else. Three hypotheses are born out of this reasoning:

H3: *People choosing under official accountability will be equally satisfied when choosing from a color-coded assortment versus an assortment without color-coding.*

H4: *People choosing under informal accountability will be more satisfied when choosing from a color-coded assortment versus an assortment without color-coding.*

H5: *People choosing without accountability will be equally satisfied when choosing from a color-coded assortment versus an assortment without color-coding.*

The next chapter will reveal how the hypotheses were empirically investigated using three experimental studies.

4 Empirical Analysis

This chapter will report the three experiments and one pre-study conducted for this dissertation. It begins with an overview of the three experiments, before proceeding to explain each in greater detail, outlining the sample used in each study, the methods of data collection, as well as manipulations, stimuli and measures and, finally, discussing the results and implications of each experiment.

4.1 General Overview of Experiments

As mentioned previously, the three experiments were conducted to test the hypotheses stated in chapter 3. Experiments provide an ideal way of collecting data in the given context for two main reasons. Firstly, they enable the researcher to control for certain factors, while simultaneously manipulating the variables of interest and using stimuli that are comparable to their real-world equivalents (Carson et al. 1994). Secondly, the research streams used to derive the hypotheses have generally used experiments to demonstrate any relevant inter-relationships. These streams are: accountability (see, for example, Polman 2012; Fandt 1991), choice overload, effects of variety and assortment size, respectively (e.g., Chernev 2003a; Chernev 2003b; Gourville & Soman 2005), and color-coding (e.g., van Herpen & Pieters 2007; Nagengast et al. 2013),

It was not possible to test all hypotheses in a single experiment so, instead, three experiments were conducted that build on each other's results. Experiments 1 and 2 simultaneously collected data from real B2B buyers, while Experiment 3 replicated and extended the findings from the first two studies with another sample that was not limited to B2B decision makers. Experiment 1 examined if choice overload, i.e., reduced satisfaction from large assortments, exists under different forms of accountability (hypotheses H1A and H1B). This experiment also explored the underlying process by showing how the interactive effects of assortment size and accountability on decision satisfaction are mediated by the justifiability of a decision (H2). After obtaining these basic results, Experiment 2 was designed to show the effects of attribute-level color-coding on decision satisfaction under informal versus official accountability when choices from large assortments have to be made (hypotheses

H3 and H4). Experiment 3 replicates these results (H3 and H4) with another sample and in a different choice context (i.e., a different kind of assortment) and also tested how color-coding affects decision satisfaction when subjects are not held accountable at all (H5). Again, only large assortments were investigated. In sum, each of the experiments complemented and advanced one another.

All three studies were conducted as online experiments and used scenarios to manipulate the variables of interest. Scenarios seemed most appropriate in the context of this research since they help subjects to visualize a certain situation, with the purpose of studying the underlying processes of (consumer) behavior. This technique is particularly suited for investigating subjective reactions to certain procedures or stimuli (Lind & Tyler 1988). Scenarios have already been successfully implemented in other studies researching the effects of variety and accountability (see, e.g., Som & Lee 2012; Polman 2012).

To generalize the findings of the three experiments conducted for this dissertation, different product categories were used for Experiments 1 and 2. Experiment 3 used a service (the choice of a restaurant) to create the assortments that subjects had to choose from, thereby extending the generalizability of the results. Section 4.2 will give more detail on the chosen research contexts. While Experiments 1 and 2 used real B2B buyers as subjects, Experiment 3 used a random online sample and thus was not exclusive to a B2B context. The details for the choice of this sample will be explained further in section 4.5.1. Fig. 4-1 gives an overview of the three experiments regarding the independent variables studied, as well as the analyzed sample and the hypotheses that were tested in each experiment.

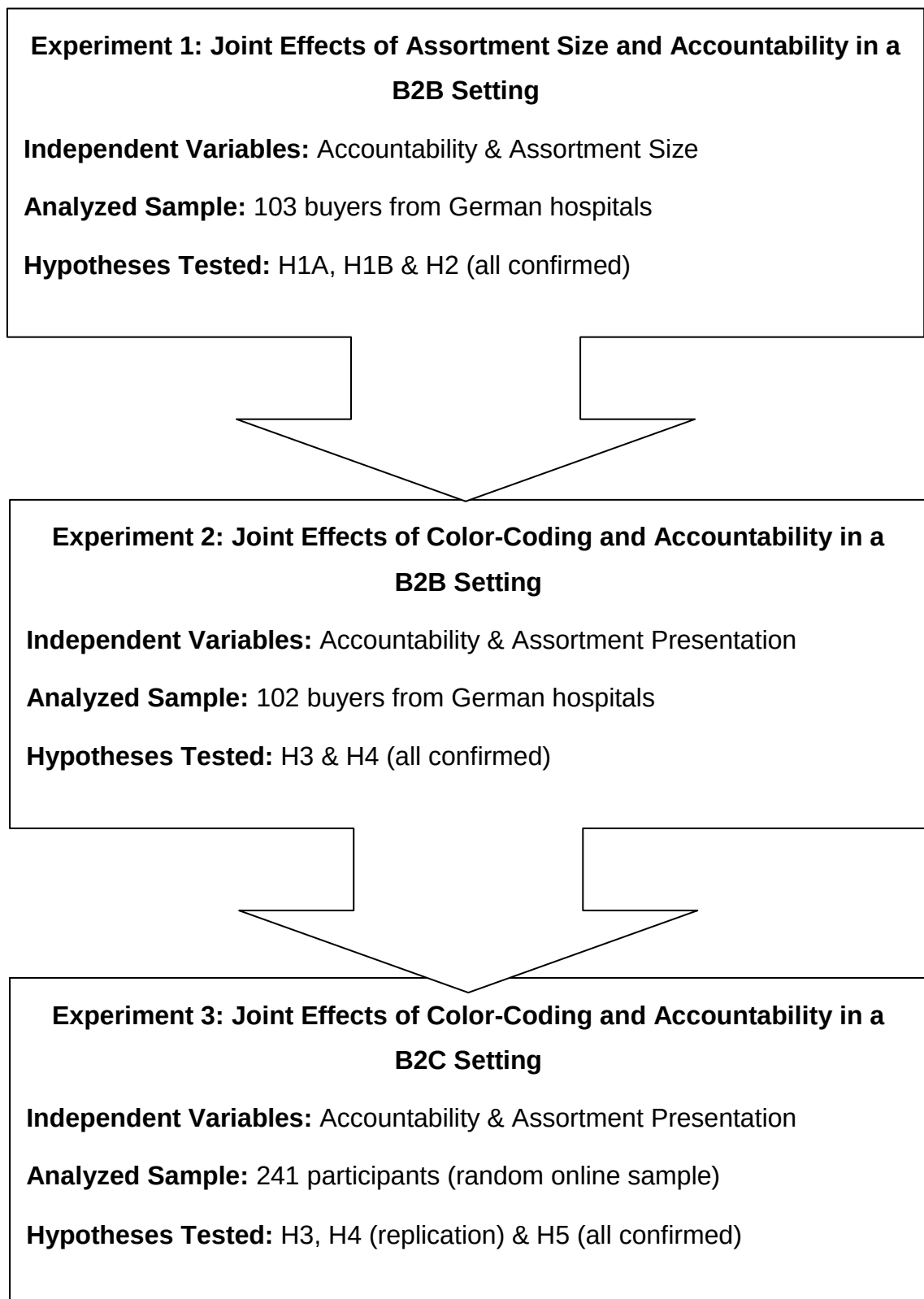


Fig. 4-1: Overview of the experiments

4.2 Research Contexts of the Experiments

As already mentioned, Experiments 1 and 2 were conducted in a B2B setting. In light of the rationale for the research questions at hand, it was important to use products for which large assortments exist in reality. In a typical modified rebuy decision, which is the focus of this dissertation, a certain number of – in most cases – standardized products will exist, from which the buyer chooses a single alternative. Therefore, it was important to choose focal product categories for the experiments in which professional buyers, at least initially, consult the online or offline product catalogues of their suppliers to search for the right alternatives on their own. Importantly, this dissertation is interested in purchase decisions where the buyer and the user of a product are not the same person.

An investigation of different branches and product categories revealed that several medical products used in hospitals fit these criteria. The product categories chosen for Experiment 1 were trousers that function as uniform for the nursing staff. Typical suppliers offer about 50 different variants of such trousers.² For Experiment 2, surgical suture material was chosen since typical suppliers offer more than 1,000 variants of sutures.³ Indeed, hospitals are also ideal for investigating decision situations where the buyer is not the user of a certain product, since users, for example, doctors, do not conduct purchase decisions themselves. Rather, they are occasionally asked about their experience with certain products by buyers, suggesting that buyers may have some sense of being informally accountable to those they casually seek advice from.

Experiment 3 was conducted with a B2C sample, with the selection of a restaurant for a work-related event as the focal decision. This ensured that decision makers could easily imagine the choice situation, whilst also allowing the options offered to still be realistic in a B2B, as well as a B2C, setting.

The next chapters will describe the stimuli and the three experiments in more detail.

² The number of variants is based on information from a buyer in a local hospital as well as online shops; for an example of the latter see: <http://www.7days.de>.

³ Numbers are based on 2014 online catalogues of typical suppliers, which are Covedien, Ethicon and B.Braun.

4.3 Experiment 1: Joint Effects of Assortment Size and Accountability in a B2B Setting

4.3.1 Design, Participants and Procedure

Experiment 1 used a 2 (assortment size: small versus large) x 2 (accountability: informal versus official) between-subjects design.⁴ Subjects remained the same for Experiment 2 and the order of studies was counterbalanced among participants. A total of 103 buyers from German hospitals participated in the study. Of the participants, 71 (68.9 %) were male and 32 (31.1 %) were female. 83 (80.6 %) of the buyers had managerial responsibility, while 16 (15.5 %) had none and 4 (3.9 %) did not specify when answering the question. The average age of the participants was 45.4 years. Most of the buyers (95; 92.2 %) were employed full-time, while 8 (7.8 %) worked part-time. On average, they were in their current job position for 10.8 years and had generally worked as buyers for 15.3 years. More than half of the hospitals for which the buyers worked (52; 50.5 %) were run by non-governmental organizations (NGOs) while just over a third (37; 35.9 %) were public hospitals and over a tenth (14; 13.6 %) were commercially run. The number of beds per hospital was 557 on average. Buyers were contacted via telephone and asked if they wanted to participate in an online experiment. As an incentive, participants were informed that when they completed both studies 5 € was donated to a certain NGO. The donation was funded by a company sponsor. This kind of incentive was chosen because buyers in a professional context are usually not allowed to take incentives for themselves due to the anti-corruption compliance programs that most firms and hospitals have nowadays.

A total of 1,824 addresses of hospitals in Germany were collected. However, 1,193 had to be eliminated from the list because either they did not have a purchasing department⁵ and/or a surgical ward, which was needed because of the focal product categories, especially in Experiment 2, or they were generally not allowed to partici-

⁴ Results of Experiments 1 and 2 were already partly presented in a working paper: see Schaffrath & Wentzel 2015.

⁵ Many hospitals share one purchasing department nowadays or have outsourced their purchases to an external service provider.

pate in studies due to the hospital's standards and rules. Thus, 631 potential hospitals or buyers, respectively, were left remaining. Of those, 260 could not be reached via telephone, e.g., they did not pick up their phone, although several attempts were made. In sum, 371 buyers were reached through calls and 218 agreed to be sent the link to the online experiments via email. The other 152 buyers were either not interested in the study or could not participate due to time constraints. Of the 218 buyers who had received the link, 103 filled out both studies completely. This amounts to a response rate of 28.8 %, on the basis of 371 buyers being called. When compared to an average response rate of 27.0 % found in a review by Bartholomew and Smith (2006) of small firms, the response rate reached in this dissertation can be considered satisfactory. Importantly, it ought to be noted that while hospitals may be large employers, most only have a small number of employees working in administration and management, meaning they are most accurately placed alongside small firms when it comes to their constraints in taking part in studies, e.g. time constraints.

The procedure for carrying out the studies was as follows. For Experiment 1, buyers were told that they had to buy new work wear for their hospital. They were randomly assigned to a scenario with either informal or official accountability. The accountability manipulation was held constant over Experiments 1 and 2 to prevent confounding effects between the two studies that could arise from their different accountability manipulations. Since the order of the studies was counterbalanced, participants were either randomly assigned to an accountability manipulation in Experiment 1 or in Experiment 2, depending on the specific study order, albeit every participant read a specific scenario for each of the studies. An overview of the procedure of Experiments 1 and 2 is shown in Fig. 4-2. Importantly, the order of the studies did not have a significant influence on the dependent variables of interest (all $ps > .61$).

In Experiment 1, participants in the condition with official accountability were told that they had to justify their decision to their boss, while informally accountable subjects were told that they could, but did not have to, incorporate the preferences of the nurses of the hospital they worked for, which would have to wear what they bought. Afterwards, buyers were shown either a small or a large assortment of trousers (work wear) and had to pick one of the products. After their choice, participants rated their decision satisfaction with, and justifiability of, the decision, as well as overload, on

respective scales. They also filled out a series of covariates, confound and manipulation checks. Participants took on average 16:49 minutes to complete Experiment 1.

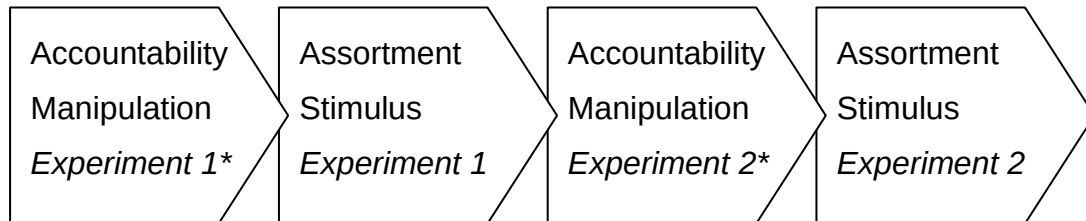


Fig. 4-2: Procedure of Experiments 1 and 2 (order was counterbalanced)

**: Accountability was either official or informal in both Experiments*

4.3.2 Manipulation of Independent Variables

Two different scenarios were created to manipulate the form of accountability. As mentioned before, the manipulation of accountability, i.e., informal versus official accountability, was held constant over Experiment 1 and Experiment 2, although both experiments used different scenarios that were adapted to the product categories the buyers had to choose from. In Experiment 1, buyers were confronted first with the accountability manipulation through a scenario and then shown either a small or large assortment, from which they had to choose a product.

4.3.2.1 Manipulation of Accountability

Accountability was manipulated through different scenarios, which explained to whom a buyer should feel accountable and whether this person had legitimate authority over the buyer. In the case of the official accountability manipulation, participants were told that their decision would be important for the hospital and would, therefore, be evaluated by their boss. In the scenario for informally accountable buyers, the boss was not mentioned. The scenario only explained that the nurses working for the hospital's surgery had certain preferences that the buyer knew about which could, but did not have to be, incorporated into his or her decision.

Thus, accountability was manipulated by a) varying the hierarchical status of the person the buyer should feel accountable to and, consequently, b) varying whether or not legitimate authority over the buyer existed. All other descriptions were kept as constant as possible. For example, the descriptions in the scenarios explaining which product specifications a buyer had to search for were the same for both accountability manipulations. To make the situation as realistic as possible, buyers were told to know basic characteristics of the purchase situation from their own experience, while either the boss or the nurse produced more specific, detailed preferences. The exact manipulations were as follows⁶:

Official accountability: Imagine that you have to buy new work wear. In particular, you have to purchase new trousers for the female nursing staff in your hospital. From your experience with past purchases you already know the following: The trousers should be available in sizes XS to XXL. The trousers have to be chlorine bleachable and machine washable at a hot temperature. The price per trouser should be as low as possible. Furthermore, your boss tells you that the trousers need to be offered in a red and a green color and the fabric should contain a high proportion of cotton. He further tells you that the trousers should have as many pockets as possible for practical reasons relating to work in the hospital. Since this purchase is important for the hospital, your boss will evaluate your purchase decision in great detail.

