ERASMUS UNIVERSITY ROTTERDAM
Erasmus School of Economics

Master Thesis MSc Economics and Business – Marketing

The Impact of Social Crowding on Impulsive Buying Behaviour: A Sequential Shopping Scenario Analysis.

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Date final version: 22/06/2023

Acknowledgements

I would like to acknowledge my deepest gratitude to my supervisor, Dr. Ana Scekic, who made this thesis possible. Her valuable support helped me through all the stages of this work and her expertise and standards have improved my knowledge in this scientific field.

Furthermore, I would like to thank my supervisor, Dr. Ana Scekic and my coreader for evaluating this thesis and providing me with valuable feedback during my defence.

Moreover, I would like to thank all the professors of the master's program “MSc Economics and Business – Marketing” for having deepened my knowledge in Marketing and consumer analysis, which provided me with the necessary knowledge to write this thesis.

Last but not least, I would like to express a special thanks to my family and friends for their support not only during the process of this thesis but also during all my years of study. They believed in me and made me believe in myself and my knowledge.

Abstract

In today's consumer society, impulsivity plays a major role in shoppers' decision-making process. For this reason, a high percentage of offline sales consist of impulsive purchases. Thus, understanding the drivers and the functionality of this consumer behaviour will represent a major advantage for all parties involved in the shopping process. As a classic shopping trip includes multiple store visits, it is vital to investigate how previous shopping experiences influence consumers' impulsive buying behaviour. Usually, store visitors must share their space with many other customers, which some will perceive as crowding. This feeling of crowdedness, named social crowding, could influence consumers' impulsive buying behaviour in subsequent shopping scenarios. Furthermore, as the state of ego depletion could be triggered by social crowding, which in turn could be the reason for impulsive buying behaviour, ego depletion represents a potential explanation of this relationship. Thus, the following research questions will help investigate the relationship between these phenomena: How does social crowding in a first shopping scenario impact impulsive buying behaviour in a subsequent scenario? Does ego depletion mediate the relationship between social crowding and impulsive buying behaviour?

In order to answer both research questions, quantitative research in the form of an online experiment including imaginary shopping scenarios has been used. First, participants watched a video of a crowded (versus non-crowded) shopping scenario, then they needed to answer questions about their ego depletion state and last decide if they would like to buy a product in a subsequent shopping scenario. In addition, the video participants watched was either 30 seconds or 2 minutes long in order to manipulate the time they imaginarily spent in the store.

The results of this research showed that social crowding increases consumers' impulsive buying behaviour in a subsequent shopping scenario. This effect is partially explained by ego depletion, as social crowding increases consumers' ego depletion state, which in turn increases impulsive buying behaviour. However, the time consumers spent in the store did not influence any of these two effects.

Future research could repeat this experiment in an actual shopping scenario and/or include different variables in the model, as many other aspects could potentially influence the relationship between these variables.

Keywords

Consumer Behaviour, Impulsive Buying Behaviour, Social Crowding, Ego Depletion

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1. Introduction

Nowadays, most individuals experience impulsivity regularly in various decision-making processes. This encounter can result in positive outcomes, such as higher creativity and not missing a big opportunity or negative outcomes, such as less control over one's own life (Lohmann, 2015). Impulsivity can be defined as a rapid and unplanned action, happening before a person could weigh the consequences of this action (Moeller et al., 2001). Such behaviour is typical in shopping situations, as people are confronted with multiple decisions.

Already in the 50s, researchers began to study this effect in retail stores. The Dupont consumer buying habits studies (1948-1965) create the foundation for this consumer behaviour and defined impulsive buying as an "unplanned" purchase. These were defined as purchases that were not planned to buy before entering the corresponding store (DuPont et al., 1945, 1959, 1954, 1959, 1965). Despite the rise of e-commerce and online shopping which may entail many advantages to customers, such as a large number of offerings, price comparisons and time-saving opportunities (Malloy, 2019), offline shopping remains the more popular option among consumers. In fact, 79% of the global sales are carried out in offline stores in 2022 and 81,8% of U.S. consumers prefer to buy groceries in-store (Ariella, 2023). Among so many offline buying decisions, impulsivity might be the driver for some of them. In fact, impulsive purchases represent 62% of supermarket sales and even up to 80% of purchases in certain product categories (Cheng et al., 2013). This highlights its importance and the need for this research to build on existing theory and further investigate this behaviour, specifically in shopping scenarios. For decades, researchers have been studying this customer tendency, trying to define its antecedents and its impact on many different aspects. Among the findings are factors influencing impulsive buying behaviour, such as product characteristics, customers' pre-purchase mood (Ozer & Gultekin, 2015), money availability (Badgaiyan & Verma, 2015) and product and retail characteristics (Kacen et al., 2012).

While these studies prove that these triggers play a decisive role during one specific store visit, impulsive buying behaviour could also be impacted by certain experiences in previous shopping scenarios, such as social crowding for example. Finding oneself in a crowded situation can happen at any time and at any location. Already early in the morning, many people are experiencing crowding on the train on their way to work, making them feel uncomfortable (Evans & Wener, 2007). As crowding is such an everyday companion and is affecting people in many ways, it is important to investigate how it affects consumers during offline shopping scenarios, as nowadays crowded stores are becoming a habit.

Researchers have discovered different effects of social crowding on consumer behaviour, such as reduced tolerance for risk and a preference for safety-oriented products (Maeng et al., 2013), a negative perception among customers, low in-store browsing and an early departure from the store (Xia, 2010; Bandyopadhyay, 2020). In addition, studies found that social crowding creates a stressful situation, in which consumers need to exert self-control in order to deal with the stress they are exposed to (Muraven & Baumeister, 2000). However, every person has only a limited capacity of self-control, which can get depleted due to previous self-regulation tasks, reaching the state of ego depletion (Baumeister, 2002). This emphasizes that the state of ego depletion arises from the encounter of multiple self-regulation actions. Ego depleted human beings, who have a reduced self-control capacity show behavioural changes, such as less physical stamina, giving up more quickly and being less able to control their emotions (Muraven et al., 1998). Therefore, ego depleted consumers might be more likely to make impulsive purchases, as their decision-making is based on short-term emotional desires instead of long-term goals (Baumeister, 2002). Consequently, this study uses two scenarios with different levels of social crowding, aiming to investigate the behavioural changes of ego depleted store visitors.

Hence, ego depletion serves as a mediator, explaining the relationship between experiencing social crowding in a first shopping scenario and making impulsive purchases in a subsequent scenario. This investigation of consumer behavioural alteration within two different and consecutive shopping scenarios, while observing these three variables presents a research gap, this thesis aims to fill, leading to this work's research questions.

How does social crowding in a first shopping scenario impact impulsive buying behaviour in a subsequent scenario?

Does ego depletion mediate the relationship between social crowding and impulsive buying behaviour?

As researchers discovered that social crowding acts as a source of ego depletion (Muraven & Baumeister, 2000) and that ego depletion affects impulsive buying behaviour (Baumeister, 2002), the main goal of this research is first to act as the missing piece of the puzzle of these findings and investigate if there is an overall connection and second to examine the relationship of these variables in a two-stage process in form of two consecutive offline shopping scenarios.

1.1. Theoretical, managerial and social contributions

This work makes contributions on multiple fronts. First, it shines light on the change in consumer behaviour when experiencing two consecutive shopping scenarios, which has been little studied yet. Second, it adds to the theory of social crowding, impulsive buying behaviour and ego depletion. Third, it aims to connect the findings of three main concepts and potentially discover an even stronger relationship between these phenomena than previously assumed. These three contributions provide this work with its necessary academic relevance. Furthermore, brand and store managers could benefit from these findings, as an additional understanding of consumer and impulsive buying behaviour will help to increase the effectiveness of their advertising and marketing. More specifically, understanding in which situations store visitors are vulnerable to impulsive purchases helps managers to adapt their advertising and marketing campaigns, so that the likelihood of consumers purchasing products impulsively is even higher. An effective strategy is essential nowadays, as many stores are physically surrounded by their competitors, exposing their customers to multiple shopping opportunities. Hence, this research's experiment will help managers to better understand consumers' behaviour when they are exposed to many shopping opportunities.