⁶ All studies in this dissertation were conducted in Germany so that the original descriptions used in all three experiments were in German.

Informal accountability: Imagine that you have to buy new work wear. In particular, you have to purchase new trousers for the female nursing staff in your hospital. From your experience with past purchases you already know the following: The trousers should be available in sizes XS to XXL. The trousers have to be chlorine bleachable and machine washable at a hot temperature. The price per trouser should be as low as possible. Furthermore, you come to talk to one of the nurses from the surgery and she tells you that it would be great if the trousers were offered in a red and a green color and if the fabric contains a high proportion of cotton. She further tells you that the trousers should have as many pockets as possible for practical reasons relating to work in the hospital. Because you think that the needs of the nurse are reasonable, you promise her that you will incorporate them if possible.

4.3.2.2 Manipulation of Assortment Size

After reading the scenario with the accountability manipulation, participants were shown an assortment of trousers from which they had to choose one. The large assortment consisted of eleven alternatives and the small assortment included a subset of the large assortment with a total of six alternatives. To ensure realistic offers, these assortment sizes and the characteristics of the trousers were based on typical assortments of online shops selling corresponding work wear. The descriptions of the stimuli (the trousers), were displayed in a table showing the following dimensions: name of the trouser, description of the trouser, material, care instructions, price per trouser, available colors and sizes. Examples of the stimuli are shown in Tab. 4-1. The complete stimuli can be found in Appendix 1. As would realistically be the case when purchasing most trousers, an alignable or non-complementary assortment, was chosen for this experiment.

Name	Description	Material	Care	Price in €	Available
			Instructions		Colors & Sizes
Sandra	straight cut, 1 hip pocket	50 % polyester, 50 % cotton	machine wash hot, chlorine bleachable	39.95	light brown: S – XXL mandarin orange: S – XXL grey: S – XXL white: S – XXL
Sylvia	straight cut, 1 hip patch pocket	100 % cotton	machine wash warm, do not bleach	32.99	white: XS – XXXL chocolate brown: S – XXXL light yellow: M – L dark red: XS – XXL mint green: XS – XXL

Tab. 4-1: Example of stimuli in Experiment 1

4.3.3 Selection of Measures

4.3.3.1 Dependent Measures

Two dependent measures, namely decision satisfaction and overload, were taken in Experiment 1. Decision satisfaction was measured with five items based on a scale from Heitmann et al. (2007). The original scale consisted of six items, of which one (i.e., “*I would be happy to choose from the same set of product options on my next purchase occasion.*”) was left out because it did not fit within the context of the study. The items used to measure decision satisfaction for Experiment 1, which were also

employed in Experiments 2 and 3, are listed in Tab. 4-2. The scale demonstrated a satisfactory level of reliability in Experiment 1 ($\alpha = .75$).

Overload was measured with two items (“*The number of options was overwhelming.*” and “*The shown information was overwhelming.*”) from Morales et al. (2005). This scale produced a highly satisfactory level of reliability ($\alpha = .96$).

Items for Decision Satisfaction

I think the process of deciding which product to buy was not difficult. (*adapted*)

I found the process of deciding which product to buy interesting.

I was satisfied with my experience of deciding which product option to choose.

Several good options were available for me to choose between.

I thought the choice selection was good.

Tab. 4-2: Items for decision satisfaction (reduced and slightly adapted version of the scale from Heitmann et al. (2007))

4.3.3.2 Mediator

As explained in section 3.1, justifiability was proposed as a mediating factor on the interactive effect of assortment size and accountability. This construct was measured using a scale consisting of three items (i.e., “*I thought it would be easy to justify a purchase decision, in case someone challenges it.*”, “*I was able to see at first sight that some products were superior.*”, “*In order to decide for one product, it was not necessary to make any difficult trade-offs.*”) from Heitmann et al. (2007). This scale again showed a satisfactory level of reliability ($\alpha = .74$).

4.3.3.3 Covariates

Two covariates, namely situational involvement and self-construal, were incorporated into the study. Generally speaking, covariates are metric independent variables that affect the results in a way that is not controlled for in the experiment and are

assumed to be linearly related to the dependent variables of interest. One can adjust for the effects of covariates in data analysis to test treatment effects more sensitively (Hair et al. 2010). Thus, the two variables mentioned above were measured and tested for potential influences on the analyses of the dependent variables, e.g., decision satisfaction.

The rationale for including involvement as a covariate is that it ultimately influences information processing, which refers to how deeply the information offered is processed by an individual (Petty, Cacioppo & Schumann 1983; Cacioppo & Petty 1984). People vary in their motivation, some look at information in detail, others only superficially, and it is possible to distinguish situational or enduring motivation, or, in other words, involvement (Richins, Bloch & McQuarrie 1992; Richins & Bloch 1986). Within the context of this research, especially situational involvement during the experiment is of great relevance. When situational involvement is high it will lead participants to engage in more detailed trade-offs between alternatives and, thus, involvement could have an influence on their motivation to evaluate the alternatives. However, in the course of Experiment 1, participants' motivation should differ according to the interaction of accountability and assortment size. Therefore, it is important to measure involvement and control for its effects on the dependent measures. Otherwise the results could be biased. Situational involvement (also called study involvement) was measured using a slightly adapted scale of Miniard et al. (1991). The scale consisted of four items and showed a high level of reliability ("*I was very involved during the course of the study.*", "*I was concentrating very hard during the course of the study.*", "*I was paying a lot of attention during the course of the study.*", "*I carefully considered the offered information.*"; $\alpha = .93$).

Self-construal was also included as a potentially relevant covariate. This personal trait distinguishes certain people as being more independent and others as more interdependent on people in their environment. This trait could influence how strongly buyers tried to incorporate preferences of others, especially in the conditions of informal accountability. When a person is strongly interdependent, she may try harder to please others, even if others do not have legitimate authority over her. It seems, therefore, that self-construal is an important covariate that could have influ-

enced the motivation to engage in detailed trade-offs between the alternatives offered.

To measure self-construal, a shortened form of Singelis' (1994) scale was adopted. Items were selected on the basis of the highest factor loadings (Singelis 1994, Sample 1, all loadings above .5). From the original 24 items introduced by Singelis (1994), eight items, listed in Tab. 4-3, were used, (four items for the interdependent dimension ($\alpha = .53$) and four items for the independent dimension ($\alpha = .67$)). Surprisingly, reliability, especially for interdependency, was relatively low.

Items for Self-Construal

Interdependency

It is important for me to maintain harmony within my group.

I will sacrifice my self-interest for the benefit of the group I am in.

I often have the feeling that my relationships with others are more important than my own accomplishments.

It is important for me to respect decisions made by the group.

Independency

I prefer to be direct and forthright when dealing with people I've just met.

I enjoy being unique and different from others in many respects.

My personal identity independent of others, is very important to me.

I value being in good health above everything.

Tab. 4-3: Items for self-construal (reduced version of the scale from Singelis (1994))

The subsequent analyses showed, however, that none of the covariates had a significant influence on the results. They were, therefore, excluded from the analyses.

4.3.3.4 Manipulation and Confound Checks

To ensure that the different forms of accountability were manipulated successfully, buyers were asked to rate on a seven-point scale the extent to which they thought about the preferences of their boss or the nursing staff when making their purchase decisions. Participants were then asked to rate how realistic they perceived the situation to be (*"The situation described was realistic."*) and whether they had any difficulties in imaging themselves in the situation and, thus, whether the descriptions were easy to comprehend and aligned to a real-world situation (*"I had no difficulty imagining myself in the situation."*). This ensured that the two scenarios did not differ in terms of how realistic they were perceived.

An overview of all the measures used in Experiment 1 is provided in Tab. 4-4.

<i>Measure</i>	<i>Number of Items</i>	<i>Reliability (α)</i>	<i>Source</i>
Dependent Variables			
Decision Satisfaction	5	.75	Heitmann et al. (2007)
Overload	2	.96	Morales et al. (2005)
Mediator			
Justifiability	3	.74	Heitmann et al. (2007)
Covariates			
Situational Involvement	4	.93	Miniard et al. (1991)
Self-Constructual			
<i>Interdependency</i>	4	.53	Singelis (1994)
<i>Independency</i>	4	.67	Singelis (1994)
Manipulation Check			
Accountability	1	n.a.	
Confound Checks			
Realism	1	n.a.	Dabholkar (1994)
Comprehensibility	1	n.a.	Dabholkar (1994)

Tab. 4-4: Overview of measures for Experiment 1

4.3.4 Results

4.3.4.1 Manipulation and Confound Checks

A manipulation check was first performed to test whether the two different forms of accountability were manipulated successfully. It will be recalled that the manipulation check asked participants to rate on a 7-point-scale the extent to which they felt more accountable to their boss' or the nurse's preference when deciding on trousers to purchase. The scale was anchored by "1 = to my boss" and "7 = to the nurses", meaning all values smaller than four show that participants felt more accountable to their boss, while all values greater than four reveal they felt more accountable to the nurses.

A significant main effect revealed that participants in the official accountability manipulation felt more accountable to their boss, while those that were manipulated to be informally accountable felt more accountable to the preferences of the nurses ($M_{\text{official accountability}} = 3.37$, $M_{\text{informal accountability}} = 5.10$, $F(1, 101) = 37.43$, $p < .001$), as would be expected. Furthermore, it was tested whether assortment size, the other independent variable, had an effect on the manipulation check and/or if the interaction of assortment size and accountability had an effect on the manipulation. Again, as expected, neither the main effect of assortment size nor the interaction were significant ($ps > .81$).

Finally, two univariate ANOVAS were performed to test whether the two scenarios differed in terms of their perceived realism. On both items of the realism check, accountability and assortment size did not yield any significant effects ($ps > .43$). Thus, participants had no difficulties in imagining the situations described in the scenarios and thought both were equally realistic.

4.3.4.2 Hypotheses Testing

Interactive Effect of Assortment Size and Accountability. Hypotheses H1A and H1B postulated an interactive effect of assortment size and accountability. To test for this effect, an ANOVA was conducted. Firstly, the results demonstrate that the main effect of assortment size on decision satisfaction was not significant ($M_{\text{small}} = 4.27$, $M_{\text{large}} = 4.01$, $F(1, 99) = 1.10$, $p > .29$), while the form of accountability had a signifi-

cant main effect on decision satisfaction ($M_{\text{official}} = 4.46$, $M_{\text{informal}} = 3.82$, $F(1, 99) = 7.69$, $p < .01$) Secondly, and importantly, the ANOVA revealed that the latter effect was qualified by a significant interaction effect between accountability and assortment size ($F(1, 99) = 9.12$, $p = .003$). Following the logic of hypotheses H1A and H1B, a simple effects analysis was conducted to identify which of the conditions differed from one another. This analysis revealed that officially accountable decision makers experienced no significant difference in satisfaction between the two assortments ($M_{\text{small}} = 4.24$, $M_{\text{large}} = 4.69$, $F(1, 99) = 1.75$, $p > .18$), as postulated in H1A, while informally accountable decision makers were less satisfied with the large than with the small assortment ($M_{\text{small}} = 4.30$, $M_{\text{large}} = 3.39$, $F(1, 99) = 8.87$, $p < .005$), as predicted in H1B. In summary, H1A and H1B are clearly supported. The mean values for decision satisfaction, as well all other dependent variables, are shown in Tab. 4-5, and the results are laid out in Fig. 4-3.

	<i>Official Accountability</i>		<i>Informal Accountability</i>	
	<i>Small Assortment</i>	<i>Large Assortment</i>	<i>Small Assortment</i>	<i>Large Assortment</i>
Decision Satisfaction	4.24 (1.31)	4.69 (1.30)	4.3 (1.03)	3.39 (1.08)
Overload	1.76 (.74)	2.66 (1.46)	1.58 (.83)	2.07 (1.25)
Justifiability	5.27 (1.34)	5.43 (1.32)	5.83 (.82)	4.97 (1.35)
Manipulation Check	3.41 (1.50)	3.32 (1.55)	5.13 (1.26)	5.07 (1.47)

Notes: Numbers in parentheses are standard deviations; all measures were taken on seven-point scales such that higher numbers present higher mean ratings.

Tab. 4-5: Mean values for the dependent variables in Experiment 1

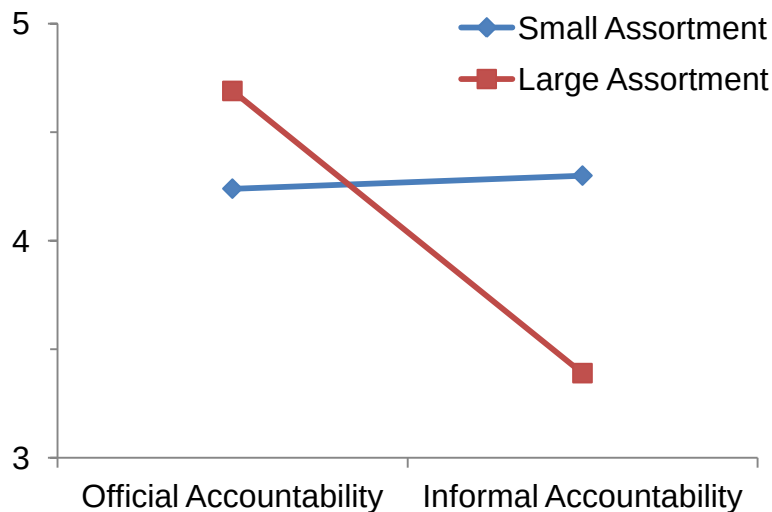


Fig. 4-3: Mean decision satisfaction in Experiment 1

Moderated Mediation. Hypothesis H2 stated that the proven interactive effects of accountability and assortment size (H1A and H1B) are mediated by justifiability. In other words, a moderated mediation is presumed, in which the interaction of assortment size and accountability unfolds its effect not directly on decision satisfaction, but on justifiability, which, in turn, affects decision satisfaction (Preacher, Rucker & Hayes 2007, Model 2). In detail, Preacher et al. (2007) state that “these indirect effects are hypothesized when theory suggests that [...] a moderation effect is mediated by *M* (an effect sometimes called mediated moderation, as discussed by Müller et al. 2005, among others) [...]” (p. 196; see also Müller, Judd & Yzerbyt 2005). This describes exactly the effects hypothesized in H1A, H1B and H2, respectively (see also Fig. 4-4). From a mathematical perspective, mediated moderation and moderated mediation are calculated precisely the same way since “the model may be used to address either hypothesis” (Preacher et al. 2007, p. 196).

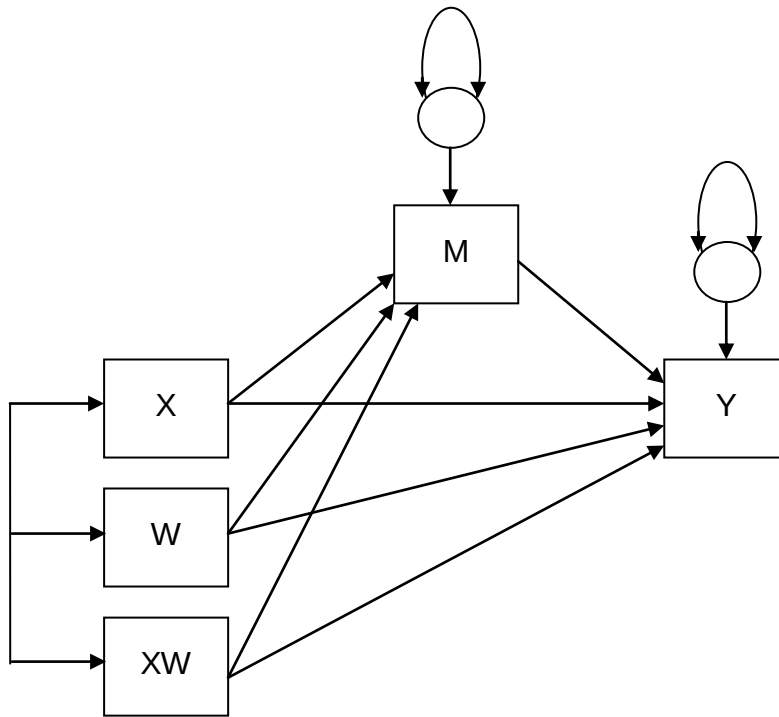
In light of this, and following the approach of Preacher et al. (2007), two multiple regression models were run to test the proposed moderated mediation. In the mediator model, the effects of assortment size, accountability and the assortment size x accountability interaction on justifiability were examined. This analysis indicated that justifiability was predicted by the assortment size x accountability interaction ($b = .988$, $t = 2.04$, $p < .05$). In the dependent variable model, decision satisfaction

was regressed on justifiability, assortment size, accountability and the assortment size x accountability interaction. In this model, justifiability predicted decision satisfaction ($b = .297$, $t = 3.34$, $p < .002$). However, the assortment size x accountability interaction was still significant ($b = 1.065$, $t = 2.44$, $p < .02$). This shows that moderated mediation exists, albeit only partially, the latter indicating that at least one other mediator must exist that additionally explains the effect of the assortment size x accountability interaction on decision satisfaction (Zhao, Lynch & Chen 2010).

As expected, the results show that a) the interaction between assortment size and accountability determines justifiability and b) justifiability, in turn, affects decision satisfaction. Using the recommended bootstrapping technique (5,000 samples), the results confirm that the conditional indirect effect of assortment size on decision satisfaction through justifiability is significant for informal accountability ($b = -.248$, 95 % confidence interval [CI] = $[-.501, -.047]$), but not for official accountability ($b = .046$, 95 % CI = $[-.190, .274]$; Zhao et al. 2010). Thus, a partial moderated mediation exists, which means that H2 is supported. Although not a necessary condition for moderated mediation (see Zhao et al. 2010), in addition decision satisfaction was regressed on assortment size, accountability and the assortment size x accountability interaction. As would be predicted (see Equation 1 in Müller et al. 2005), the assortment size x accountability interaction in this model is significant ($b = 1.358$, $t = 3.02$, $p = .003$). In order to prove that the decomposition of the originally detected interaction effect of assortment size and accountability was done correctly, one can calculate if the product of the b coefficients for the indirect path, i.e., the coefficient of the interaction in the mediator model times the coefficient of the mediator in the dependent variable model, plus the coefficient of the interaction in the dependent variable model equals the coefficient of the interaction in the last regression of decision satisfaction on assortment size, accountability and the assortment size x accountability interaction (Preacher, Curran & Bauer 2006; Aiken & West 1991). In the case of the analysis at hand this means that

$$.9884 * .2971 + 1.0647 \equiv 1.358$$

which holds true. Thus, a correct decomposition of the interaction can be shown as further proof of the postulated moderated mediation.



Notes: X is the independent variable, W is the moderator, XW is the interaction of the independent variable and the moderator, M is the mediator, Y is the dependent variable.

Fig. 4-4: Moderated mediation (Model 2, slightly adapted from Preacher et al. 2007, p. 194)

Further Analysis Regarding Overload. Although not stated as a formal hypothesis, it was tested if assortment size, accountability and/or their interaction influenced overload. Therefore an ANOVA was conducted. This analysis revealed a significant main effect of assortment size, i.e., as would be expected, the larger assortment led to increased overload ($M_{\text{large}} = 2.36$, $M_{\text{small}} = 1.68$, $F(1, 99) = 10.15$, $p = .002$). Furthermore, accountability had a marginal significant effect on overload ($M_{\text{official}} = 2.19$, $M_{\text{informal}} = 1.84$, $F(1, 99) = 3.04$, $p < .09$) while the interaction effect was not significant ($F(1, 99) = .881$, $p = .35$). It is important to note that participants under official accountability experienced more overload than informally accountable participants. The reasoning behind this is that official accountable participants generally made greater effort when assessing trade-offs between alternatives and, thus,

experienced more overload. Informally accountable decision makers, however, did not experience as much overload since they were less motivated to evaluate all alternatives in detail. Fig. 4-5 shows the corresponding mean values.

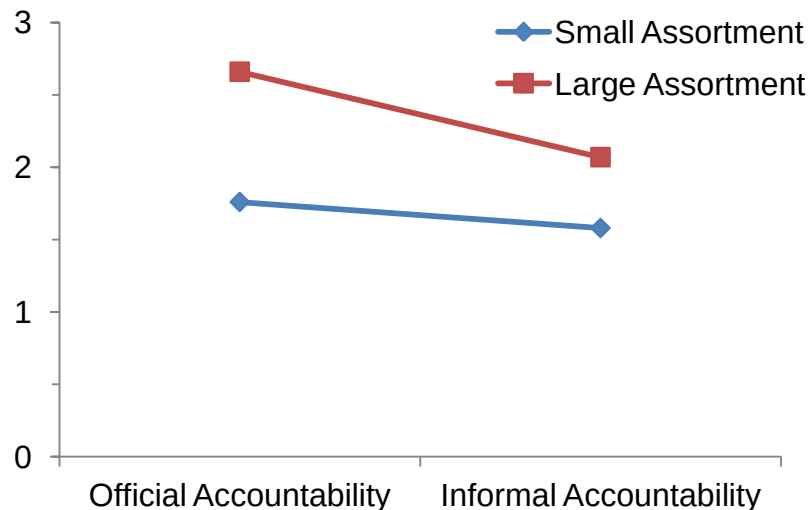


Fig. 4-5: Mean overload in Experiment 1

4.3.5 Discussion

The purpose of Experiment 1 was to test hypotheses H1A, H1B and H2. As predicted by H1A, decision makers under official accountability were equally satisfied when choosing from small or large assortments. H1B was also confirmed, with the results revealing that decision makers under informal accountability were more satisfied when choosing from small than from large assortments. Thus, the proposed interaction between assortment size and accountability was demonstrated. This deepens the insights from Polman's (2012) findings by showing that not all forms of accountability lead to reduced satisfaction when choosing from large assortments, i.e., overchoice effects. Thus, an important boundary condition was revealed.

In addition to this, the underlying process of how assortment size and accountability affect decision satisfaction was investigated. As outlined earlier, the revealed interaction between assortment size and accountability was qualified by mediation: for informally accountable decision makers, the effect of assortment size on decision

satisfaction worked through an indirect path with justifiability as a mediator. This means that decision makers prefer to have a mentally convenient choice when held informally accountable and, consequently, appreciate small, rather than large, assortments. If, however, decision makers have to make a choice from a large assortment, they are not willing to investigate all alternatives in depth and, therefore, have the feeling that it is hard to justify their own decision. This, in turn, reduces their satisfaction with the decision process.

As demonstrated by further analysis, participants under official accountability experienced more overload than those under informal accountability, which means, in general, they invested greater effort in trade-offs between alternatives. However, this did not lead to them feel unsatisfied with a large assortment due to the ease with which they could justify their decision once they had identified the option they wished to purchase. In contrast, informally accountable decision makers did not experience as much overload since they were less motivated to evaluate all offered alternatives in detail. This reduced the possibility of justifying their decision when choosing from a large assortment, through giving good reasons for their choice, because they felt they did not make comprehensive trade-offs between a sufficient number of alternatives. As explained before, this ultimately reduced their decision satisfaction.

The fundamental psychological processes that lead to reduced decision satisfaction when choosing from a large assortment and, simultaneously, being held informally accountable is now very clear. Building on this, what is of great interest is how the satisfaction of decision makers under these circumstances can be enhanced. As already outlined, this could potentially be achieved by using attribute-level color-coding, the application of which can be seen in van Herpen and Pieters' (2007) study. Experiment 2 will, therefore, investigate the effects of color-coding when choosing from large assortments under different forms of accountability.

4.4 Experiment 2: Joint Effects of Color-Coding and Accountability in a B2B Setting

4.4.1 Design, Participants and Procedure

Experiment 2 used a 2 (color-coding: yes versus no) x 2 (accountability: informal versus official) between-subjects design. The same subjects from Experiment 1 were used and the order of the two studies was counterbalanced among participants. A total of 103 buyers from German hospitals participated in the study. However, since color-coding was implemented in this study, it was important that participants were not color-blind. Therefore one participant had to be removed from the analysis. The remaining sample consisted of a total of 102 buyers. Of the participants, 70 (68.6 %) were male and 32 (31.4 %) were female. 83 (81.4 %) of the buyers had managerial responsibility, while 15 (14.7 %) did not and 4 (3.9 %) did not specify when answering the question. The average age of the participants was 45.3 years. Most of the buyers (95; 93.1 %) were employed full-time, while 7 (6.9 %) worked part-time. On average, they had been in their current job position for 10.3 years and had generally worked as buyers for 15.3 years. Exactly half (51) of the hospitals for which the buyers worked were run by NGOs while 37 (36.3 %) were public hospitals and 14 (13.7 %) were commercially run. The average number of beds per hospital was 562.

The experiment was carried out as follows. It began with buyers being told that they had to buy new surgical suture material for their hospital. As already explained, they were randomly assigned to a scenario with either informal or official accountability. It will be recalled that the accountability manipulation was held constant over Experiments 1 and 2 to prevent confounding effects between the two studies arising from different accountability manipulations. Since the order of the studies was counterbalanced, participants were either randomly assigned to an accountability manipulation in Experiment 1 *or* in Experiment 2, depending on the specific study order. Participants in the official accountability condition were told that they had to justify their decision to their boss, while informally accountable subjects were told that they could, but did not have to, incorporate the preferences of a surgeon who would be using the suture material they bought. Afterwards, buyers were shown large assortments that had either a color-coding on attribute-level for the kinds of product appli-

cations or did not have any additional coding. Buyers then had to choose one of the products from the assortment they were presented with. Having made their choice, participants rated their decision satisfaction and filled out a series of covariates, confound and manipulation checks. Participants took on average 13:01 minutes to complete the experiment.

4.4.2 Manipulation of Independent Variables

Two different scenarios to manipulate the form of accountability were created. Firstly, to manipulate the form of accountability (informal versus official accountability), buyers were confronted with a scenario and, secondly, they were shown either a color-coded or non-coded assortment from which they had to choose a product.

4.4.2.1 Manipulation of Accountability

Pre-study. To ensure that the scenarios experienced were as realistic as possible, a total of 16 expert interviews with buyers in German hospitals were conducted beforehand. Buyers were asked, among other things, to describe typical purchase processes for surgical suture materials. In detail, they were asked who would first signal the need to make a purchase, which departments would typically be involved in such a decision and which standards and rules they would have to follow. They were also explicitly asked about the different people involved – the equivalent of roles in a buying center – and hierarchical structures that are relevant for purchase decisions for surgical suture material. In addition, information was sought on their experiences of assortment size and presentation of the suppliers that they typically purchased such materials from. Where possible, the interviews were recorded digitally⁷, which was the case for eleven interviews, lasting an average of 30:44 minutes. All interviews were conducted in person at the facilities of the participating hospital.

Formalization of the processes differed considerably among the hospitals and, importantly, hospitals also varied with regards to the inclusion of user preferences when new products had to be purchased. While five experts told to buy solely what the user, i.e., surgeons, wanted, nine buyers explained that although they made the

⁷ Buyers were asked for their permission to record the interview with a digital recorder. Some buyers, however, could not give this permission due to regulations of their employer.

final purchase decision themselves, they incorporated user preferences. In contrast, two buyers stated it was solely their decision which products they bought, they did not ask users about their preferences. Importantly, many buyers mentioned that the degree to which user preferences are incorporated into purchase decisions varies widely among hospitals and, thus, they were at least partly sensitive to different forms of accountability in practice. All buyers mentioned in some way that they have a boss to whom they felt accountable and who would, at least occasionally, evaluate their decisions. In summary, it appears realistic to have a scenario with an informal accountability manipulation in which non-binding user preferences are mentioned and another scenario where buyers are solely accountable to their bosses (official accountability).

Buyers' satisfaction with the assortment size and presentation of current suppliers of surgical suture material differed. Ten buyers thought that assortments of most suppliers were well presented and easy to comprehend, fourteen of the buyers were totally satisfied with their current supplier and two only had minor complaints regarding satisfaction. In contrast, four buyers had difficulties finding the right product from the actual assortments, indeed two always contacted the sales personnel of the corresponding supplier directly because they felt unable to make a decision from the assortments offered on their own. It is important to note that this satisfaction is based on a perception of the product quality the suppliers deliver and *not* their decision satisfaction, as measured in the dissertation's three experiments. Decision satisfaction, however, is reflected in the statements on assortment presentation, with buyers who felt overwhelmed by the number of options offered being not totally satisfied with the corresponding suppliers' assortments.

Manipulation of Accountability in the Experiment. Similar to Experiment 1, accountability was manipulated through different scenarios which explained to whom the buyer should feel accountable to and whether this person had a legitimate authority over them. In case of the official accountability manipulation, participants again were told that their decision would be evaluated by their boss. In the scenario for informally accountable buyers the boss was not mentioned. They were just informed that a specific surgeon using suture material has certain preferences that the buyer could, but did not have to, incorporate into his or her decision. Thus, accountability was

again manipulated by a) varying the hierarchical status of the person the buyer should feel accountable to and, consequently, b) varying whether or not there was legitimate authority over the buyer. All other descriptions were kept as consistent as possible. For example, the situation described in the scenarios explained which product specifications a buyer had to search for and these descriptions were the same for both accountability manipulations. To make the situation as realistic as possible, buyers were again informed to know certain basic characteristics of the purchase situation, drawing on their own experience, while either the boss or surgeon developed more detailed preferences and specifications.

The exact manipulations were as follows:

Official accountability: Imagine the following situation: Recently, one of your suppliers for surgical suture material had problems delivering the materials ordered. Therefore, you have to conduct a purchase from a supplier you have not ordered from in the past. What you need at the moment is a surgical suture material for use in gynecologic surgery. From your experience with past purchases you already know the following: The material has to be explicitly denoted for use in gynecological surgery and the price per packaging unit should be as low as possible. Furthermore, your boss tells you that the material needs to be absorbable. Absorption should ideally take place within 75 days, but up to 90 days would be acceptable. It should be a multi-filament material that is uncolored. Desirable, but not compulsory, is a further applicability of the material for subcutaneous skin closure. Since the purchase is important for the hospital, your boss will evaluate your purchase decision in considerable detail.

Informal accountability: Imagine the following situation: Recently, one of your suppliers for surgical suture material had problems delivering the materials ordered. Therefore, you have to conduct a purchase from a supplier you have not ordered from in the past. What you need at the moment is a surgical suture material for use in gynecologic surgery. From your experience with past purchases you already know the following: The material has to be explicitly denoted for use in gynecological surgery and the price per packaging unit should be as low as possible. Furthermore, you come to talk to one of the surgeons and he tells you that the material needs to be absorbable. Absorption should ideally take place within 75 days, but up to 90 days would be acceptable. It should be a multifilament material that is uncolored. Desirable, but not compulsory, is a further applicability of the material for subcutaneous skin closure. Because you think that the needs of the surgeon are reasonable, you promise him that you will incorporate them if possible.