Last, this work's social contributions consist of an enhanced awareness of consumers' own shopping behaviour. More specifically, they will become more familiar with the functionality and the influence of social crowding, ego depletion and impulsive buying behaviour on their behaviour and their decision-making process. This knowledge will allow in-store visitors to make wiser decisions and avoid falling victim to the negative consequences of these phenomena.

2. Theoretical background

2.1. Impulsive buying behaviour

Nowadays, a person's life is shaped by many decisions throughout the day, which are sometimes influenced by impulses, resulting in positive and/or negative outcomes (Lohmann, 2015). Especially in an offline shopping scenario, impulsive behaviour can play a crucial role, as consumers are facing various decisions. Hence, this section discusses in detail the role of impulsive buying behaviour during a retail store visit.

2.1.1. What is impulsive buying?

The phenomenon of impulsive buying behaviour consists of two aspects: buying behaviour and impulse. An impulse is a sudden and spontaneous act, which may be powerful enough for a human being to act on it immediately (Rook, 1987). Hence, an impulsive purchase represents a sudden urge to make an "unplanned" purchase, occurring in many different retail settings (Kollat & Willet, 1969). Already in the early stage of impulsive buying behaviour, researchers suggested that defining this consumer behaviour as "unplanned purchases" is too vague (Stern, 1962). Hence, Stern (1962) created "the impulsive mix", which is a mix of four different kinds of impulsive buying behaviour. The first one, "pure impulsive buying" is the strongest, as it breaks normal buying patterns. The second type, "reminder impulsive buying" is weaker than the first one, as the buyer reminds himself/herself of information about the product, associating this with a previous decision to buy. The third, "suggestion impulse buying" is defined as the visualisation of a need when seeing a product for the first time and thus fulfilling the purchase based on that need. The last part of the mix, the "planned impulsive buying" is the weakest, meaning that a buyer thinks of certain products before entering the store but plans to buy other products for whatever reason and still ends up buying the products he/she planned to avoid (Stern, 1962).

While this view on impulsive buying behaviour was focused on the products that could get impulsively purchased, Rook and Hoch (1985) explained that it is the individuals that make impulsive purchases and not the products. Hence, analyzing only the products to define this consumer tendency would present a narrow explanation of this term, as the consumers experience these impulses, driving them to fulfil the purchase. This opened a whole new chapter for impulsive buying behaviour, as the origin of this type of behaviour is shifted from the products to the consumers. Hence, impulsive buying behaviour has been defined as a spontaneous urge to consume a product, due to a lack of conscious planning (Rook & Hoch, 1985). This definition matches with the one from Baumeister (2002), who defined impulsive buying behaviour as getting a sudden and spontaneous impulse to buy something without having planned to do so in advance and the person acts on this impulse without considering the match of this product with his/her long-term goals. However, the question arises which factors can provoke this consumer tendency.

2.1.2. Factors influencing impulsive buying behaviour

This specific consumer tendency to impulsively purchase a product can be triggered by many different internal and external aspects. External drivers of impulsive buying behaviour are mostly part of the retailer's marketing. One aspect included in every marketer's strategy is for example the creation of a pleasant in-store atmosphere. Researchers discovered that the interaction of music and scent in a retail store has a positive effect on impulsive buying behaviour (Mattila & Wirtz, 2001). In addition, store attributes such as light, layout and employees also increase the urge to buy products impulsively (Mohan et al., 2013). Besides the store atmosphere attributes, the product itself can also prompt this consumer tendency. Kacen et al. (2012) discovered that different product characteristics, such as hedonic, ready-to-use, low price, on sale and displayed products increase impulsive buying behaviour. Also in an online shopping scenario, sensory attributes, price attributes, such as special promotions and hedonic browsing influence people to purchase impulsively (Park et al., 2012).

Moreover, customers' internal characteristics also play a decisive role in their impulsive decision-making process. Researchers discovered that a customer's money availability, well-being and time availability (Badgaiyan & Verma, 2015), as well as a customer's positive pre-purchase mood and his/her impulsive buying tendency in general (Ozer & Gultekin, 2015), stimulate them to make impulsive purchases. Such a positive mood can increase the willingness to take risks in consumers' decision-making process, which can lead to an impulsive purchase due to basic reasons such as the likeability of the product. While this is true for cheap products, it is not for expensive products, as the associated risks of such a decision would be too high compared to the money consumers would need to spend (Spies et al., 1997). Nevertheless, once this pre-purchase mood is negative, customers tend to make less impulsive purchase decisions (Ozer & Gultekin, 2015).

As the antecedents influencing a person's impulsive buying behaviour are coherent, the cause why people let themselves get influenced by internal and external stimuli is still questionable. Hence the following section focuses on identifying the reason and motivation behind impulsive buying behaviour.

2.1.3. Internal reasons for impulsive buying behaviour

After having defined the different versions and the drivers of impulsive buying behaviour, it is important to analyze the internal reasons why consumers decide to make impulsive purchases. The moment a consumer must decide if he/she wants to buy a product or not, two processes may occur: affective and cognitive. The affective process occurs automatically,

without processing resources being present. Hence, the decision-making in this process will be determined by the person's emotions and feelings at that specific moment (Shiv & Fedorikhin, 1999). On the opposite side, the cognitive process is less driven by emotions, but the consumer rather compares different purchase options and uses processing resources. These consumer thoughts and evaluations could arise from stimulus-based as well as memory-based processes (Shiv & Fedorikhin, 1999). Affective and cognitive processes can vary in its intensity and can have positive and negative outcomes for the consumer. In addition, if the consumer's processing resources are depleted, it is more likely that his/her decision-making will be based on the affective and emotional process (Shov & Fedorikhin, 1999). These findings match the theory of Kahneman (2003), which indicates that human beings have two modes of thinking and deciding: System 1 and System 2. The procedures of System 1 are automatic, do not require effort, are emotionally driven and difficult to alter, while the operations of System 2 are slower, require effort, are relatively flexible and are driven by rules and thinking (Kahneman, 2003). Combining both theories, the affective processes equal System 1 and cognitive processes equal System 2. Based on these explanations, one could assume that only affective aspects, such as emotions and feelings could cause impulsive buying. However, Verplanken and Herabadi (2001) gave clear examples of impulsive buying in both processes. The cognitive aspects include for example the lack of planning and deliberation when deciding to buy a product, while the affective aspects include for example feelings of excitement, the urge to buy, difficulty in self-control and possible regret afterwards (Verplanken & Herabadi, 2001). While these findings explain that human beings have two different thinking processes when it comes to their decision-making process, it is also important to analyze consumers' feelings and experiences at the moment of the impulsive purchase opportunity.

Rook (1987) and Rook and Hoch (1985) identified several features occurring in the decision-making process causing store visitors to make impulsive purchases. First, consumers experience a spontaneous urge to buy, which can be triggered by a sudden stimulation, such as direct visual stimulation for example.

The next feature consists of the power and compulsion to act on the urge, as people want to possess something immediately.

Further, the sudden urge to buy evokes strong excitement and stimulation among consumers. This can disrupt one's ongoing behaviour stream, putting the individual in a state of psychological disequilibrium and making them feel out of control. This feeling only occurs if the person does not have enough "willpower" at that specific moment. Will power is a philosophical concept indicating the strength a person has to refuse immediate gratification in

order to benefit from a better but delayed gratification in the future (Rook and Hoch, 1985). Having not enough willpower and thus failing to control one's impulses will have negative effects on a person's long-term goals, such as budget, diet, schedule or reputation.

Next, the synchronicity of internal and external forces gives consumers the "right place, right time" feeling. One participant from Rook's (1987) research explained that when seeing a product that she always wanted to purchase, the urge to buy was so strong, as she might never experience this purchase opportunity again.

Another feature is the product animation, to which consumers can build a personal connection. One participant from a study explained that one product was literally screaming "Buy me", leaving him/her with no other choice than to make the purchase.

Next, the hedonic elements (e.g. the good and bad feelings) further influence a consumer's impulsive buying behaviour. Consumer associate purchasing impulsively with a good and satisfying feeling (Rook, 1987). These positive feelings in combination with the sudden need to possess a product immediately will reduce the cognitive evaluation of the product attributes and thus lead to impulsive purchases (Rook, 1987; Weinberg & Gottwald, 1982). This implies that shoppers have reduced intellectual control in their decision-making process (Weinberg & Gottwald, 1982). Therefore, affective aspects, such as emotions instead of product attributes or his/her needs will define consumers' final decision to buy or not to buy (Rook and Hoch, 1985).