4.4.2.2 Manipulation of Assortment Presentation

After reading the scenario containing the accountability manipulation, participants were presented with an assortment of surgical suture materials from which they had to choose one. The assortment consisted of thirteen different materials, which is considered to be a large assortment on the basis of the expert interviews conducted beforehand and the assortments offered by leading suppliers.⁸ The descriptions of the stimuli, i.e., the surgical suture materials, were displayed in a table showing the following dimensions: name, material, applications, color of material, absorption, structure, price per packaging unit (36 pieces). For the attribute-level color-coding, a column showing the corresponding colors for the fields of application was added. Examples of the stimuli are shown in Tab. 4-6 and the complete stimuli can be found in Appendix 2. As can be seen again, this assortment was an alignable or noncomplementary one, respectively, as was the case in Experiment 1.

⁸ The assortment was also critically evaluated regarding its realism by one buyer from a hospital who participated in the expert interviews.

<i>Fields of appli- cation</i>	<i>Name</i>	<i>Mate- rial</i>	<i>Appli- cations</i>	<i>Color of Material</i>	<i>Absorp- tion</i>	<i>Struc- ture</i>	<i>Price in € (36 pieces)</i>
	Lactil 910	Poly- glactin 910	gynecology skin closure (sub- cutaneous, intra- cutaneous)	un- colored violet	approx. 56 – 70 days	multi- filament	125.00
	Novo Med 90	Poly- ester (PET)	cardio- surgery vascular surgery	white green	none	multi- filament	68.00

Tab. 4-6: Example of color-coded stimuli in Experiment 2

The legend explaining the color representing each application was listed on the same page. For example, orange stood for possible application in gynecology and red indicated possible application for intracutaneous skin closure. Thus, participants in the color-coding condition just had to remember the corresponding colors for the applications they were looking for to find materials that would meet the particular demands of the scenario.

4.4.3 Selection of Measures

4.4.3.1 Dependent Measures

The dependent measure of interest in this experiment was decision satisfaction. It was measured with the same five items from Heitmann et al. (2007) as used in Experiment 1 (e.g., “*I was satisfied with my experience of deciding which product*

option to choose."). As with the previous experiment, the scale produced a satisfactory level of reliability ($\alpha = .69$).

4.4.3.2 Covariates

As in Experiment 1, a number of covariates were included in this study to control for external influences and to test treatment effects more sensitively. Covariates were the same as in the first study, namely, situational involvement and self-construal. Self-construal is independent of the study treatment at hand and since Experiment 1 and Experiment 2 were conducted together, self-construal was only measured once, but included in both the analyses for Experiment 1 and 2. Situational involvement could, however, have differed over the course of the two studies and was thus measured twice. Involvement was again measured on a four-item scale from Miniard et al. (1991). The scale continued to show a highly satisfactory level of reliability ($\alpha = .92$).

The subsequent analyses, however, revealed that none of the covariates had a significant influence on the results and, for this reason, they were excluded from the analyses.

4.4.3.3 Manipulation and Confound Checks

Similar to Experiment 1, and to ensure that the different forms of accountability were manipulated successfully, buyers were asked to rate on a seven-point scale if they thought about the preferences of their boss or the surgeon when making their purchase decisions. Based on two items from Dabholkar (1994), participants were then asked, as in Experiment 1, to rate how realistic they perceived the situation to be (*"The situation described was realistic."*) and if they had any difficulties in imagining themselves in the situation (*"I had no difficulty imagining myself in the situation."*). This ensured that the two different scenarios used to manipulate accountability did not differ in how realistically they were perceived. Tab. 4-7 gives an overview of all measures used in Experiment 2.

<i>Measure</i>	<i>Number of Items</i>	<i>Reliability (α)</i>	<i>Source</i>
Dependent Variables			
Decision Satisfaction	5	.69	Heitmann et al. (2007)
Covariates			
Situational Involvement	4	.92	Miniard et al. (1991)
Self-Construal*			
<i>Interdependency</i>	4	.53	Singelis (1994)
<i>Independency</i>	4	.67	Singelis (1994)
Manipulation Check			
Accountability	1	n.a.	
Confound Checks			
Realism	1	n.a.	Dabholkar (1994)
Comprehensibility	1	n.a.	Dabholkar (1994)

*Notes: * Values of self-construal are the same as in Experiment 1 because this construct was only measured once.*

Tab. 4-7: Overview of measures for Experiment 2

4.4.4 Results

4.4.4.1 Manipulation and Confound Checks

First, a manipulation check was performed to test whether the two different forms of accountability were manipulated successfully. Similar to Experiment 1, the manipulation check asked participants to rate on a 7-point-scale whether they felt more accountable to their boss' or the surgeon's preferences when choosing a surgical suture material. The scale was anchored by "1 = to my boss" and "7 = to the surgeon", meaning all values smaller than four show that participants felt more accountable to their boss while all values greater than four mean that they felt more accountable to the surgeon. A significant main effect revealed that participants in the official accountability manipulation felt more accountable to their boss, while participants manipulated to be informally accountable felt greater accountability to the surgeon's preferences ($M_{\text{official accountability}} = 3.62$, $M_{\text{informal accountability}} = 5.28$, $F(1, 100) = 36.34$, $p < .001$). Furthermore it was tested, if assortment presentation, i.e, the other independent variable, had an effect on the manipulation check and/or if the interaction of assortment presentation and accountability had an effect. As expected, neither the main effect of assortment size nor the interaction was significant ($ps > .53$).

Additionally, two univariate ANOVAS were performed to test whether the two scenarios differed in how realistically they were perceived. Accountability and assortment presentation did not yield any significant effects on either items of the realism check ($ps > .21$). Thus, participants had no difficulty imagining the situations described in the scenarios and thought both were equally realistic.

4.4.4.2 Hypotheses Testing

Interactive Effect of Assortment Presentation and Accountability. Hypotheses H3 and H4 postulated an interactive effect of assortment presentation and accountability. To test for this effect, an ANOVA was conducted. Firstly, the results demonstrate that the main effect of assortment presentation on decision satisfaction was marginally significant ($M_{\text{no color-coding}} = 4.44$, $M_{\text{color-coding}} = 4.78$, $F(1, 98) = 3.65$, $p < .06$) and the form of accountability had a significant main effect on decision satisfaction ($M_{\text{official}} = 4.40$, $M_{\text{informal}} = 4.84$, $F(1, 98) = 5.40$, $p < .03$). The ANOVA further revealed

a non-significant interaction effect between accountability and assortment presentation ($F(1, 98) = 1.64, p < .21$). However, a simple effects analysis was conducted to see if some of the conditions differed significantly from one another, albeit the non-significant interaction effect. This analysis revealed that officially accountable decision makers experienced no difference in decision satisfaction across the two forms of assortment presentation ($M_{\text{no color-coding}} = 4.33, M_{\text{color-coding}} = 4.46, F(1, 98) = .11, p > .74$), as was posited in H3. However, informally accountable decision makers, as predicted in H4, were less satisfied with the assortment presentation without color-coding than with the one with color-coding ($M_{\text{no color-coding}} = 4.54, M_{\text{color-coding}} = 5.17, F(1, 98) = 4.72, p < .04$).

It is important to note that a significant interaction effect is not a compulsory requirement to test simple effects. When there are explicit hypotheses about the direction of effects and which of the contrasts should be significant, simple effects analysis can be performed without testing for interaction beforehand (Keselman et al. 1998). Since corresponding directional hypotheses were stated from the outset of this dissertation, it is sufficient to show that simple effects revealed a significant difference regarding informally accountable decision makers, while effects were clearly not significant for officially accountable decision makers, as postulated beforehand. Summing up, the simple effects analysis shows strong support for H3 and H4, although the interaction effect in the ANOVA is not significant. In other words, H3 and H4 can be seen as supported. The mean values for the dependent variables are shown in Tab. 4-8 and the results are recorded in Fig. 4-6.

	Official Accountability		Informal Accountability	
	No Color-Coding	Color-Coding	No Color-Coding	Color-Coding
Decision Satisfaction	4.33 (.92)	4.46 (1.18)	4.54 (.81)	5.17 (1.00)
Manipulation Check	3.71 (1.37)	3.54 (1.75)	5.19 (1.17)	5.38 (1.21)

Notes: Numbers in parentheses are standard deviations; all measures were taken on seven-point scales such that higher numbers present higher mean ratings.

Tab. 4-8: Mean values for the dependent variables in Experiment 2



Fig. 4-6: Mean decision satisfaction in Experiment 2

4.4.5 Discussion

The purpose of Experiment 2 was to test hypotheses H3 and H4, thereby demonstrating color-coding to be a promising means of enhancing decision satisfaction of informally accountable decision makers. Ultimately, both hypotheses were confirmed, and thus, as predicted, color-coding has been shown as helpful for informally, but not officially, accountable decision makers. As explained in Experiment 1, officially accountable decision makers are far more motivated to process and evaluate assortments, even if they are large and/or complex. Since the basic information about the products is held constant with or without such presentation aids, these decision makers do not benefit strongly from color-coding or other forms of mentally convenient assortment presentation. Informally accountable decision makers, however, are less motivated to deeply evaluate all alternatives offered, it is helpful for them, when assortment presentation makes it easy or, in other words, mentally convenient to identify which products are and which are not worth to form detailed trade-offs. Importantly, Experiment 2 clearly showed that color-coding did not harm satisfaction of the officially accountable decision makers and can, therefore, be applied without concern.

Thus far the experiments conducted have only compared situations where decision makers were held accountable in some form. This is reasonable since B2B buyers, in reality, are always held accountable for their decisions, making it unrealistic to encourage them to envisage a situation of zero accountability when performing their job. However, with regard to Experiment 2, it is important to compare decision makers not accountable for their decision to those who are accountable in order to observe whether, and if so, how, they differ in their decision satisfaction. Building on this, the results of Experiment 2 were replicated and extended in Experiment 3.⁹ In detail, the third experiment was conducted to extend the result of Experiment 2 in two important ways: Firstly, and as already discussed, accountable and non-accountable decision makers were compared on the basis of decision satisfaction. Secondly, Experiment 3 used a service, instead of a product, offer and adopted a complementary, rather than non-complementary, assortment.

⁹ Given that overchoice effects have been heavily studied in the case of non-accountable decision makers, a similar replication is unnecessary for Experiment 1.

4.5 Experiment 3: Joint Effects of Color-Coding and Accountability in a B2C Setting

4.5.1 Design, Participants and Procedure

Experiment 3 used a 2 (color-coding: yes versus no) x 3 (accountability: none versus informal versus official) between-subjects design. A total of 241 people participated in this online experiment. Of the participants, 124 (51.5 %) were male and 117 (48.5 %) were female. Of the participants, 95 (39.4 %) worked in a permanent position, 69 (28.6 %) had a temporary job, 47 (19.5 %) were unemployed and 30 (12.4 %) had never worked before. The average age of the participants was 29.7 years. As an incentive, several Amazon vouchers were raffled off among participants.

Importantly, this was a random online sample, which did not consist of B2B decision makers, meaning accountability was transferred to another context. As will be explained, the fictitious decision situation used in the scenarios is, however, similar to a B2B setting. Thus, the results can still be applied to B2B decision makers, because, as former research has shown, experts like B2B buyers outperform amateurs in the speed at which they reach an accurate decision, but amateurs often show the same patterns in their decision making (Neale & Northcraft 1986). Since this dissertation is interested in revealing effects on decision satisfaction, rather than decision speed, or even the accuracy of a decision, it is not a major limitation to use a non-B2B sample, especially because Experiment 3 is a replication of Experiment 2 in some important parts. In further support of this approach, studies with student samples have been used to explain behavior in B2B contexts in earlier research (for example, Wilken et al. 2010; Camerer 2003). Also Herbst and Schwarz (2011) showed that samples with trained students are not significantly outperformed by professionals in a large number of studies. Because the focal decision for Experiment 3 of this dissertation is one for a restaurant, it can be assumed that special training is not necessary to reach a similar performance. Equally relevant is that the sample selected in this dissertation is more general than a student sample and since Experiment 3 is in part a replication of Experiment 2, which used a B2B sample, there should be no serious issues concerning the choice of participants for this study.

The procedure of the experiment was as follows. Participants were asked to imagine that they had to choose a restaurant to celebrate a certain event. Those participants held unaccountable for their decision were told to choose a restaurant according to their own preferences. Informally accountable decision makers, on the other hand, were informed that their colleagues would take part in the event and that they wanted to incorporate their colleagues' preferences into the decision so their colleagues would like the chosen restaurant. Officially accountable participants were told that their boss along with several key accounts of the company would attend the event and it was very important to make the right decision based on those customers' preferences, indeed their boss would critically evaluate their decision afterwards. After reading the scenario with the accountability manipulation, participants had to choose a restaurant from a restaurant guide. This guide either used a color-coding on attribute-level additionally to descriptions of the restaurants or just showed the descriptions. After their choice, participants rated their decision satisfaction. They also completed a series of covariates, confound and manipulation checks. Participants took on average 15:11 minutes to complete the experiment.

4.5.2 Manipulation of Independent Variables

4.5.2.1 Manipulation of Accountability

Similar to Experiments 1 and 2, accountability was manipulated using different scenarios, which explained to whom the buyer should feel accountable to and whether this person had legitimate authority over them. In detail, participants were asked to plan a certain event. In the case of the official accountability manipulation, participants were again told that their boss would evaluate their decision. For informally and non-accountable decision makers the boss was not mentioned. The scenario stated that the decision maker knew certain preferences of his or her colleagues that he or she wanted to incorporate these into the decision to ensure their colleagues were comfortable with the restaurant choice. Thus, the two distinct forms of accountability were manipulated once again by a) varying the hierarchical status of the person the decision maker should feel accountable to and, consequently, b) varying whether or not legitimate authority over the decision maker was present. All other descriptions, for example, the preferences of others described in the scenarios, were kept as

consistent as possible. The non-accountable decision makers, however, were told to simply decide on the basis of their own preferences. Since those preferences were not known to the researcher, there were no statements what these preferences had to look like to keep the situation as realistic as possible. Preferences of other people were not mentioned. The exact manipulations were as follows:

Official accountability: Imagine that you are asked to organize an event for your company's 10th anniversary. In detail, you have to choose a restaurant for a dinner with 20 key customers of your company. Since this event is very important for your boss, he will evaluate your decision for a restaurant in great detail.

Informal accountability: Imagine that you are asked to organize an event for your company's 10th anniversary. In detail, you have to choose a restaurant for a dinner with 20 of your colleagues. Since you want your colleagues to feel comfortable, you want to choose a restaurant that they like.

No accountability: Imagine that you want to organize an event for your 10th anniversary at your company. In detail, you want to choose a restaurant for a dinner with 20 of your colleagues. You are really looking forward to that event and now want to choose a restaurant that best fits your preferences.

In the first two conditions, participants were further informed about some preferences of their customers or colleagues, e.g., that lots of them prefer wine and would appreciate a restaurant near the city center.

4.5.2.2 Manipulation of Assortment Presentation

After reading one of the scenarios with the accountability manipulation, participants were shown a restaurant guide with descriptions and pictures of eight different restaurants. The complete stimuli can be found in Appendix 3.

As an example, one of the restaurant descriptions reads:

Asia Royal: When visiting us, you will experience a culinary explosion: The inimitable art of Sushi making and Asian-style high quality specialties with fish, meat or vegetables. Relax in a stylish lounge-like atmosphere and enjoy one of our world-famous cocktails... Take some time to relax in our “Asia Garden” – a unique terrace, designed in the spirit of feng shui. A place of silence, all calm and peaceful while located in the middle of the lively city center. We are sure here you’ll find calmness and inner peace! Asia Royal, the unique spirit!

The restaurant guide with color-coding used colored symbols for specific attributes of the restaurants, e.g., if a certain restaurant was located near the city center or served fish. Participants who saw the restaurant guide with color-coding could, therefore, easily recognize the alternatives that were potentially fitting the preferences they wanted to incorporate into their decision and had a reduced set of options to trade-off. The symbols for the specific color-coding applied in this study are shown in Fig. 4-7. Importantly, in this experiment a complementary assortment was used because the chosen attributes and their combinations, respectively, were independent of each other. Thus, participants had to trade-off attribute combinations against one another, but not all attributes were present for all restaurants, making the decision situation more demanding than in Experiment 1 and 2.

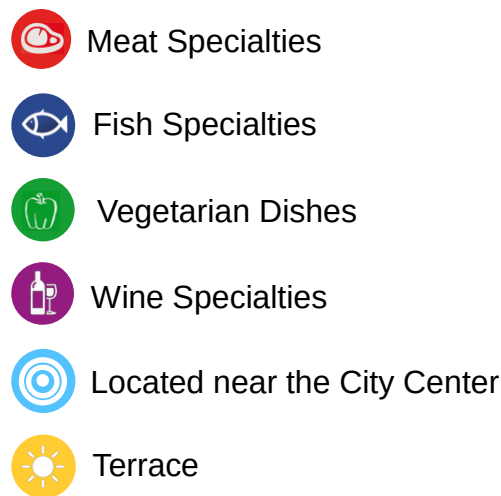


Fig. 4-7: Color-coded symbols used in Experiment 3

4.5.3 Selection of Measures

4.5.3.1 Dependent Measures

As with the previous two experiments, the dependent measure of interest was decision satisfaction. Decision satisfaction was measured using the same five items from Heitmann et al. (2007) as in Experiments 1 and 2 (e.g., “*Several good options were available for me to choose between.*”). Once again, the scale showed a satisfactory level of reliability ($\alpha = .72$).

4.5.3.2 Covariates

In addition to some others, the same covariates as in Experiment 1 and Experiment 2 were measured in this study. Situational involvement was measured with the same four items from Miniard et al. (1991). The scale showed a very good level of reliability ($\alpha = .82$). Self-construal was measured with the same eight items from the preceding experiments that constituted a reduced version of the scale from Singelis (1994). The four items reflecting interdependency demonstrated an acceptable level of reliability

($\alpha = .59$), while the four items for independency showed a relatively low level of reliability ($\alpha = .53$).

For Experiment 3, enduring involvement was included as a possible covariate. The rationale behind this was that some of the participants frequently ate in restaurants and may like to go out for dinner as a hobby, with the result that enduring involvement for restaurants potentially varied across participants, influencing how motivated they were to process the information offered in the restaurant guide (Richins et al. 1992; Richins & Bloch 1986; Cacioppo & Petty 1984). Enduring involvement was measured on a three-item scale from Broderick and Mueller (1999). The items read “*I attach great importance to eating in restaurants.*”, “*I have a strong interest in eating in restaurants.*” and “*I enjoy eating in restaurants.*”. The last item was slightly adapted to the context at hand. The scale showed a very good level of reliability ($\alpha = .88$).

However, subsequent analyses showed that none of the covariates influenced the results. They were therefore excluded from the analyses.

4.5.3.3 Manipulation and Confound Checks

To test whether the manipulation of accountability affected who participants felt accountable to during their decision for a restaurant, they were asked to rate the following three items on a seven-point scale: “*During the course of the study, I thought about my boss and that I would have to justify my decision to him.*”, “*During the course of the study, I thought about my colleagues and that I want them to feel comfortable at the event.*”, “*During the course of the study I thought about my own preferences regarding the organization of the event.*”.

Furthermore, participants responded to the same realism check of the scenarios from Dabholkar (1994) as already in the preceding two experiments. All measures are listed in Tab. 4-9.

<i>Measure</i>	<i>Number of Items</i>	<i>Reliability (α)</i>	<i>Source</i>
Dependent Variables			
Decision Satisfaction	5	.72	Heitmann et al. (2007)
Covariates			
Situational Involvement	4	.82	Miniard et al. (1991)
Self-Constructual			
<i>Interdependency</i>	4	.59	Singelis (1994)
<i>Independency</i>	4	.53	Singelis (1994)
Manipulation Check			
Accountability			
<i>Boss</i>	1	n.a.	
<i>Colleagues</i>	1	n.a.	
<i>Own Preferences</i>	1	n.a.	
Confound Checks			
Realism	1	n.a.	Dabholkar (1994)
Comprehensibility	1	n.a.	Dabholkar (1994)

Tab. 4-9: Overview of measures for Experiment 3

4.5.4 Results

4.5.4.1 Manipulation and Confound Checks

To test if the manipulation of the different forms of accountability was successful, three ANOVAS were performed, i.e., one for each item (e.g., “*During the course of the study, I thought about my boss and that I would have to justify my decision to him.*”). Firstly, an ANOVA was conducted to see if participants in the different accountability conditions rated differently in how far they felt accountable to their boss. The analysis yielded a significant main effect of accountability on this manipulation check ($M_{\text{official}} = 3.62$, $M_{\text{informal}} = 3.10$, $M_{\text{non-accountable}} = 2.88$, $F(2, 235) = 3.66$, $p < .03$). Next, post-hoc tests were conducted to see which conditions differed exactly from one another. These tests revealed that officially accountable participants differed marginally significant from informally accountable ones ($p < .09$) and significantly from non-accountable subjects ($p < .02$), while informally accountable subjects did not differ from those who were not accountable ($p > .45$), as would be expected. It is not surprising that both forms of accountability differed only on a marginally significant level, as both groups thought they had to incorporate preferences of others belonging to their working environment. Since the boss was not explicitly mentioned in the scenario for informal accountability, some of the participants may have thought that their boss, not just their colleagues, was going to be part of the event. It was further tested whether assortment presentation or the interaction of assortment presentation had an unintended influence on the first manipulation check. Consistent with expectations, these effects were not significant ($ps > .27$).

A second ANOVA was carried out to see if the groups differed in incorporating their colleagues’ preferences into their decision. Again, the analysis revealed a significant main effect of accountability ($M_{\text{official}} = 5.22$, $M_{\text{informal}} = 5.87$, $M_{\text{non-accountable}} = 4.64$, $F(2, 235) = 63.96$, $p < .001$). Again, post-hoc tests were conducted which revealed that informally accountable participants differed significantly from officially accountable ones ($p < .02$) and from non-accountable ones ($p < .001$). In addition, officially and non-accountable subjects differed significantly ($p < .001$), which is, most likely, due to officially accountable subjects generally incorporating the preferences of others into their decision, whereas non-accountable subjects did not. It was again

tested whether assortment presentation or the interaction of assortment presentation and accountability had an unintended influence on the manipulation check. As one would expect, these effects were not significant ($ps > .53$).

Lastly, an ANOVA was conducted to see if participants differed regarding how much they incorporated their own preferences into the decision for a restaurant depending on the accountability manipulation. A significant main effect of accountability on this third manipulation was found ($M_{\text{official}} = 4.63$, $M_{\text{informal}} = 4.21$, $M_{\text{non-accountable}} = 5.14$, $F(2, 235) = 4.80$, $p < .01$). Post-hoc tests showed that participants that were not accountable differed marginally significant from those who were officially accountable ($p < .09$) and significantly from those who were informally accountable ($p = .002$). Officially and informally accountable subjects did not differ regarding this manipulation check ($p > .15$). That only a marginally significant difference between officially and non-accountable subjects was found is not completely surprising though, because all subjects had probably incorporated their own preferences into the decision for a restaurant to a certain extent. Since all main effects and the most important post-hoc tests showed the expected patterns regarding significant differences between the groups, it can be concluded that, in sum, the manipulation of accountability was successful.

In addition, two univariate ANOVAS were performed to test whether the three scenarios differed regarding the questions on their realism. On both items of the realism check accountability and assortment presentation did not yield any significant effects ($ps > .12$). Thus, participants had no difficulties in imagining the situations described in the scenarios and thought both were equally realistic.

4.5.4.2 Hypotheses Testing

Interactive Effect of Assortment Presentation and Accountability. Hypotheses H3, H4 and H5 postulated an interactive effect of assortment presentation and accountability. To test for this effect, an ANOVA was conducted. Firstly, the results demonstrate that the main effect of assortment presentation on decision satisfaction was significant ($M_{\text{no color-coding}} = 4.98$, $M_{\text{color-coding}} = 4.68$, $F(1, 198) = 4.77$, $p = .03$). Accountability also had a significant main effect on decision satisfaction ($M_{\text{official}} = 4.34$, $M_{\text{informal}} = 4.62$, $M_{\text{non-accountable}} = 5.44$, $F(2, 198) = 23.56$, $p < .001$). Second, the ANOVA revealed that

these main effects were qualified by a marginally significant interaction effect between accountability and assortment presentation ($F(2, 198) = 2.91, p < .06$). To test in greater detail whether an interaction effect exists, simple effect analyses were conducted. These analyses revealed that officially accountable decision makers experienced no difference in decision satisfaction between the two forms of assortment presentation ($M_{\text{no color-coding}} = 4.39, M_{\text{color-coding}} = 4.29, F(1, 198) = .17, p > .68$), as was postulated in H3. However, informally accountable decision makers, as predicted in H4, were less satisfied with the assortment presentation without color-coding than with the assortment presentation using color-coding ($M_{\text{no color-coding}} = 4.28, M_{\text{color-coding}} = 5.00, F(1, 198) = 9.78, p = .002$). As postulated in H5, non-accountable decision makers experienced no difference in decision satisfaction between the two forms of assortments presentation ($M_{\text{no color-coding}} = 5.30, M_{\text{color-coding}} = 5.58, F(1, 198) = 1.47, p > .23$). To sum up, the simple effect analyses show strong support for H3, H4 and H5. All mean values are shown in Tab. 4-10. The results are also depicted in Fig. 4-8.

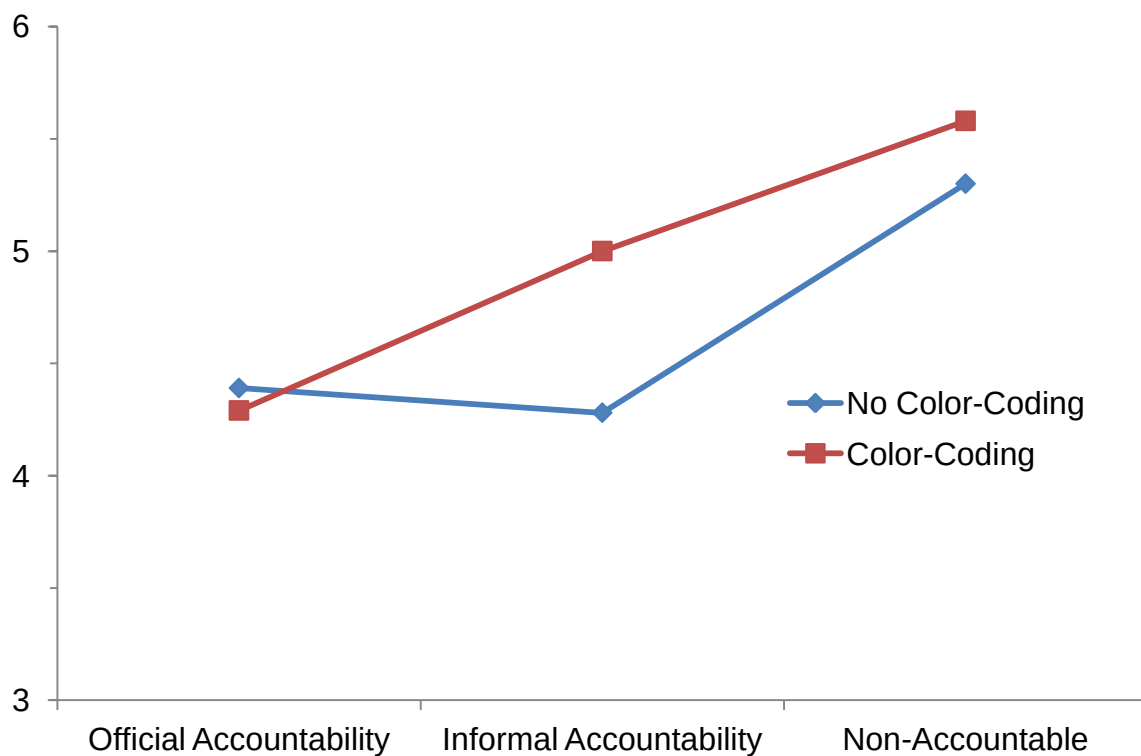


Fig. 4-8: Mean decision satisfaction in Experiment 3

	<i>Official Accountability</i>		<i>Informal Accountability</i>		<i>Non-Accountable</i>	
	<i>No Color-Coding</i>	<i>Color-Coding</i>	<i>No Color-Coding</i>	<i>Color-Coding</i>	<i>No Color-Coding</i>	<i>Color-Coding</i>
Decision Satisfaction	4.39 (1.28)	4.29 (1.11)	4.28 (.86)	5.00 (.98)	5.30 (.84)	5.58 (.71)
Manipulation Check						
<i>Boss</i>	3.88 (2.25)	3.43 (2.05)	3.22 (1.95)	2.94 (1.56)	2.93 (1.69)	2.84 (1.54)
<i>Colleagues</i>	5.16 (1.81)	5.26 (1.88)	6.00 (1.19)	5.69 (1.53)	2.83 (1.82)	3.12 (1.85)
<i>Own Preferences</i>	4.50 (1.97)	4.72 (2.10)	4.09 (1.88)	4.38 (2.16)	4.95 (1.61)	5.33 (1.46)

Notes: Numbers in parentheses are standard deviations; all measures were taken on seven-point scales such that higher numbers present higher mean ratings.

Tab. 4-10: Mean values for the dependent variables in Experiment 3

Further Analysis of the Different Forms of Accountability. A post-hoc test was conducted, to see if non-accountable decision makers differed from those officially accountable because both groups showed the same pattern of results regarding the interaction of assortment presentation and accountability. The test showed that non-accountable decision makers differed significantly from officially accountable ones ($p < .001$) and from informally accountable decision makers ($p < .001$). Despite showing the same pattern, then, decision satisfaction of unaccountable and officially accountable decision makers operate at different levels.

4.5.5 Discussion

The purpose of Experiment 3 was to a) replicate the findings of Experiment 2 concerning the interactive effects of assortment presentation and accountability (H3 and H4) in a setting where a service, instead of a product, had to be chosen and b) replicate the findings with a different sample. In addition, the results of Experiment 2 were extended by introducing a manipulation for non-accountable decision makers (H5) into the scenarios. Experiment 3 continued to demonstrate that the decision satisfaction of informally accountable decision makers was improved by color-coding when choosing from a large set of options. Unaccountable decision makers and those held officially accountable did, as expected, not experience a difference in decision satisfaction due to the form of assortment presentation, i.e., if the offered options were color-coded or not. What this means, though, is that color-coding did not harm the satisfaction of these decision makers and, therefore, is a promising means to enhancing overall decision satisfaction.

Given that the results from Experiment 2 could be replicated with another sample, as well as in a setting where a service had to be chosen, they appear very robust. Further, it could be shown that unaccountable decision makers react differently than those subject to informal accountability. Indeed, they revealed the same pattern of results as officially accountable decision makers with regard to the non-significant effects of color-coding on decision satisfaction, though their decision satisfaction was generally on a different, i.e., higher level than the satisfaction of officially accountable decision makers.