Furthermore, receiving an impulse to make a certain purchase will in most cases present a conflict between two forces: pleasure and guilt. The consumer must decide between the "good" that arises from making the impulsive purchase and thus benefitting from immediate gratification versus the "bad" that will arise later, as no long-term goals would be served (Rook & Hoch, 1985; Ainslie, 1975). The gravity of this conflict varies from person to person, thus Ainslie (1975) explained that the bigger the enjoyment is of making the impulsive purchase, the harder it is to resist this impulse. This conflict can have a very strong influence on decision-making, as some participants in Rook's (1987) study showed that they felt helpless and could only end that conflict by fulfilling the impulsive purchase.

Last, a consumer's decision to buy a certain product impulsively is very rarely accompanied by considering its potential consequences in the future (Rook, 1987; Rook & Hoch, 1985). Thus, impulsive buying behaviour regularly causes a feeling of regret after falling for one's impulses. Grabbing a candy bar in the check-out line or buying a pretty piece of clothing in the mall are examples that could in worst-case scenarios lead to bad consequences in the future, such as bulimia or bankruptcy if performed repeatedly (Rook & Hoch, 1985). However, not the purchase but the consumption experience will determine if the person regrets his/her

decision. If this consumption experience of the product that a person bought impulsively is negative, his/her feeling of regret will be stronger (Cornish, 2018).

The next explanation for why customers make impulsive buying decisions does not arise from the product, atmosphere or personality traits themselves. Impulsive purchases can be used to deal with certain emotions. These emotions can be triggered by positive or negative events in a customer's life (Verplanken & Herabadi, 2001). Once a customer has positive emotions, impulsive purchases can serve as a reward for oneself, while on the other hand, when having negative emotions, these purchases can serve as a comfort (Verplanken & Herabadi, 2001). While this comfort can be temporarily helpful and relieving, it will not present a long-term solution, as it only represents an escape from the problem (Elliott, 1994). Repeated usage of impulsive buying as a way to comfort oneself can have severe consequences, as it can become a habit, resulting in addictive consumption and thus potentially leading to money issues (Elliott, 1994).

The last internal reason why customers make impulsive purchases is ego depletion, which this work puts the greatest focus on. Every human being has a limited capacity of self-control per day, which one can use for self-regulation tasks. However, as every individual encounter multiple situations in which he/she needs to exert self-control, this resource can get depleted over time (Muraven & Baumeister, 2000). If this capacity is low, people enter the stage of ego depletion and are less able to exert self-control for present and future situations (Baumeister, 2002). Hence, people's behaviour is more driven by their emotions and feelings, making them highly vulnerable to acting on their impulses and their desire at that specific moment (Muraven et al., 1998). This implements that ego depleted consumers are more likely to make impulsive purchases, as they fail more frequently to resist temptations (Baumeister, 2002).

As previous studies have investigated this psychological state in similar shopping situations, it could present an intermediate between social crowding and impulsive buying behaviour. Hence, ego depletion is the most important internal reason for this work and will be discussed more in detail in section 2.3.

2.2. Social crowding

Finding oneself amid a big crowd, when trying to shop in a retail store is an experience most people encounter regularly. Hence, this section aims to discuss social crowding, how consumers perceive it and its impact on their decision-making.

2.2.1. What is crowding?

Kotler (1974) was one of the initiators to define that consumer decision-making does not only get influenced by tangible products but also by the store atmosphere. A customer perceives multiple sensory qualities of his/her surroundings during a shopping scenario that have different effects on the buyer's information (Kotler, 1974). These findings opened a whole new chapter in marketing research and gave rise to social crowding as an influence on consumer behaviour and decision-making. Crowding occurs in many everyday activities of human beings, such as for example on the train during rush hour. This typical crowding situation increases the likelihood of having a negative mood and feeling stressed due to personal space invasion (Evans & Wener, 2007). Furthermore, studies by Mackintosh et al. (1975) found that respondents, who performed an experimental task under high density perceived negative feelings, such as confusion and tensity, while participants performing a task in a low-density environment felt pleased and relaxed. Based on these findings, one could assume that crowding has mostly negative effects on a person's perception and feelings.

Due to the steady rise of the human population, many consumption decisions are made in the presence of other people. Crowdedness in a store can vary significantly across different locations, times and domains (Maeng et al., 2013). With the physical presence of numerous customers in a store, the personal space of each person gets violated at some point. However, crowdedness is much more than only the physical evidence of many people being in a limited space. The customer's perception of being crowded or not plays a very important role in his/her decision-making process and the functionality of this perception of crowdedness versus the actual crowdedness might operate differently.

2.2.2. Different types of crowdedness

In order to understand consumer behaviour changes in a crowded retail scenario, it is important to evaluate how consumers perceive crowding. Researchers distinguish between two different types of crowdedness, "density" and "crowding". Density is the physical condition of high density in a specific area, evaluated based on the number of people in that certain space while crowding is the psychological state of the person, evaluated based on his/her perception of crowdedness (Stokols, 1972). In order to have the possibility as a customer to perceive crowding, density must be given, as there needs to be physical evidence of many people in a certain space first, before the customer can psychologically act on it (Stokols, 1972). Despite the similarity and interaction of these two terms, there are some differences. As an example of this discrepancy, the available space for one person in an area can appear limited from an

outside perspective, meaning that density is given, while on the other hand, the person does not perceive the situation as crowded, especially if he/she does not require a high degree of coordination and has a friendly connection with the surrounding human beings (Stokols, 1972).

Furthermore, researchers continued to analyze perceived crowding in more detail and discovered that there should be a distinction made between two types. Harrell et al. (1980) conducted a study with two different dimensions of perceived retail crowding. The first dimension consists of a confined and closed feeling, while the other dimension consists of a crowded and restricted movement. The results of their studies showed that there exists a difference between these two constructs, for example, only the confined feeling weakly affected the fulfilment of the purchase plan (Harrell et al., 1980). However, other studies did not feel the need to differentiate between two types of perceived crowding and thus treated this construct unidimensionally. Hence, Machleit et al. (1994) further investigated if there should be a differentiation made and discovered two different constructs, which were then defined as "spatial crowding" and "human crowding". As the names already suggest, human crowding focuses on the perceived crowding caused by other store visitors, while spatial crowding focuses on the limitation of one's personal space in a certain area (Machleit et al., 1994). Hence, the biggest difference between these two types of crowdedness perceptions is that human crowding is caused by humans, while spatial crowding is caused by non-human elements, such as the amount of merchandise placed in a store, which mostly happens during the holiday seasons (Bandyopadhyay, 2020; Machleit et al., 1994).

The following figure aims to clarify the differences between the types of crowdedness that exist, while the blue box represents the physical appearance and the green boxes the psychological state of consumers (see Figure 1).