5 Discussion

This chapter will present the final discussion of the results and implications of this dissertation. In the first part, the hypotheses and results of the three experiments will be briefly summarized. Building on this, the second part will give theoretical, as well as managerial, implications at a more general level, before the third part outlines the limitations of the studies conducted. Finally, since this dissertation could not address all interesting factors in the three experiments, directions for future research will be discussed.

5.1 Summary of Results

From the outset, three general questions have motivated the research conducted in this dissertation. To ascertain that these were answered adequately by the research, the results of the three experiments are briefly summarized below. It will be recalled the questions were:

1. Does choice overload exist in B2B settings, where buyers are not users of the products they purchase but are held accountable for their choices?
2. Do different forms of accountability, i.e., informal and official accountability, have different effects on the decision satisfaction of a buyer, especially when choices from large assortments have to be made? In other words, do large assortments affect the satisfaction of buyers subject to informal accountability differently from those held officially accountable? And if so, what is the underlying psychological mechanism that drives these effects?
3. How can decision satisfaction be improved when decision makers experience low levels of satisfaction arising from the joint effects of choice overload and accountability? Put differently, is color-coding a promising means of enhancing decision satisfaction in these circumstances?

In order to answer these three questions, chapter 2 developed a conceptual framework. This framework was based on several different streams of literature: Firstly, on research about the effects of a large number of variants, specifically i.e., literature on the positive and negative effects of variety, like choice overload, secondly, on research about B2B decision making, for example, the concept of buying centers, thirdly, on literature about accountability and its effects on decision making and lastly, on research that was conducted to find out means of reducing negative effects of high variety through different forms of assortment presentation, e.g., online filters and color-coding. In this way, the dissertation built strongly on existing research from Polman (2012) on the joint effects of accountability and choice overload, as well as the work of van Herpen and Pieters (2007) concerning the positive effects of color-coding for large assortments.

Notably, these bodies of work were extended in several important ways: Regarding joint effects of large assortments and accountability, Polman's (2012) results were complemented by the introduction of an important boundary condition, because it could be shown that not all forms of accountability lead to the same effects on satisfaction when people have to conduct choices from large assortments. Also, the underlying psychological mechanisms that lead to choice overload in certain circumstances were shown. Furthermore, Polman (2012) conducted a study with a student sample and let subjects choose courses for the next semester, whereas in this dissertation, participants in the corresponding study (Experiment 1) were B2B decision makers and the focal decision was a purchase. The results of van Herpen and Pieters (2007) were also extended when it was demonstrated that attribute-level color-coding not only reduces cognitive effort for making a purchase decision, but also enhances decision satisfaction in certain circumstances.

Exploring each of the experiments in further detail, Experiment 1 was designed to identify forms of accountability under which choice overload exists in a B2B context, in other words, where the satisfaction of the decision maker would be reduced when choosing from large assortments. As hypothesized, officially accountable decision makers did not experience different levels of satisfaction when choosing from small and from large assortments (H1A). This was due to the high cognitive effort they were willing to invest in the decision, as demonstrated in this study. However, as

predicted, informally accountable decision makers invested less effort in their decision-making and, therefore, felt less satisfied when choosing from a large compared to a small assortment (H1B).

Notably, these interactive effects of accountability and assortment size were qualified by mediation. The effect of assortment size for informally accountable decision makers (moderation) affected the degree of the decision's justifiability, which, in turn, affected decision satisfaction (mediation). Importantly, officially accountable decision makers did not experience different levels of justifiability when choosing from small and large assortments and, therefore, their decision satisfaction did not vary according to assortment size. In sum, a moderated mediation regarding the interactive effect of assortment size and accountability that affected decision satisfaction through justifiability, as postulated in H2, could be shown. On a more general level, this demonstrates that choice overload can exist in some, but not all, B2B settings and the effect of reduced satisfaction can be of concern in such cases. It could also be shown that justifiability is an important mediator of this effect. Ultimately, research questions 1 and 2 were successfully answered by Experiment 1.

Experiment 2 was designed to identify a means of enhancing satisfaction of informally accountable decision makers when making a choice from a large assortment and, simultaneously, ensuring that the approach used does not harm satisfaction of officially accountable decision makers. The form of assortment presentation was varied in this experiment using color-coding, where the most important attribute of a product was coded with a unique color. By doing so, search costs were potentially reduced and the choice became more mentally convenient. As hypothesized, this increased decision satisfaction of informally accountable decision makers (H3), while not affecting satisfaction of officially accountable decision makers (H4). This experiment was, therefore, able to answer the third research question. However, since Experiment 2 used the same sample as Experiment 1, and also did not include unaccountable decisions makers as a possible group for comparing the effects, Experiment 3 was conducted to replicate and enhance these results and, thus, to deepen the understanding of the effects of attribute-level color-coding.

In detail, Experiment 3 used a sample of B2C decision makers in a B2B-like situation, specifically, a choice of a restaurant for an anniversary of an individual's firm, thereby

extending the results of Experiment 2 to a service setting. Importantly, Experiment 3 also included non-accountable decision makers to control for how those would be affected by color-coding. As predicted, color-coding did not affect their decision satisfaction (H5) and they were, in general, more satisfied with their decision than accountable decision makers. This appears intuitively logical, since non-accountable decision makers could just decide what they themselves preferred, without having to justify their decision afterwards. This ought to have made the decision easier and, therefore, decision makers should have higher decision satisfaction. Regarding the decision makers held to account, the same pattern emerged as in Experiment 2, where officially accountable decisions makers were equally satisfied when choosing from a color-coded assortment as an assortment without color-coding, while informally accountable decision makers were more satisfied when choosing from the color-coded compared to the other assortment.

5.2 Theoretical Contribution

The preceding section summarized the results of the three experiments and outlined some of their immediate implications. The following section will now take a more general perspective to explain how these results contribute to the existing literature on a) variety seeking and choice overload, b) accountability, c) the joint effects of choice overload and accountability, d) B2B decision making processes and e) assortment presentation, particularly color-coding.

5.2.1 Contribution to the Literature on Variety Seeking and Choice Overload

It is well documented by former research that more variety is not always better and which circumstances influence if variety is perceived positive or negative. For example, when consumers have an ideal product in mind they appreciate large assortments, because the probability to find exactly this ideal product is very high when such a large number of different alternatives are offered. However, when consumers are not totally sure what they are looking for, a large assortment is likely to be overwhelming, thereby reducing satisfaction (Chernev 2003b). Surprisingly, these effects have not been investigated in a B2B context before. This, however, is especially

interesting because, in practice, B2B assortments are often very large and offer a high number of similar product variants to match diverse customer needs (Homburg 2012). This dissertation addresses this research gap by demonstrating that overchoice effects, in the form of reduced satisfaction of decision makers, can exist in B2B settings, but that negative effects from large assortments depend on the form of accountability. Thus, an understanding of variety is developed from a pure B2C perspective to professional buyers carrying out purchases.

5.2.2 Contribution to the Literature on Accountability

A growing body of literature has investigated various effects of different forms of accountability (see, for example, Langhe et al. 2011; Ossege 2012; Lerner & Tetlock 1999). Thus far, though, only Doney and Armstrong's (1996) research has investigated the effects of different forms of accountability in B2B purchase decisions. This was also the first, and only, article to reveal the difference between informal and official accountability. Given that Doney and Armstrong (1996) conducted a survey that was purely interested in documenting the existing forms of accountability for B2B buyers, they did not investigate which effects these different forms of accountability might have in detail. Thus, this dissertation makes an important contribution to the research on accountability, since for informally and officially accountable buyers different effects on decision satisfaction were shown. Indeed, the research further revealed that these two forms of accountability could be successfully manipulated using scenarios. This broadens the possibilities for future research in B2B settings since it is often difficult to conduct B2B studies in laboratory settings due to the reluctance of B2B decision makers to participate, for example, due to time constraints. However, now that experiments using scenarios can be conducted online, as done in this dissertation, the effort for B2B decision makers to participate is reduced. In summary, this dissertation did not only offer a substantive contribution to existing research, but also contributed to the field by demonstrating that psychologically complex constructs like accountability can be manipulated with scenarios.

5.2.3 Contribution to the Research on Joint Effects of Choice Overload and Accountability

As postulated in the title of this dissertation, the focal interest of the research lies in the joint, or, in other words, interactive effects of choice overload and accountability. Polman (2012) made an initial step in that direction by revealing that a large number of alternatives could reduce satisfaction with a choice when the decision maker is held accountable. These effects held true when individuals made decisions concerning themselves, which equates to the typical overchoice effect already shown by prior research, and more importantly, when choosing for others. This dissertation extended Polman's (2012) results by qualifying them on the basis of the form of accountability, more specifically, whether the decision maker is informally or officially accountable. Furthermore, the choice context was broadened to purchase decisions using a sample consisting of B2B buyers instead of students. Most importantly, this dissertation illuminated the underlying psychological processes by demonstrating that the interactive effect of choice overload, or, in other words, assortment size, and accountability on decision satisfaction is mediated by the decision's degree of justifiability. This is an important contribution to existing research because these processes have not been shown before.

5.2.4 Contribution to the Literature on B2B Decision Making Processes

Research on B2B purchase decisions has long focused on the constitution of buying centers and what factors, e.g., the risk or the importance of the purchase for the company, influence the number of people involved into a purchase decision, i.e., the buying center (see, for example, Anderson et al. 1987; Reve & Johansen 1982). What appears equally important, but largely ignored in the existing research though, are the underlying psychological processes that influence how purchase decisions are experienced by the people conducting them. Although accountability in its various forms appears important in B2B settings at an intuitive level, there is a paucity of research on the varying effects of forms of accountability. This dissertation takes an important step in this direction by demonstrating the different influences of informal and official accountability on decision satisfaction for choices from large assortments

from a buyer's perspective. This directly contributes to understanding when buyers' satisfaction is high or low in a professional context.

5.2.5 Contribution to the Literature on Assortment Presentation

5.2.5.1 Contribution to the General Literature on Assortment Presentation

This dissertation contributes to the literature on assortment presentation by showing that a certain form of presentation can be a mean to enhance satisfaction for otherwise less satisfied decision makers in the case of informal accountability. At the same time, it was shown that neither officially accountable decision makers nor non-accountable decision makers experience reduced decision satisfaction from a differing assortment presentation. Thus, it could be proven that not only the reduction of assortment size by elimination of products from the offered assortment can enhance satisfaction, as is often recommended and was shown as a possible way by prior research (see, e.g., Broniarczyk et al. 1998). Importantly, the number of options offered in an assortment can be kept constant, but by the way of presenting the assortment, satisfaction can be enhanced. This is especially important for cases where the number of options cannot be reduced.

5.2.5.2 Contribution to the Literature on Color-Coding

This dissertation not only contributed to research on assortment presentation in general, but, by using color-coding as a means to enhance satisfaction, it also contributed to this special stream of literature. This dissertation directly built on the design of attribute-level color-coding van Herpen and Pieters (2007) used. Their results were extended by showing that color-coding can enhance satisfaction – a construct not studied by these authors – when people have to choose from large assortments and that this positive effect holds true for informally, but not officially accountable decision makers. Importantly, satisfaction was not significantly enhanced for non-accountable decision makers. This constitutes a further extension of the van Herpen and Pieters (2007) studies. To sum up, the results reflect the findings of former research by showing that color-coding has positive effects under certain circumstances, but also showed important boundary conditions regarding its effects on decision satisfaction.

5.3 Managerial Contribution

The results of this dissertation also have important practical implications for managers that have to decide on the assortment offered by their company. It also gives some hints for executive managers, since accountability is somewhat linked to the implementation of hierarchies and authority.

5.3.1 Offering an Appealing Assortment

In practice, three of Europe's best known suppliers for surgical suture material each offer more than 1,200 product variants, with two offering over 1,700¹⁰, meaning a higher number of variants in an assortment is not a hypothetical, but rather an existing problem for many firms, especially B2B suppliers. The interviews conducted as a pre-study for Experiment 2 clearly revealed that some of the buyers felt overwhelmed by these assortments. As a result, they would often directly contact sales staff when searching for a certain product. From a supplier's point of view, this can be inefficient because it leads to increased workloads for the sales staff without necessarily leading to higher sales. Consequently, an appealing and easy to understand assortment is an important component in order to compete in the market. As already explained, many B2B suppliers offer large assortments that, at the same time, are efficient in fulfilling customer needs and, therefore, do not have the potential to be reduced through the elimination of certain product variants from the assortment.

Strategic considerations can also occasionally come into play. By way of example, it can be useful to offer variants of a product with the same basic characteristics, but a different number of additional features positioned in different price categories. For instance, when three products are offered, people often choose the one positioned in the middle. This is called the compromise effect (see, for example, Kivetz, Netzer & Srinivasan 2004). This indicates that buyers can be directed to purchase a certain variant by the structure of the offerings. In turn, it can be very effective when the variant that is bought regularly is produced very cost efficiently. Furthermore, since assortments offering a certain amount of variety are appealing this can lead buyers to

¹⁰ The three suppliers are: Covedien, Ethicon and B.Braun. Numbers are based on 2014 online catalogues.

choose a particular supplier over competitors (see, for example, Iyengar & Lepper 2000).

What can suppliers do, though, when they want to offer a large number of product variants but do not want customers to get lost when reviewing their catalogues on their own? How can a large assortment on a potential new supplier's website be perceived as offering plenty of variety without creating cognitive overload for new customers? As shown in this dissertation, assortment presentation can be the key to offering a high number of variants while making the assortment mentally convenient at the same time. This could resolve the paradox of customers perceiving large assortments to be appealing when choosing a supplier, but finding the same assortments offering too much variants and therefore leading to cognitive overload when making the purchasing decision. Resolving this issue will ultimately lead to higher decision satisfaction for customers and, when satisfaction with the product is also high, enhance loyalty to the supplier.

It is easy to implement color-coding as a mean of reducing the cognitive effort of identifying the most important characteristics of products offered in an assortment. For B2C products, this strategy has, on occasion, been implemented already. For instance, Sarotti® uses attribute-level color-coding for its chocolates, with every flavor coded with a unique color. In a B2B context, color-coding can easily be applied to online and offline catalogues and can also be integrated into packaging design. Generally, managers have knowledge of the most important product attributes from their customers' perspective or, if not, can survey their customers to gain this knowledge.

To decide whether the implementation of color-coding is worth the effort, it is important for managers to have a detailed knowledge of the buying processes of their customers, in particular, knowledge about the people officially, as well as informally, involved in the purchase process. For example, does a buyer decide on her own what product she purchases or does she talk to the users of the product she has to purchase about their preferences? Does the buyer, perhaps, have to give reasons for the decision to her boss afterwards? In cases where informal accountability arises, for instance, where users do not have legitimate authority over the buyer given their position in a firm's hierarchy, a buyer may still wish to incorporate their preferences

into her decision. At the same time, the buyer may not want to invest too much effort into doing so because, ultimately, this is not what she gets paid for. In such cases, purchasers will particularly appreciate assortments that are easy to evaluate, enabling them to quickly identify the relevant products they should trade-off against one another and reach a final decision swiftly. Color-coding can help buyers to do so and will raise their satisfaction, as proven in Experiments 2 and 3 of this dissertation. The buyer will have the feeling she can justify her decision well and the positive effects of this will let her worship the corresponding supplier. This, in turn, should lead to greater loyalty towards the supplier, increasing the likelihood of the buyer purchasing from this supplier in the future.

5.3.2 Accurate Decisions through Hierarchical Structures

As was explained in section 2.3.2.1, accountability is sometimes seen as a promising means of promoting accurate decisions and stimulating higher motivation in decision makers to process information in greater detail. However, research has revealed that most forms of accountability do not have these desired effects (see, for example, Lerner & Tetlock 1999; Ossege 2012). As Langhe et al. (2012) demonstrated, process accountability, which was frequently stated as enhancing decision quality, only improves judgments when the task is easy rather than when it is complex. Therefore, it is questionable whether this form of accountability will lead to better purchase decisions involving large and complex assortments. As this dissertation was able to show, however, official accountability can have this positive effect. Buyers in Experiment 1 that were officially accountable had a tendency to show greater cognitive effort when choosing a product than those held informally accountable. This means that an executive manager who's position in the hierarchy is, by definition, higher than the position of their subordinates, could encourage employees to make better decisions simply because of the legitimate authority being exercised over them. Importantly, managers do not have to adopt explicit mechanisms for controlling their subordinates' decisions as long as subordinates *believe* that it is possible they could be asked to explain their decisions. If, for example, a firm wants buyers to incorporate user preferences, this implies that users should assert legitimate authority over buyers to foster buyers' motivations to reach good decisions. This is an important point, since, in practice, users often do not have official authority over buyers.

5.4 Limitations

Although replicating some of the findings of this dissertation (i.e., the results regarding H3 and H4) in another setting to show robustness of the actual results, there are some limitations to the three experiments worth outlining. In particular, external validity is limited due to the use of scenario experiments. Notwithstanding the advantages of this method in studying the underlying processes of behavior, it would have been useful to replicate the findings in a field or, at least, laboratory, setting to see if they persist in these settings (Lind & Tyler 1988).

Similarly, it would also be fruitful to use non-experimental research methods to conduct studies in a real-world setting and to observe how B2B buyers would react to large assortments and color-coding in their normal working environment. This would be especially worthwhile given the minor limitations of the manipulation checks in Experiment 3, explained in detail in 4.5.3.3. It would also be curious to see if the effects of large assortments and color-coding hold true in the long run, when a buyer has become familiar with the assortment of a supplier. Furthermore, as mentioned by Doney and Armstrong (1996), informal and official accountability often do not exist exclusively, making it useful to determine whether observed effects change when both forms are manipulated simultaneously, and if so, how.

Using the same sample for Experiments 1 and 2 is an important limitation that questions the validity of the results. Although the order of the two studies was counter-balanced and did not have a significant influence on the results, it is still possible that unobserved learning and/or confounding effects were present in some or all combinations of the conditions in Experiments 1 and 2. However, given that the results of Experiment 2 were replicated using a different sample in Experiment 3 and a similar pattern of results was obtained, this would, in fact, seem to be of minor concern in this dissertation. Nonetheless, it would have been advisable to use different samples for each of the studies to ensure that the manipulations in the experiments did not affect each other.

Furthermore, it could be argued that the sample in Experiment 3 is unsuitable because the participants were not B2B buyers, yet were asked to conduct a corresponding purchase decision. Responding to this, first, the situation described in the

scenarios and the focal service (a restaurant) is not exclusive to B2B buyers. As explained before, although accountability is typical to B2B settings, it is not limited to them and a sample of consumers should not have strongly influenced the results. This argument is supported by the results of Experiment 2 which show exactly the same pattern as those of Experiment 3 concerning the hypotheses on the interaction effect of color-coding and accountability on decision satisfaction (H3 and H4). Second, prior research has been content to use a combination of B2B and B2C samples to show certain effects (see, e.g., Wilken et al. 2010).

Furthermore, the moderated mediation shown in Experiment 1 was only partial, meaning that another, non-observed mediator has influence on the effects (Zhao et al. 2010). Thus, the effects of the interaction of assortment size and accountability on decision satisfaction (through justifiability) do exist, but do not give a complete picture of the underlying processes. Further investigation would be needed to completely understand these processes.

In a similar vein, it is worth noting that the effects revealed were obtained in a certain business environment, namely hospitals, which surely differ in some respects from other branches in, at least, some respects. Especially in small- and medium-sized companies, for example, users often conduct purchase decisions themselves and, thus, take multiple roles, simultaneously acting as the buyer and user of a product. It must be possible that in such cases other patterns regarding choice behavior and satisfaction emerge. Furthermore, the focal assortments in this dissertation consisted of large numbers of relatively inexpensive products, which show certain similarities to commodity products in B2C settings. It is apparent that these purchase decisions differ significantly from investment decisions, e.g., to purchase a new assembly line or to build a new plant. Moreover, only standardized products were offered in the studies. However, as outlined previously, B2B customers have very different needs that strongly differ from firm to firm, which, in turn, leads many suppliers to offer possibilities for customizing products and services. For instance, some firms offer a choice of components that customers can choose among and from which products are then build individually. This could, of course, lead to a variation in buyers' decision behaviors compared to a case where a standardized product has to be chosen, because the choice task itself is different. Additional research is, therefore,

needed to examine whether assortment size and presentation, respectively, interact with accountability and affect decision satisfaction, and if so, how this occurs.

Building on these limitations just outlined, the final section will comment on promising avenues for future research.

5.5 Future Research

5.5.1 Factors that Influence the Assortment/Accountability-Relationship on Decision Satisfaction

This dissertation was carried out in order to reveal the interactive effects of assortment characteristics, i.e., size and presentation of an assortment, respectively, as well as accountability. In an initial study, it was shown that assortment size and accountability affect decision satisfaction through the decision's justifiability. Two further studies revealed the effects of attribute-level color-coding, one possible form of assortment presentation, on the decision satisfaction of accountable decision makers choosing from large assortments. As realistic as these situations were designed, and as encouraging as the results were, there can, and will, be other factors that influence these relationships in several ways. Consequently, this dissertation ought to be seen as the first step towards a better understanding of these relationships, which other work can now build on. A brief outline will now follow on how future research could deepen the understanding of the interactive relationship between accountability and the assortment offered.

5.5.1.1 Characteristics of the Assortment

Assortment size, as well as presentation, was shown to interact with accountability to affect decision satisfaction. However, only a small number of actual assortment sizes could be tested in the three experiments. It would be interesting for future research to explore whether the effects change for even larger assortments, and if so, how this occurred. As mentioned in section 5.3.1, in practice assortments can consist of hundreds of alternatives. Therefore, it is possible that officially accountable decision makers, who showed high cognitive effort and also high decision satisfaction through corresponding levels of justifiability regardless of assortment size, will experience

cognitive or, in other words, choice overload when assortments are much larger than those studied in this dissertation. In such instances, it is possible that their perceived justifiability of their decision is lowered, in turn, reducing satisfaction. When not only mere assortment size, but also complexity of an assortment is raised, this effect could be even more pronounced. Previous research by Langhe et al. (2012) has already shown that the complexity of a task one has to perform influences decision quality. Considering this in further detail, process accountable decision makers were able to make better judgments for easy, but not for complex, tasks. It would be very interesting to build on these results and test officially and informally accountable decision makers in a similar setting to explore whether, and if so, how, their judgments differ when complexity of a choice task is high.

Turning to assortment presentation, only color-coding on attribute-level was tested as a means of enhancing decision makers' satisfaction. The rationale for this restriction was based on prior research of van Herpen and Pieters (2007), who showed that attribute-level color-coding outperforms item-level color-coding for large assortments. Nonetheless, it would be beneficial to test whether these results hold true under different forms of accountability. Van Herpen and Pieters (2007) argued that anticipated identification costs of the alternatives are raised when item-level color-coding is used for a large number of alternatives, i.e., every alternative has its unique color. By doing so, cognitive effort would be raised and because people are not always motivated to invest greater effort, presumably there will be negative consequences. However, it is unclear how people who are highly motivated to invest a certain amount of cognitive effort will be affected, for example, those held officially accountable. It is possible that such individuals perceive an assortment with item level color-coding differently because they do not anticipate negative consequences to arise from the high identification costs in case these are accompanied with high justifiability in their final choice. Future studies could, therefore, include other forms of color-coding to test their effects under the different forms of accountability. This point would be especially interesting, because, in practice, even in a case where it can be assumed that most buyers of a product (e.g. chocolate) are unaccountable for their decision, item-level color-coding is occasionally applied. Ritter Sport®, for instance, uses item level color-coding for its chocolates. Here, every single item has its own, unique color assigned to it. The whole packaging is designed using corresponding

color so that a consumer standing in front of shelf can easily distinguish the different chocolates on offer. In such instances, though, research would suggest high identification costs, as has already been explained.

Prospective research should, therefore, seek to shed more light on the question of whether item-level color-coding can be a successful and reasonable method in identified circumstances. It would be sensible, though, to take not only identification costs, but also other variables like decision satisfaction into account, when evaluating this strategy. In addition, it would be fruitful to investigate real, rather than hypothetical, products and brands to determinate whether consumers, for example, develop learning effects over time that change their evaluations of an assortment once they know that their favorite chocolate is the one with the dark yellow packaging. Here, studies could manipulate or measure if participants have an available ideal point or not, and compare their reactions to different forms of color-coding.

It would also be curious to test other forms of assortment presentation with regard to their interactive effects with accountability and how they affect satisfaction of a decision maker. For example, online filters like the ones studied by Morales et al. (2005) and Diehl (2005) could have different effects on accountable decision makers. For them, it could be less important how much variety they perceive a supplier to offer. This would hint at an effect shown by earlier research, where implementing a filter made an assortment less attractive since it was perceived to incorporate fewer alternatives. Instead, though, it seems plausible to suggest that accountable decision makers seek to make an optimal choice from an existing assortment, regardless of the variety it offers. If they trust the filter of a supplier's website to lead to better results, whereby they can quickly find the potentially fitting options, accountable decision makers ought to experience increased satisfaction when choosing from a filtered assortment. Future research should, therefore, test these possible effects in order to further understand the interaction of assortment presentation and accountability.

In this dissertation, alignability and complementarity of product characteristics were studied implicitly by designing certain assortments and products with corresponding characteristics. Experiments 1 and 2 used alignable or, in other words, noncomplementary assortments, while Experiment 3 adopted a complementary

assortment. Prospective studies could more deeply investigate the potentially different effects of these forms of assortments by explicitly studying whether a difference in decision satisfaction exists between choices from nonalignable versus complementary assortments, which are similar but, per definition, not the same (see 2.1.2). It would be interesting to explore how the different forms of assortments interact with different assortment sizes and/or forms of presentation, e.g., attribute-level compared to item-level color-coding. Again, it would be particularly insightful to study the corresponding effects under different forms of accountability.

Only modified rebuy situations were investigated in the experiments conducted for this research project. To advance the research, it would be useful to test the effects of different assortment sizes and presentation forms in situations with greater and lesser risk, such as new task or straight rebuy situations. As explained, a new task, for instance, would require a much more detailed elaboration of the options offered because the decision maker lacks experience of the important product characteristics. This raises the question of how, if at all, a decision maker experiencing higher risk and uncertainty can be guided in her choice and which forms of assortment presentation might play a role in this. Looking ahead, then, studies should incorporate different levels of risks into purchase situations and control more strictly for prior experience of participants with the focal product category. Indeed, even when studying modified rebuy situations, future research could further distinguish between simple and complex situations, as proposed by Bunn (1993). This might be especially fruitful for field studies because they offer a variety of similar, but not identical, situations regarding buyer power and the number of possible supply firms in the market.

5.5.1.2 Possible Mediators on Decision Satisfaction

This dissertation examined a moderated mediation for informally accountable decision makers which revealed that they are less satisfied when choosing from large assortments due to reduced justifiability of their own decisions. As further analysis proved, decision makers were not willing to invest high cognitive effort into their decisions. Given that the moderated mediation found in Experiment 1 is only partial, there must be other influencing factors within this relationship. One obvious factor is anticipated identification and/or decision costs (van Herpen & Pieters 2007;

Heitmann et al. 2007). It is surely possible that not only justifiability to others, but also the anticipation of the cognitive effort required to reach a good decision, influences the relationship of the interaction of accountability and assortment size on decision satisfaction.

Another likely factor is anticipated regret, with Heitmann et al. (2007) showing that it influences decision satisfaction. It would be very curious to see if certain forms of accountability increased the anticipated regret of a decision. It is possible that informally accountable decision makers are aware of their limited motivation to invest sufficient cognitive effort to reach an optimal decision from a large number of alternatives. Consequently, their anticipated regret could be higher which, in turn, could affect decision satisfaction. In the same vein, and also building on Heitmann et al. (2007), prospective studies could equally investigate the perceived confidence of decision makers as a possible mediator in the postulated relationship.

5.5.1.3 Forms of Accountability

As already mentioned, one can imagine that official and informal accountability not only exist exclusively, but, in practice, can occur at the same time (Doney & Armstrong 1996). Therefore, it would be promising to study the joint effects of both forms of accountability. This would be particularly beneficial in light of Experiment 1's results which showed that when choosing from large assortments, informally accountable decision makers experienced a reduction in their decision satisfaction, unlike officially accountable buyers who did not. It remains unclear, though which effects would predominate in a situation where both forms of accountability are present. Exploratory research is needed to investigate these joint effects since it is quite possible that the combination of different forms of accountability lead to conflicting evaluations of different assortments and/or products. This, in turn, raises the question of how a buyer would resolve these conflicts.

Finally, it would be worthwhile investigating how other forms of combined accountability would interact with different assortments. For example, one could examine how official and/or informal accountability affect the behavior of decision makers in combination with process and/or outcome accountability. It is possible that process and official accountability, when experienced together, improve motivation to invest an

even higher amount of cognitive effort. In contrast, what will happen, for example, in the case of officially accountable decision makers who are only held accountable for the outcome of their decision? Will they quickly pick an option that seems appealing to them, and then bolster arguments why their decision was right or will they engage in a detailed evaluation of the alternatives offered? Again, exploratory research in the future could reveal these effects in detail.

5.5.2 General Influences on the Postulated Relationships

5.5.2.1 Influences on Variety Perceptions

As explained in section 2.1.1, effects of one and the same assortment can differ depending on certain characteristics of the decision maker. For instance, different levels of optimum stimulation can lead some people to be overwhelmed by an assortment, while others will openly appreciate the variety being offered (Menon & Kahn 1995). OSL does not depend on accountability, but could be an important personal characteristic of decision makers that influences how quickly they will experience cognitive overload from a growing number of options. Prospective research should, therefore, incorporate OSL as a potential influencing factor.

It has been revealed in earlier research that regulatory focus interacts with assortment size and assortment alignability to affect choices (Som & Lee 2012). Regulatory focus draws a distinction between two basic motivational orientations, namely, a promotion and a prevention focus. Whereas a promotion focus shifts awareness to gains and accomplishments, a prevention focus makes safety and the prevention of loss more salient (Higgins 1997; Crowe & Higgins 1997). Som and Lee (2012) demonstrated that people with a promotion focus appreciate larger alignable assortments, but experience negative effects from larger non-alignable assortments, while prevention focused individuals value increased assortment sizes, regardless of the alignability of the assortment. Thus, it would be particularly valuable to investigate how regulatory focus and accountability interact. It is plausible that certain forms of accountability prime a certain regulatory focus, e.g., that official accountability could encourage a prevention focus because the decision maker is afraid of making a mistake and fears consequences from her boss. It is, however, also feasible that

regulatory focus exists independent of accountability and, instead, decision satisfaction is influenced by an interactive effect between these two constructs. Further research is required to shed light on these possible effects.

As illustrated by Ariely and Levav (2000) and Ratner and Kahn (2002), consumers behave differently when choosing in private than in public, with public consumption often incorporating more variety than private choices. Given that decisions held to account are often evaluated retrospectively by other people, with the decision itself often being made privately, it would be useful to observe how this can affect choice patterns and decision satisfaction. This is especially so for B2C situations with informally versus officially accountable decision makers, since in a B2C setting decision makers can generally choose options more freely and based on their own preferences, than in a B2B context.