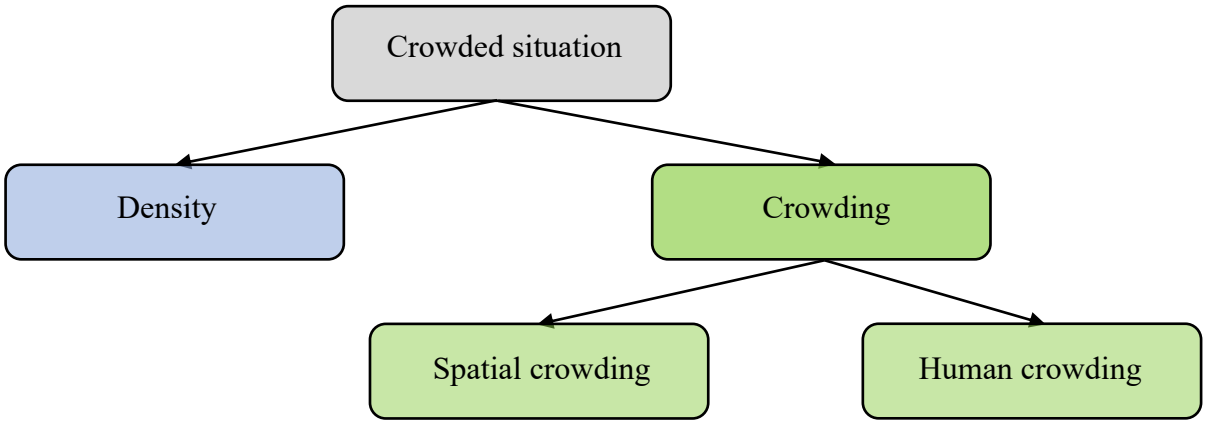

Figure 1: Different types of crowdedness

2.2.3. Alteration in consumer behaviour when experiencing social crowding.

After having defined social crowding and how people perceive this situational atmosphere in a store, it is important to identify why and how retail clients' buying decisions will get influenced when they perceive crowdedness. Milgram (1970) explained that every human being has a limited capacity to cope with external stimuli. Once the amount and rate of inputs from an individual's environment exceed this capacity, he/she needs to adapt and set priorities on which input to act (Milgram, 1970). Thus, this adaptation strategy causes the person to alter his/her behaviour. Harrell et al. (1980) used Milgram's (1970) theory and adaptation strategies and implemented them on consumers who are experiencing stimuli overload in the form of social crowding. First, consumers are less engaged in exploratory shopping, meaning that they spend less time on each purchase decision. This implies that they rely more on familiar brands and products as the functionality and quality of these products are well-known among them (Harrell et al., 1980). This behaviour can be explained by the fact that people want to avoid social interaction when the store is crowded, which results in becoming attached to nonhuman targets, such as brands and products they already know (Huang et al., 2018). Another example of an adaptation strategy is the disregard of low-priority purchases. Consumers in a crowded shopping scenario are avoiding purchase decisions regarding products that might be less useful for them in order to save time and will only consider products they really need (Harrell et al., 1980). As previously explained, consumers try to avoid social interactions when the store is crowded. This social avoidance applies not only to interactions with other consumers but also employees. Thus, crowded shop visitors are for example not asking for special services, such as getting their meat cut by the butcher for instance (Harrell, 1980).

Overall, many more studies have researched the effect of crowding on retail clients. If some consumers are browsing through a store, a person's willingness to enter it will be increased, as the store will appear more attractive and thus the consumer will feel more "at home" (Zhang et al., 2014). However, high social crowding leads to shopping dissatisfaction and a decrease in purchases among customers, especially if there is a difference in the experience and the expectation of crowdedness (e.g. a consumer did not expect crowdedness, but the store was crowded during his/her visit) and their crowding tolerance (Eroglu et al., 2022; Machleit et al., 2000). This dissatisfaction and low likeability to purchase a product is especially relevant for fashion accessories (Zhang et al., 2014). Other people's behaviour (e.g. herding, imitations effects, acquiring the employees time all for themselves) and also only their presence (e.g. reducing one's personal space, limiting one's interaction possibility with the products and increasing the wait time at the checkout) can be the cause for a negative shopping experience

(Zhang et al., 2014). These findings match the study of Eroglu et al. (2022), suggesting that human crowding reduces store visitors' intention to engage with employees, although this rapport would actually increase their enjoyment while shopping (Zhang et al., 2014). This dissatisfaction will lead to a reduced likelihood of browsing in the store and an early departure (Xia et al., 2010; Bandyopadhyay, 2020; Dion, 2004). The cause of consumer unhappiness in retail crowding can be explained by the dislike of high levels of stimulation among customers (Xia et al., 2010). When exposed to crowding, especially spatial density, retail customers feel more in a rush, which increases aggressiveness and a higher feeling of discomfort, leading to avoidance of the store (Dion, 2004). Overall clients feel that it is not feasible to make good deals in a crowded space (Dion, 2004).

2.2.4. Aftereffects of social crowding

Social crowding normally occurs in one specific retail shopping scenario. However, the effects of such a situation on the person experiencing it will most likely not end immediately after leaving this scenario. Thus, researchers were prompted to find out the changes in consumer behaviour after having experienced social crowding. Evans (1979) discovered that experiencing crowding in one scenario will lead to poorer performance in a later difficult and cooperative group task. Furthermore, people leaving a crowding situation had higher blood pressure and pulse rate, felt greater discomfort, hostility and stress and had a lower frustration tolerance, compared to people having experienced a non-crowded situation (Evans, 1979; Sherrod, 1974).

Overall findings seem to mostly consist of negative effects on consumers and an increase in dissatisfaction. As explained in the previous paragraphs, making impulsive purchases is a way to deal with one's emotions and such purchases can be made to comfort oneself and relieve an uneasy mood (Verplanken & Herabadi, 2001).

Customer's feelings after leaving a retail crowding situation could therefore present an uneasy mood and impulsive purchases could help to comfort the consumers after such a negative experience, leading to the first hypothesis of this research.

Hypothesis 1 (H1): After experiencing social crowding in a retail situation, consumers will be more likely to make impulsive purchases in a subsequent purchase scenario.

This shift in consumer behaviour towards more negative emotions could occur because people who are visiting a crowded store are more exposed to stress and a lot of bad stimuli

(Muraven & Baumeister, 2000). In order to cope with this stress, consumers need to exert self-control, which is a limited resource that can get depleted after usage, causing people to reach a state of ego depletion (Muraven & Baumeister, 2000). Hence, a possible explanation for this increase in impulsive buying behaviour due to social crowding could be this reduced self-control state, named ego depletion.

2.3. Ego depletion

Ego depletion and the theory of a limited capacity of self-control describe how people's state of mind changes due to specific influencing situations. Thus, finding oneself in this state may alter one's behaviour. Hence, this section discusses this theory while laying focus on its effects in offline purchase scenarios.

2.3.1. Self-control

"Self-control occurs when a person (or other organism) attempts to change the way he or she would otherwise think, feel or behave" (Muraven & Baumeister, 2000, p. 247). Thus, this practice helps people to control their behaviour in order to avoid unintended decisions and actions. A common example is dieters, who need to exert self-control in order to avoid eating sweets, as they want to control their behaviour and eat healthy (Muraven & Baumeister, 2000; Baumeister, 2002). Furthermore, Muraven & Baumeister (2000) presented that self-control operates like a muscle, meaning that this activity has a limited capacity that will be used up at a certain point, which leads to depletion. This depletion can cause impairment in a subsequent scenario (e.g. mental or physical activity), in which self-control would be needed (Muraven & Baumeister, 2000). Despite these findings building the foundation of the strength model, illustrating that self-control is a limited capacity, which can lead to fatigue when depleted (Muraven et al., 1998), many more outcomes can be explained by this model. Muraven & Baumeister (2000) presented the five key assumptions of the strength model. First, the exertion of self-control and similar tasks require strength. Second, each person has a limited capacity of self-control that he/she can use until it is depleted. Third, every self-control exertion reduces the same capacity of a human being, meaning that the consumption of self-control in one scenario, automatically reduces the capacity for any other scenario, independent of the scenario's differences or similarities. Fourth, the capacity of self-control varies from person to person, signifying that one person can execute self-control longer than another. In addition, every situation requires a different amount of self-control to be exerted. Last, reducing the self-

control capacity leads to a depleted state, which lasts even after having left the self-control situation, until it regenerates after a while (Muraven & Baumeister, 2000).

2.3.2. What is ego depletion?

Ego depletion is "the state of reduced capacity for self-control" (Baumeister, 2002, p.673). This represents the previously explained state, that occurs after having exerted self-control in one or multiple scenarios. The state of ego deletion will normally be reached by everybody at some point in the day, as everyday actions obligate the person to make decisions in very different settings, such as during work hours, free time, shopping etc. For all these situations, humans need to exert a certain amount of self-control (Baumeister, 2002). This explains, why most people tend to become ego depleted and fail to exert self-control later in the day than in the morning, as the self-control capacity regenerates during sleep (Baumeister, 2002).

Failing to exert self-control in an ego depleted state does not automatically derive from having no self-control capacity left. Ego depletion occurs once this capacity is reduced so that only a limited amount of this resource is still available for a certain task. Therefore, people are much more conservative in spending the last amount of self-control (Muraven et al., 2006). In addition, people being aware of their future need for self-control are even more conservative in using this resource in a current scenario, as they want to save capacity for potential situations that are yet to come (Muraven et al., 2006). The method to conserve the limited self-control capacity is coherent, as using that last amount of resource in an ego depletion state will result in much poorer performance in exerting self-control in the subsequent tasks (Baumeister et al., 2008; Muraven et al., 2006).

Therefore, the combination of being ego depleted due to previous self-control scenarios and the willingness to conserve the remaining resource in order to be prepared for subsequent self-regulation tasks will lead to the highest failure to exert self-control in present actions.

As previously explained in another paragraph, social crowding can arouse stressful feelings among customers in a crowded retail situation. Hence, they must deploy a constant level of self-control to adapt to the stress in that situation (Muraven & Baumeister, 2000; Cohen, 1980; Glass et al., 1969). After experiencing social crowding, the self-control capacity can be reduced, as this resource is limited for every human being (Muraven & Baumeister, 2000). Therefore, customers might reach a state of ego depletion, leading to this work's second hypothesis.

Hypothesis 2 (H2): Customers who experience social crowding and need to exert self-control will reach a state of ego depletion after leaving this situation.

However, another theory explaining the functionality of ego depletion appeared, named the cognitive control theory. This theory presents some special cases, during which the functionality of ego depletion and people's self-control capacity is different compared to the previously explained strength model. Cognitive control theory represents the ability to control oneself and focus on long-term goals in people's actions, by constantly thinking of their long-term desires and the pattern of actions that will lead to the achievement of these goals (Miller & Cohen, 2001). Hence, in order to manage difficult tasks, a person uses cognitive control to intentionally select his/her thoughts, emotions and thus also their behaviour (Miller & Cohen, 2001; Botvinick et al., 2001). Humans manage to control their behaviour in such situations and make favourable decisions due to control processes, which are mechanisms based on memory and learnings (Botvinick et al., 2001; Dewitte et al., 2009). These control processes are questioned if external stimuli present a different and maybe contradictory explanation than the usual thinking process, resulting in a response conflict (Botvinick et al., 2001). The most famous example of such a response conflict is the Stroop task. In this experiment, participants needed to name the colour used to write the name of a certain colour. More errors occur if the colour they see differs from the colour that has been written down, for example the colour name "red" is painted blue (Stroop, 1935).

Dewitte et al. (2009) explained this theory further by applying it to ego depletion. The previously explained response conflicts will drive people to adapt to that situation, creating certain control processes, which help the person in dealing with similar situations in the future (Dewitte et al., 2009). Therefore Dewitte et al. (2009) argue that if two self-regulatory situations occur successively, the strength model predicts that the person would be ego depleted because the self-control capacity is depleted. However, the cognitive control theory would predict that the person would not become ego depleted but on the contrary even enhance his/her self-control in the subsequent task, as he/she would use the learning of the first response conflict in the subsequent situation and thus will be able to manage the second scenario in a more controlled way.

This comparison of both models implies that the two self-regulatory situations must be distinctive to each other, in order for the person to become ego depleted in the subsequent scenario (Dewitte et al., 2009). Hence, this research's setting consists of two distinctive shopping scenarios, for which customers must have different intentions and needs.

2.3.3. Behavioural changes of ego depleted customers

The state of ego depletion expresses that a consumer's self-control capacity is reduced, meaning that a customer is less likely to exert self-control. This phenomenon has been proved in very different scenarios leading to a change in a person's behaviour. Muraven et al. (1998) proved that participants who tried to control their emotions while watching an emotional video proved lower physical stamina in a subsequent physical endurance task than participants who did not try to control their emotions. The other two studies of this research showed that ego depleted participants gave up more quickly on a frustrating and open-ended task and were less likely to control their emotional response, such as laughing, smiling, showing amusement while watching a funny video, even when asked not to do so (Muraven et al., 1998).

Other findings showed that dieters being in an ego depleted state ate more than they would otherwise, while non-dieters showed no change in their eating behaviour (Vohs & Heatherton, 2000). These findings demonstrate that ego depletion does not simply cause people to become more pleasure-seeking or have a bigger appetite, but it will make people less resistant to temptation, due to the failure to exert self-control. As non-dieters were not trying to eat less food in that second task, they did not need to exert self-control, which explains why ego depletion did not affect their eating behaviour. On the other hand, there was a need for the dieters to exert self-control, as they were trying to eat less, but did not manage to do so in an ego depleted state, due to the reduced capacity of self-control (Vohs & Heatherton, 2000; Baumeister et al., 2008). This experiment demonstrates that there needs to be a reason to exert self-control in order for ego depletion to actually affect people's behaviour.

In general, ego depleted consumers rely less on intellect than they would otherwise. Schmeichel et al. (2003) discovered that ego depletion caused participants to perform worse on a reasoning task, namely the GRE. In order to successfully complete this test, a certain amount of active cognitive control and self-regulated thinking is required. Their performance was measured based on three criteria: total correct numbers, number of questions attempted and correct answers to the attempted questions. Ego depleted participants answered less accurately in terms of the total number of questions, attempted fewer questions, indicating that ego depletion reduces the speed of thinking and answered less accurately the questions the participants attempted (Schmeichel et al., 2003). These findings show that ego depletion negatively affects a person's speed and also accuracy when it comes to logical thinking because these tasks require self-regulated thinking, which gets reduced when a person is in a state of ego depletion (Schmeichel et al., 2003).

Furthermore, Schmeichel et al. (2003) showed in two subsequent experiments that the performance on more complex information processing tasks, requiring executive control was negatively affected by ego depletion, while contrarily automatic and more basic information processing tasks were not affected and remained the same. This non-effect occurs because the more basic tasks, such as syllable memory do not need active guidance by oneself and can be successfully completed without executive control, whereas complex information processing requires cognitive and self-regulated control (Schmeichel et al., 2003). Moreover, a person's mood and emotions did not act as a mediator affecting participants' responses, which gives these findings a higher legitimacy (Schmeichel et al., 2003).

Further examples of consumer behaviour alteration due to ego depletion were mentioned by Pocheptsova et al. (2007), who showed that ego depletion causes consumers to change their decision-making towards a less effortful process without effortful engagement. Therefore, ego depleted participants were less able to compromise between different dimensions (for example price and quality) and failed to choose a middle option of all dimensions. Hence, they mostly choose a more extreme option, such as the cheapest or the best (Pocheptsova et al., 2007). These results show that ego depleted consumers would rather choose the easy option instead of the most optimum one because they are thinking less deliberative and effortful due to their psychological state.

Moreover, researchers found additional consumer behaviour changes due to ego depletion, matching the findings of Pocheptsova et al. (2007). This effortless thinking of ego depleted consumers can further get detected in their product choice. One study conducted an experiment in which participants had to choose between an option that arouses high affective but low cognitive aspects (chocolate cake) and an option that arouses high cognitive but low affective aspects (fruit salad) (Shiv & Fedorikhin, 1999). Ego depleted consumers preferred to buy the cake rather than the fruit salad. This decision occurred because ego depletion causes people to decide based on their emotions, such as their desire and feelings, while their cognition and self-control capabilities are depleted (Shiv & Fedorikhi, 1999). These findings are proven correct, as Bruyneel et al (2006) conducted a similar experiment. They showed that making a series of active choices on products on a shopping tour will increase the likelihood to buy attractive and more expensive products. Hence, repeated decision-making depletes the self-control capacity of a person and thus makes him/her more vulnerable to emotional products (Bruyneel et al., 2006).

In terms of money expenditure among consumers, Vohs & Faber (2007) showed that participants whose self-control resources are depleted were willing to spend more money than

participants who were not affected by ego depletion. This finding indicates that ego depleted consumers are vulnerable to engaging in impulsive overspending. Furthermore, Vohs & Faber (2007) confirmed their discovery with another experiment, consisting of a mock shopping experience. However, consumers who had a higher impulsive buying tendency spent the biggest amount of money, meaning that their spending was the most affected by ego depletion, while people with a low impulsive buying tendency were the least affected (Vohs & Faber, 2007).

This impulsive overspending may indicate that ego depleted consumers are living in the moment without thinking of the effects this behaviour could have on their future. Indeed, Baumeister (2002) showed that consumers with a low capacity of self-control experience difficulties in their self-regulation towards their long-term goals, such as saving money for example (Baumeister, 2002). This implies that these customers are less likely to resist temptations and therefore make impulsive purchases (Baumeister, 2002), which leads to the third hypothesis of this research.