5.5.2.2 Different Forms of Overchoice Effects

At the beginning of this dissertation (see 2.1.2 for more details), it was mentioned that choice overload does not only have negative effects on satisfaction, but can also lead to choice delay or even deferral. In a B2B context, it seems quite implausible that a buyer would delay or defer her decision since it is her job to purchase and this often happens under time pressure. She also has to expect serious consequences if she does not conduct the purchase she is told to. However, because informal and official accountability can also exist outside a working context, it would be worthwhile investigating whether decision makers under certain forms of accountability tend to be more likely to delay or defer decisions. Therefore, future research should include no-choice options into experimental studies to examine these effects (for more details on how to design no-choice options in experimental settings see, e.g., Dhar 1997).

Equally reasonable in a B2B context, buyers might decide to look for another supplier when they are unsure of which product to select from an assortment. In this case, an investigation could be conducted into the attractiveness of an assortment under different forms of accountability, with varying assortment sizes and forms of presentation. Remember that in all of the studies in this dissertation, participants had to choose a single option from one selected assortment. It would, therefore, be

insightful to compare choices among different assortments regarding a) which assortment is preferred by the decision makers and b) if they are more satisfied with the chosen product from one or other assortment. Similarly, it would be interesting to examine choice patterns when more than one product is bought at a time, in other words, when a simultaneous choice for several options is made.

5.5.2.3 Influences of the Group

In this dissertation, only situations involving a single person who had to make a decision were investigated. However, as prior research on B2B purchase processes has shown, there are also situations where several decision makers have to find a compromise and reach a joint decision (see, for example, Sheth 1973). It would, therefore, be fruitful to consider how group decisions under certain forms of accountability, and with certain assortments to choose from, are formed and influence individual, as well as aggregate, satisfaction of the group members. Thinking about this further, an examination should be conducted into a group's behavior when members feel either officially or informally accountable to reach a joint decision. The latter could be the case where colleagues of the same hierarchical level want to make a joint decision but are not required to do so by any external factors. This also reflects certain roles in a buying center, for example, the influencer who is not formally making a decision but, because of certain knowledge, is asked for advice (Webster & Wind 1972). How will this shape the behavior of the group members, or, in other words, a buying center? What will happen if some of the people involved in the decision making are officially accountable and others informally accountable? Will advice from an informally accountable decision maker, as defined by the role of an influencer, be helpful? Will an influencer put enough cognitive effort into giving that advice? Put differently, and as Jonas et al. (2005) have shown, advisers that are held accountable for their decisions can suffer from a confirmation bias. Will this be the case for all forms of accountability? Can varying forms of accountability be explicitly incorporated into B2B or other group decision making situations to foster certain effects such as enhanced cognitive effort in decision making? To answer these questions work needs to be carried out to examine these effects in detail.

5.5.2.4 Other Constructs of Interest

Decision satisfaction has been a focal construct in this research project due to the emphasis being on a buyer who is not the user of a certain product. However, several other constructs could be interesting for future research. Firstly, loyalty to a supplier could be explored as a possible consequence of decision satisfaction, as shown by Heitmann et al. (2007). To reveal how loyalty develops over time, and whether or not different forms of assortment presentation have the same effects in the long run, longitudinal studies with B2B buyers should be conducted. In addition, decision quality, that is, whether chosen products accurately fit the choice task, could be explored. This would require studies designed with one ideal, but not easy to recognize option.

In a similar vein, information search behavior could be analyzed in greater detail to determine whether increased cognitive effort leads to a broader and/or deeper processing of alternatives. Put differently, do decision makers incorporate more options into their trade-offs or do they pick a certain number of options and compare those against more attributes? Earlier research has also investigated what kind of information, i.e., conflicting or confirming information, decision makers sought in particular situations (see, for example, Mojzisch et al. 2008). Studies could be developed to investigate these effects under informal and official accountability and also to incorporate a variety of assortments in order to discover if an interactive effect with accountability exists.

Building on this, if not only buyers, but also users of a product are examined regarding their satisfaction, it would be interesting to see whether, and if so, in what ways, the interaction of accountability and assortment size and/or presentation affect their satisfaction with a product in the short, as well as long, run. In doing so, this would once again generate further insights into long-term loyalty of customers to suppliers that offer certain assortments.

6 References

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7 Appendices

7.1 Appendix 1: Stimuli Used in Experiment 1

Large Assortment:

<i>Name</i>	<i>Description</i>	<i>Material</i>	<i>Care Instructions</i>	<i>Price in €</i>	<i>Available Colors & Sizes</i>
Steffi	straight cut, 2 front pockets, 1 hip patch pocket, pockets on the right trouser leg	65% polyester, 35% cotton	machine wash hot, chlorine bleachable	35.99	navy blue : XS – XXXL rose: S – XXXL white: XS – XXXL lime: M – XXL
Kerstin	straight cut, 2 hip patch pockets	50% polyester, 50% cotton	machine wash hot, chlorine bleachable	31.99	yellow: S – XXL violet: XS – XXL white: S – XXL green: XS – XXXL red: XS – XL

Patricia	straight cut, 1 hip patch pocket , one pocket on every trouser leg	50% polyester, 50% cotton	machine wash hot, chlorine bleachable	33.99	dark green: XS – XXL
					red: XS – XXL white: XS – XXL light blue: S – L peach: M - XXXL
Sylvia	straight cut, 1 hip patch pocket	100 % cotton	machine wash warm, do not bleach	32.99	white: XS – XXXL chocolate brown: S – XXXL light yellow: M – L dark red: XS – XXL mint green: XS – XXL

Verena	Boot cut, 2 pockets in the front, 1 hip patch pocket	50% polyester, 50% cotton	machine wash hot, chlorine bleachable	39.95	beige: XS – L
					dark blue: XS – L
					black: XS – L
					emerald green: XS – XXL
					fiery red: XS – XXL
Linda	Straight cut, pockets at the sides, 1 hip patch pocket	100% polyester	machine wash at 60°C, do not bleach	30.95	pastel green: XS – XXL
					dark red: XS – XXL
					ocean blue: XS – XXL
Marion	boot cut, pockets at the sides, 1 hip patch pocket	100% cotton	machine wash hot, chlorine bleachable	37.99	lemon: S – XXL
					white: S – XXL
					navy blue: S – XXL
					pastel green: S – L
					pale pink: XS – XL

XXI	Sandra	straight cut, 1 hip pocket	50 % polyester, 50 % cotton	machine wash hot, chlorine bleachable	39.95	light brown: S – XXL mandarin orange: S – XXL grey: S – XXL white: S – XXL
	Marina	straight cut, hip patch pockets, 2 pockets at the sides	98% cotton, 2% elastane	machine wash hot, chlorine bleachable	33.95	olive green: XS – L mint green: XS – XXL light brown: XS – L red: XS – XXL
	Helga	2 pockets on the front, light material	100% cotton	machine wash hot, chlorine bleachable	38.99	violet: XS – XXL sand: XS – XXL rose: XS – XXL light blue: XS – XXL

Samira	Boot cut, 2 pockets at the sides	50% polyester, 50% cotton	machine wash at 60°C	30.00	lime: S – XL lilac: S – XL white: S – XL maroon: XS – XXL light green: XS – XXL
Maika	2 hip patch pockets, very light material	100% cotton	machine wash hot, chlorine bleachable	34.95	turquoise: S – XXL black: S – XXL magenta: S – XXL violet: S – XXL rose: XS – M

Small Assortment:

Name	Description	Material	Care Instructions	Price in €	Available Colors & Sizes
Steffi	straight cut, 2 front pockets, 1 hip patch pocket, pockets on the right trouser leg	65% polyester, 35% cotton	machine wash hot, chlorine bleachable	35.99	navy blue : XS – XXXL rose: S – XXXL white: XS – XXXL lime: M – XXL
Kerstin	straight cut, 2 hip patch pocktes	50% polyester, 50% cotton	machine wash hot, chlorine bleachable	31.99	yellow: S – XXL violet: XS – XXL white: S – XXL green: XS – XXXL red: XS – XL

Sylvia	straight cut, 1 hip patch pocket	100 % cotton	machine wash warm, do not bleach	32.99	white: XS – XXXL chocolate brown: S – XXXL light yellow: M – L dark red: XS – XXL mint green: XS – XXL
Sandra	straight cut, 1 hip pocket	50 % polyester, 50 % cotton	machine wash hot, chlorine bleachable	39.95	light brown: S – XXL mandarin orange: S – XXL grey: S – XXL white: S – XXL

Marina	straight cut, hip patch pockets, 2 pockets at the sides	98% cotton, 2% elastane	machine wash hot, chlorine bleachable	33.95	olive green: XS – L mint green: XS – XXL light brown: XS – L red: XS – XXL
Maika	2 hip patch pockets, very light material	100% cotton	machine wash hot, chlorine bleachable	34.95	turquoise: S – XXL black: S – XXL magenta: S – XXL violet: S – XXL rose: XS – M

7.2 Appendix 2: Stimuli Used in Experiment 2

Note: Only the color-coded assortment is shown here because the only aspect in which the two assortments differ is the color-coding, all other information are exactly the same.

Legend for the Color-Coding:

Gynecology:	
Urology:	
Skin closure, intracutaneous:	
Skin closure, subcutaneous:	
Visceral surgery:	
Plastic surgery:	
Cardiosurgery:	

Vascular surgery: 

Neurosurgery: 

Ophthalmology: 

Oral surgery: 

Orthopedics: 

Odontology: 

Color-Coded Assortment:

Fields of application	Name	Material	Applications	Color of Material	Absorption	Structure	Price in € (36 pieces)
	Caprone Tech 10	Polyglecaprone 25	gynecology	uncolored violet	approx. 90 – 120 days	mono-filament	99.00
			urology skin closure (subcutaneous, intracutaneous)				
	Glyco 50	Glyconate	visceral surgery	uncolored	approx. 60 – 90 days	mono-filament	185.00
			gynecology urology plastic surgery skin closure (subcutaneous, intracutaneous)				

XXXX		Lactil 910	Polyglactine 910	gynecology skin closure (subcutaneous, intracutaneous)	uncolored violet	approx. 56 – 70 days	multi- filament	125.00
		Novo Med 90	Polyester (PET)	cardio-surgery vascular surgery	white green	none	multi- filament	68.00
		Novo Tech 90	Polyester	neurosurgery ophthalmology oral surgery orthopedics	white green	none	multi- filament	79.00
		Novomix 30	Polypropylene & Polyethylene	cardiosurgerry vascular surgery	black green	none	mono- filament	97.00

XXX

	Poly 1000	Polyglycolic Acid	gynecology	uncolored violet	approx. 60 – 90 days	multi- filament	115.00
			urology				
			plastic surgery skin closure (subcutaneous, intracutaneous)				
	Poly 2000	Polyglycolic Acid	gynecology	uncolored violet	approx. 60 – 90 days	mono- filament	165.00
			urology				
			plastic surgery skin closure (subcutaneous, intracutaneous)				
	Poly 3000	Polyglycolic Acid	gynecology	uncolored violet	approx. 45 days	multi- filament	165.00
			ophthalmology				
			odontology				

XXXI



Prop 1400

Polypropylene

plastic surgery
skin closure
(subcutaneous,
intracutaneous)

blue
black

none

mono-
filament

105.00



Prop Med
700

Polypropylene

neurosurgery
ophthalmology
skin closure
(subcutaneous,
intracutaneous)

uncolored
green

none

mono-
filament

75.00



Six Tech

Polyamide 6

ophthalmology
skin closure
(subcutaneous,
intracutaneous)

white
blue
black

none

mono-
filament

100.00



Sync 100

Polyamide

neurosurgery
ophthalmology

white
blue
black

none

mono-
filament

79.00

7.3 Appendix 3: Stimuli Used in Experiment 3

Description of the Restaurants:

Kochkunst: Experience our dishes with the tastes of summer in an elegant atmosphere with candlelight and champagne as well as our wine specialties. We serve a set meal that will surprise you. We also serve vegetarian dishes. Enjoy the great view over fields and woods from our terrace on the fifth floor or relax inside in an elegant ambience with candlelight. Unfortunately, a return with public transportation is not possible after 10 pm. Of course, we are happy to call a taxi for you (travel time to city center: approx. 20 min.). We are looking forward to welcome you as our guests!

Zum Brauhäuschen: Eat at rustic tables, typical for a brewery pub, and enjoy the lively atmosphere in our “Brauhausstube”. Don’t go home hungry because we serve good and solid portions of food. Enjoy plain fare in high quality. All our dishes are cooked on order. Of course, we serve a variety of tasty vegetarian dishes. Try our well-known homebrew! Please be aware that our traditional brewery pub does not have a terrace to eat outside. To make you feel most comfortable, all our rooms are air-conditioned during summer. “Zum Brauhäuschen” – that’s rustic coziness in the heart of the city!

Asia Royal: When visiting us, you will experience a culinary explosion: The inimitable art of Sushi making and Asian-style high quality specialties with fish, meat or vegetables. Relax in a stylish lounge-like atmosphere and enjoy one of our world-famous cocktails... Take some time to relax in our “Asia Garden” – a unique terrace, designed in the spirit of feng shui. A place of silence, all calm and peaceful while located in the middle of the lively city center. We are sure here you’ll find calmness and inner peace! Asia Royal, the unique spirit!

Bella Italia: Pizza, pasta, salads – that’s the Italian lifestyle and our specialty! We serve food for every taste, no matter if you prefer fish or meat, and for people of every age. We serve food that makes you happy with Italian hospitality, no-frills style and in a family-like atmosphere. We serve – what else could it be?! – only Italian wines. Enjoy our homemade Tiramisu along with an

espresso for dessert which is worth the peccadillo. During summer we put some tables in front of our restaurant for you – just like in Italy!

Just Burger: Like an American diner we serve fresh-made burgers from 100 % beef. As side dishes, we offer fresh salads with a large choice of dressings as well as homemade fries – because we love potatoes! We serve as many variants of burgers as you can imagine: Choose from 10 different sauces, if you like cucumber, tomato or both on your burger, choose your favorite bread, your preferred cheese and many more! You can also get all of our products for take-away so that you can enjoy eating in the nearby park. Where we are? Right next to the university (approx. 15 min. from the city center).

1001 Nacht: Be our guest and enjoy a journey full of scents, tastes and spices like in the story of “thousand-and-one night”. Our traditional, Arabian dishes offer you delicious meat or vegetables with exotic spices. The atmosphere in our restaurant will becharm you and your comfort is our highest priority. We try to read your every wish from your lips. Please understand that we do not serve alcoholic beverages due to our cultural traditions. Enjoy an Ayrān, a very cooling and fresh drink, on our lovely terrace with view on the woods instead – you will be positively surprised by the taste!

Veggie Delight: Are you sick of only getting enormous portions of meat and only pasta with tomato sauce as a vegetarian dish? Are you sick of non-organic food? Come visit us and enjoy solely vegetarian and fresh-made organic food! To offer you the most fresh and seasonable food, we offer four varying dishes a day. Small variety, but good choice, we think! Would you like a glass of juice or wine? It's all organic as well! We moved to the city center recently. Just come on over and have a look at our new, bright and comfortable rooms that welcome you to stay for a little while...

Formitable: We offer piano music on every weekend and a dinner in a high-class atmosphere. We only serve the highest quality and the most premium ingredients. Our specialty is fine fish and seafood. We also offer culinary highlights with exclusive meat. We are proud to offer you a large number of exclusive wines. We were awarded for our wines and our dishes several times. Since we are located in the countryside, far away from the noise of the city, you

can enjoy your dinner in our nice garden, of course, with all perfect service and a high quality experience as well. It would be our greatest pleasure to welcome you as our guest soon!