Hypothesis 3 (H3). Customers being in an ego depletion state (versus not being in that state) will evince a higher impulsive buying behaviour.

Combining all assumptions, ego depletion could present a suitable mediator, explaining the relationship between social crowding and impulsive buying behaviour. A mediator represents a variable, aiming to explain the effect between the independent and the dependent variable (Baron & Kenny, 1986). Applying this theory to this research, the mediator will be ego depletion, the independent variable social crowding and the dependent variable impulsive buying behaviour. This leads to the mediation hypothesis of this work.

Hypothesis 4 (H4): Ego depletion mediates the effect of social crowding on impulsive buying behaviour.

2.4. Introducing the time spent in the store as a moderator

As previously explained, the self-control capacity of a human being declines continuously over time with every self-control attempt (Muraven & Baumeister, 2000). Retail customers are especially vulnerable to a higher level of ego depletion, as they often have to make multiple decisions at once and could already be depleted due to previous experiences that day, such as in their workplace or previous shopping experience on their shopping trip (Baumeister, 2002).

These findings allowed this thesis to introduce a moderator into the conceptual model, leading to the fifth hypothesis of this work.

Hypothesis 5a (H5a): Being exposed to social crowding for a longer time (versus a shorter time) will increase a customer's level of ego depletion in a subsequent and different shopping scenario.

In addition, time could not only play a role in determining the level of ego depletion but also the gravity of impulsive buying behaviour. As previously explained, the findings that the experience of social crowding in one store leads to dissatisfaction and in general an uneasy mood among consumers (Evans, 1979; Sherrod, 1974) and people use impulsive purchases to deal with their dissatisfaction, led to the first hypothesis of this research.

Therefore, being exposed to social crowding for a longer time could enhance the level of dissatisfaction, which could lead to a stronger desire to comfort oneself with impulsive purchases. Hence we assume that the variable, time spent in the store, may not only moderate the mediation but also the direct effect of social crowding on impulsive buying behaviour, which leads to the last hypothesis of this work.

Hypothesis 5b (H5b): Being exposed to social crowding for a longer time (versus a shorter time) will increase a customer's level of impulsive buying behaviour in a subsequent and different shopping scenario.

2.5. Conceptual model

The combination of all these findings and research gaps allows us to introduce this research's conceptual model (see Figure 2). Social crowding will present the independent variable, Impulsive buying behaviour the dependent variable, ego depletion the mediator and the time spent in the store the moderator of the mediation and the direct effect. As mentioned in a previous paragraph, this research will serve as the missing piece of the puzzle, put all these findings together and indicate if there is an overarching relationship in subsequent shopping scenarios. In addition, it aims to enlarge the theory of impulsive buying behaviour, ego depletion and social crowding.

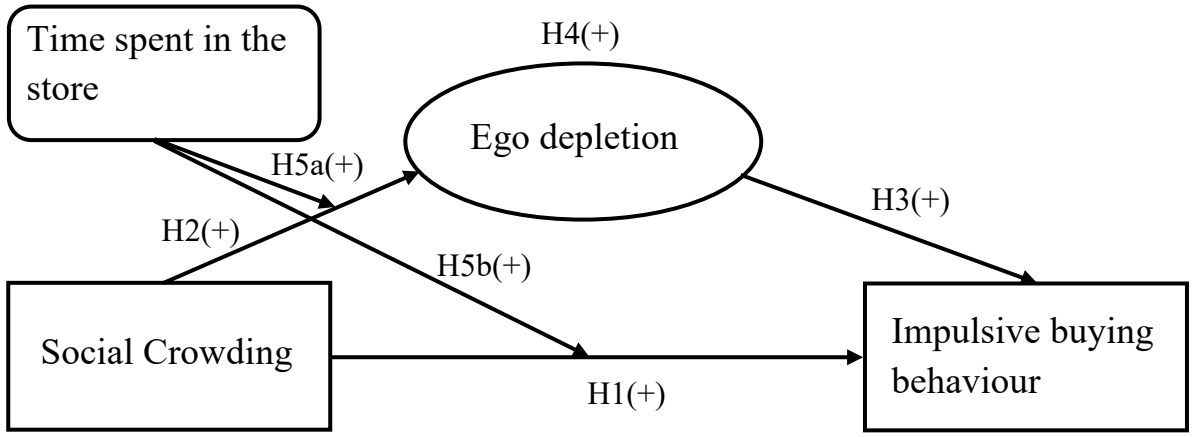

Figure 2: Conceptual model

H1	After experiencing social crowding in a retail situation, consumers will be more likely to make impulsive purchases in a subsequent purchase scenario
H2	Customers who experience social crowding and need to exert self-control will reach a state of ego depletion after leaving this situation.
H3	Customers being in an ego depletion state (versus not being in that state) will evince a higher impulsive buying behaviour.
H4	Ego depletion mediates the effect of social crowding on impulsive buying behaviour.
H5a	Being exposed to social crowding for a longer time (versus a shorter time) will increase a customer's level of ego depletion in a subsequent and different shopping scenario.
H5b	Being exposed to social crowding for a longer time (versus a shorter time) will increase a customer's level of impulsive buying behaviour in a subsequent and different shopping scenario.

Table 1: Summary of hypotheses

3. Research Methodology

3.1. Research method

For this thesis, a quantitative approach will be applied. This type of research consists of a problem statement, hypotheses formulation derived from the literature review and quantitative data analysis (Williams, 2007; Leedy & Ormrod, 2005). The research's hypotheses present the prediction of the most probable outcome based on previous research and are not actually explaining why something is occurring (Sutton & Staw, 1995). Hence, these hypotheses are created by using logical thinking to connect multiple previous findings and thus predict possible outcomes (Sutton & Staw, 1995). The theoretical background and the hypotheses are precisely explained and structured in this research (Queirós et al., 2017), as this will present

the starting point, which helps to further elaborate or question their findings (Creswell, 2003). The quantitative approach makes the quantification of the data possible, as it allows the collection of large sample sizes (Queirós et al., 2017). Further, the quantified data can be analyzed in detail with the help of statistics, using softwares such as SPSS, R or Statista to test the hypotheses and present a solution to the problem, which has been detected based on existing theory (Queirós et al., 2017; Williams, 2007, Creswell, 2003).

As the quantitative approach permits to analyse the relationship between the variables of the research (Williams, 2007), it represents a perfect fit for this work, as we seek to test the effects of social crowding on impulsive buying behaviour and the mediation of ego depletion, with the help of specific scales. In addition, as one part of the quantitative research consists of testing the formulated hypothesis (Williams, 2017), the previously explained conceptual model can be perfectly defined.

More specifically, an experimental design has been chosen for this research, as it allows to set the scene for imaginary shopping scenarios, in which participants are exposed to certain situations. This allows a higher accuracy of the change in consumer behaviour after having experienced social crowding. Hence, an experimental design is the most suitable method for this work, as it allows us to investigate the causality between the variables of this thesis and it will result in creating strong arguments by fully understanding the reason behind this research's phenomena (Sutton & Staw, 1995). The experiment will take place in an online setting, as it suits best the purpose and execution of this research. It provides the advantage to reach a large number of participants and most importantly guarantees a higher amount of control during the experiment (Horton et al., 2011), which will potentially lead to eliminating study biases and confusion.

For the executive part of this experiment, an online survey will be used, containing questions based on the presented scales per variable, further explained in section 3.3.

3.2. Experiment design

This work will focus on an experimental design, executed by an online survey, which the around 200 participants will receive via different channels, such as social media, word-of-mouth ("snowball" system), university etc. The experiment is a 2 (high versus low level of crowding) x 2 (short versus long time period) between-subject design, which means that we manipulate the level of crowdedness and the amount of time participants need to imagine themselves in a store. When receiving the online survey, participants will be randomly assigned to one of the four groups. The first group represents the control group, in which participants

will see a video of a store browsing situation, while the store will be empty/almost empty (see Figure A.1. in Appendix A). This first scenario will take place in a fashion store, as this industry is peculiarly affected by social crowding (Zhang et al., 2014). This group will be divided into two groups, one seeing the video for a long period and the other for a short period. The second group will experience the same procedure, except that the store is fully crowded (see Figure .2. in Appendix A). In addition, both groups (crowded and empty) will be separated again into two groups. One will see the video of the crowded store in a short amount of time, while the other will see the video for a longer period. In total, this will leave us with four groups. The video length will be 2 min for the long period and 30 seconds for the short period. As Muraven et al. (1998) showed that a 3 min video is already enough to reduce a person's subsequent physical stamina by about one-third, meaning that self-regulation resources will get depleted already by a 3 min video (Muraven et al., 1998). However, watching a 3-minute-long video in an online survey will potentially cause participants to become annoyed and not wanting to continue. Hence 2 minutes will be the length of our long period video as we predict that it will already be enough to affect people's resources while also not being too long for a survey to avoid they will simply skip the video or stop watching. All 4 shopping scenarios will be filmed in the same store and will show approximately the same route of walking in order to keep all elements except for crowding and time as constant as possible to avoid distortion of the results. As the goal of the different groups is to manipulate the level of social crowding, participants need to answer questions indicating how they perceived the crowdedness of the store. This manipulation check allows us to determine if the manipulation worked or not.

Next, participants will be exposed to a second shopping scenario, which will be presented in a form of a bakery stand with all different kinds of pastry (see Figure A.3. in Appendix A). At this stage, they need to indicate if they want to buy something and if so then they need to select that product in the presented image. This second scenario with the corresponding shopping decision will present the measurement of the key dependent variable of this study, impulsive buying behaviour.

After participants experienced this second retail shopping scenario, they need to answer questions about a potential ego depletion state, which they might be in after the first shopping scenario. These questions will be asked at the end rather than between the two shopping scenarios to avoid priming.

In the last section of the survey, participants need to answer several control questions about their impulsive buying tendency. This is an important aspect to control in this experiment, as the level of consumers' impulsive buying tendency can impact the results. In addition, more

control questions will be asked in order to control participant's hunger level, as they could only buy something from the bakery stand because they were hungry, knowledge about the store brand to avoid the influence of any kind of relationship to the store and finally, their level of tiredness to avoid that participant have been kind of ego depleted already before starting the experiment. Besides the control questions, an attention check will be included in a random spot between the questions in order to eliminate false responses or participants who are not paying attention to the questions.

3.3. Measurement of concepts

In order to ensure a valid experimental procedure, it is critical to have clear measurements for the variables. In this research, the variables that will be measured are impulsive buying behaviour and ego depletion. The social crowding and the time spent in the store variables will be manipulated in the experiment. For the manipulation of social crowding, this work will rely on the research methodology of O'Guinn et al. (2015). They conducted an experiment and manipulated social density by putting their participants in two different groups and showed one group a low-density picture with only two people in it and the other group a high-density picture with thirty-six people in it. This procedure helped them to fully control the situation of social density and test the effect of high density versus low density on the perception of social class (O'Guinn et al., 2015). In addition, the procedure of showing two pictures (one with many people and one with very few people) to participants was also used by other researchers (Tong & He, 2021; Maeng et al., 2013; Huang et al., 2018). Following the success of these studies, social crowding will be manipulated by a similar procedure in this work. However, as Masood & Farooq (2021) discovered that videos can evoke greater emotions than pictures, this survey will show participants a video of a crowded store versus an empty store instead of pictures. In order to verify if this social crowding manipulation will be successful, a manipulation check in the form of questions asking participants how crowded they perceived the store will be introduced.

This alternative setting will allow a better intervention of the moderator, "the time spent in the store", which will be manipulated, as one group of participants will watch a long video of browsing through the store, while the other group will watch a short video of browsing through the store.

As this research aims to better understand impulsive buying behaviour, this variable will be measured if participants buy a product in the subsequent shopping scenario (1) or not (0).

Additionally, in order to control for participants' impulsive buying tendency in general, questions were derived from Rook and Fisher (1995) (see Table B.1. in Appendix B).

The other variable is ego depletion, which will also be measured on a Likert scale retrieved from Salmon et al. (2014) (see Table B.2. in Appendix B) and Martijn et al. (2002) (see Figure B.1. in Appendix B). As these questions will address a specific situation in this survey, the questions will be slightly different from those retrieved from the scale of Salmon et al. (2014) and Martijn et al. (2002). This allows the questions to better fit in the flow of the survey and be more accurate according to the situation of the survey.

3.4. Sample

The sample description of this work will not be very strict, as the majority of human beings spend time in retail situations buying all different kinds of products. Of course, the only criteria a participant must fulfil is that he/she regularly visits a retail store. As this experimental design consists of an online survey and participants will be assigned to four different groups, the aim is to have a sample size of around 200 participants. As previously mentioned, demographics are not an important exclusion criterion.

3.5. Data analysis

The data analysis will start after a sufficient number of surveys have been collected. Then the data will be imported into SPSS, which is the software that will be used for the data analysis of this research. As both the independent and dependent variables are categorical, the Chi-squared test helps assess if there is a significant association between social crowding and impulsive buying behaviour. Furthermore, the PROCESS analysis by Hayes will be used to further evaluate the mediation and moderation of this research. More specifically, PROCESS model 8 will be used to determine if ego depletion mediates the effect of social crowding on impulsive buying behaviour and to determine if the moderated mediation is significant and what that effect would be. Last, the control variables will be included one be one in the PROCESS analysis in order to report how these covariates change the output.

4. Results

This section will focus on the results of the SPSS output. After the data has been processed and only valid and meaningful responses have been retained, the hypotheses of the conceptual model will get tested.

4.1. Data exclusion

In summary, a total of 292 people participated in the survey. However, before running the different analyses, it is necessary to execute a first filtering of all these surveys in order to eliminate invalid responses and thereby provide the experiment with its necessary quality. Of all these participants, 91 did not finish the experiment, 2 did not consent to the terms and conditions to participate in this survey and 12 failed the attention check. Hence, 105 surveys have been eliminated, leaving us with 187 valid responses.

4.2. Sample descriptives

The sample of this research is very diverse as the age of the participants ranges from 18 years old to 84 years old. This big difference was expected, as the only criteria participants needed to fulfil to do the survey was to go shopping regularly. The mean age is 32 and the most represented age in the survey is 23 (22% of participants indicated that they are 23 years old) (see Table C.1. and C.2. in Appendix C).

Furthermore, the gender of the participants seems equally distributed, as the sample consists of 48,1% female, 49,7% male, 0,5% other genders and 1,6% preferred not to say. In terms of education, 27,3% indicated they have a university degree, 32,6% indicated they have a bachelor's degree and even 38,5% have a master's degree (see Table D.1. and D.2. in Appendix D).

4.3. Reliability of the scales

In order to test if the questions used in the survey were good enough to identify a clear output of the conceptual model, reliability scale analyses were used. The Cronbach's alpha of the ego depletion scale was 0,823 (see Table E.1. in Appendix E), which is a very good reliability of the scale when looking at the Siswaningsih et al., (2017) alpha coefficient range table (see Table F.1. in Appendix F). Furthermore, looking at the total statistics of all questions of the ego depletion scale, eliminating one question from the scale would not significantly increase Cronbach's alpha and thus all items will be kept (see Table E.1. in Appendix E). The control variable impulsive buying tendency has a Cronbach's alpha of 0,864, which again indicates a very good reliability of this scale. In addition, no questions will be deleted from the scale, as this will not increase Cronbach's alpha noteworthy (see Table E.2. in Appendix E). The other control variable tiredness has a Cronbach's alpha of 0,862, which indicates a very good reliability for this scale as well. Again, no questions will be deleted from the scale, as it will not increase the alpha (see Table E.3. in Appendix E). Lastly, the manipulation check

variable for crowdedness has a Cronbach's alpha of 0,952, which shows excellent reliability for this scale. In addition, no question should be excluded from the scale as this would not improve the alpha (see Table E.4. in Appendix E).

4.4. Control variables

In order to control for different aspects that could have negatively influenced the experiment, several control variables have been measured: two control variables to control participants' hunger, one for their tiredness, one if they recognized the store brand and one to check the participants' impulsive buying tendency. In order to check if these variables' means do not vary across this thesis' experimental conditions (social crowding and the time spent in the store) a Manova has been used (see Table G.1. in Appendix G).

The manova output for the two social crowding conditions (0 = the store was empty; 1 = the store was crowded) indicates that there is no statistically significant difference in the mean across the two conditions for impulsive buying tendency, tiredness and the store brand control. This is very good, as we can confirm that these aspects that could influence the dependent variable are randomized across conditions. However, the hunger control variables seem to have a significant difference in the mean across the two crowding conditions. The first hunger control variable (ConH1), specifying how hungry participants are on a 1-7 scale, is only marginally significant because the p-value is lower than 0.1 but higher than 0.05 (p-value = 0.06). The second hunger control variable (ConH2), indicating how much time has passed since they last ate something, has a significant difference in the mean across the two crowding conditions, as the p-value is lower than 0.05 (p-value = 0.014). Looking at the descriptive table below, the mean was higher for the participants, who experienced crowding during the survey (mean = 3,667) than the one for participants who experienced an empty store (mean = 2,998) (see Table 2). Hence this is not a good sign, as this could influence the output, as participants in the crowded condition could have a higher tendency to buy something in the bakery stand due to their hunger level. Later in the PROCESS analysis, we will further control these variables and test if they influence the output in any way.

Manova

Dependent variable	Social Crowding				
	SocCrow	Mean	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Hunger (1)	0	3,492	0,231	3,036	3,948
	1	4,104	0,228	3,656	4,553
Hunger (2)	0	2,998	0,195	2,6130	3,382
	1	3,667	0,192	3,288	4,046
Impulsive buying tendency	0	3,472	0,111	3,254	3,691
	1	3,479	0,109	3,263	3,694
Tiredness	0	3,508	0,143	3,227	3,790
	1	3,385	0,140	3,108	3,662
Store brand	0	0,382	0,049	0,285	0,478
	1	0,273	0,048	0,178	0,368

Table 2: Means of the social crowding conditions

Furthermore, the manova output for the time spent in the store conditions (0 = participants saw a 30 seconds video of store browsing; 1 = participants saw a 2 minutes video of store browsing) indicates that there are small differences in the mean (see Table 3). However, these differences in the mean of all control variables are not statistically significant (see Table G.1. in Appendix G). Hence, the means of none of these control variables vary across the time conditions, proving a randomization of these specific variables, which means that the output in the time conditions will not get affected by any of these control variables.

Manova

Dependent variable	Time	Time spent in the store			
		Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Hunger (1)	0	3,941	0,225	3,497	4,385
	1	3,656	0,233	3,195	4,116
Hunger (2)	0	3,453	0,190	3,078	3,828
	1	3,211	0,197	2,822	3,600
Impulsive buying tendency	0	3,501	0,108	3,288	3,714
	1	3,449	0,112	3,228	3,670
Tiredness	0	3,434	0,139	3,160	3,708
	1	3,459	0,144	3,175	3,744
Store brand	0	0,300	0,048	0,206	0,394
	1	0,356	0,049	0,258	0,453

Table 3: Means of the time spent in the store conditions

4.5. Manipulation check

In this research, a manipulation has been used in order to investigate if people in different groups experiencing different conditions will also behave differently. More specifically, two shopping scenarios having different levels of social crowding have been used to identify potential changes in participants' impulsive buying behaviour. In order to check if this manipulation worked, a manipulation check variable has been computed. The following ANOVA results provide evidence that there is a significant difference in participants' perception of social crowding across the two crowding groups, as the p-value is lower than 0,05 (p-value = <0,001) (see Table H.1. in Appendix H)

More specifically, for the group that should not have experienced social crowding (SocCrow = 0), the mean for the perception of social crowding was 2,06 with a standard deviation of 0,95, while the mean for the group, which should have experienced social crowding (SocCrow = 1) is 5,91 with a standard deviation of 1,06 (see Table 4). This means that participants who watched a video with a lot of people in the store perceived a high level of social crowding, as the mean is 5,91 on a Likert scale ranging from 1-7. On the other hand, participants who watched a video of an empty store did not perceive social crowding, as the mean is 2,06 on the same Likert scale. Hence, the manipulation worked perfectly and the difference in the perception of crowdedness among participants in the two different groups is big enough.

Manipulation check

	Participants' perception of crowdedness in the store							
					95% Confidence Interval for Mean			
Conditions	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	Min	Max
0	92	2,0580	0,95004	0,09905	1,8612	2,2547	1	6
1	95	5,9123	1,05880	0,10863	5,6966	6,1280	1	7
Total	187	4,0160	2,17740	0,15923	3,7019	4,3302	1	7

Table 4: Mean of social crowding manipulation check

4.6. Hypotheses testing

This section will focus on the conceptual model of the thesis and investigates the hypotheses. Based on the theory, we assumed that social crowding in an offline shopping scenario will increase a person's impulsive buying behaviour. As both variables are categorical, a chi-squared analysis will be executed.

The Chi-squared analysis is significant as $p<0.05$ ($p= <.001$) with a chi-squared of 12.920, meaning that the two variables are associated with each other and not independent variables (see Table I.1. in Appendix I). Thus, this output verifies that there is an effect of social crowding on impulsive buying behaviour. Next, the Phi value, which determines how strong the relationship between the two variables is, is significant and has a value of 0,263 (see Table I.2. in Appendix I). As this Phi value is above 0,25, it indicates that the relationship between the two variables is very strong (Akoglu, 2018) (see Table J.1. in Appendix J).

Furthermore, looking at the crosstabulations below, we see that experiencing crowding increases impulsive buying behaviour in a second scenario. More specifically, from all the participants who experienced an empty store in the survey (SocCrow = 0), 60 participants (65,22%) decided not to buy something and 32 (34,78%) decided to buy. On the other hand, of the participants who experienced crowding during the survey (SocCrow = 1), 58 (61,05%) wanted to buy something and 37 (38,95%) decided to not buy anything (see Table 5).

		Social Crowding		
		No	Yes	Total
Impulsive buying behaviour	No	60	37	97
	Yes	32	58	90
Total		92	95	187

Table 5: Crosstabulations

The next goal of the experiment is to investigate if this direct effect of social crowding on impulsive buying behaviour is mediated by ego depletion and if the time spent in the store moderates the mediation and the direct effect. Thus, the PROCESS model 8 moderated mediation analysis by Hayes (2012) has been executed in SPSS. The variables social crowding, time and the control variables have been effect coded, which allows to get the average effect of these variables.

In order to investigate how well the model fits the data, we need to look at the R-squared in the model summary output table (see Table 6). This value explains the total variations for the dependent variable that could be explained by the model. In our case, the R-squared is 0,2144 (21,44%) which is not very high, meaning that the model explains only 21,44% of the total variations for the dependent variable. This means that there are other factors influencing this thesis' dependent variable (impulsive buying behaviour), which are not included in the model. As this research tries to explain human behaviour in a shopping scenario, which is not very simple to predict because many different aspects influence how a person thinks and acts, a low R-squared was expected. However, the model still explains human impulsive buying behaviour.

Model Summary

R	R-sq	MSE	F	df1	df2	p
0,4630	0,2144	0,9606	166.435	3,000	183,000	0,000

Table 6: Model summary output PROCESS model 8

Based on the PROCESS output (see Table 7), we can see that social crowding has a significant effect on ego depletion with a p-value lower than 0,05 (p-value = 0,00). The coefficient of this effect is positive, meaning that social crowding causes ego depletion. In addition, the coefficient of this effect is 0,4880. As social crowding is effect coded, we need to multiply this coefficient by 2 in order to interpret it correctly. Hence, this implies that if there is social crowding, the mean of ego depletion is 0,9760 higher than when there is no social crowding. As this explains that experiencing social crowding in a retail scenario causes people to become more ego depleted, we can accept hypothesis 2 (H2).

Regression Results

	Ego depletion					
Predictors	Coefficient	se(HC4)	t	p	LLCI	ULCI
Constant	3,6535	0,0715	51,1015	0,0000	3,5124	3,7946
Social Crowding	0,4880	0,0715	6,8262	0,0000	0,3470	0,6291
Time	0,1312	0,0715	1,8355	0,0681	-0,0098	0,2723
Interaction effect	-0,0422	0,0715	-0,5903	0,5557	-0,1833	0,0989

Table 7: Regression results PROCESS model 8

Furthermore, ego depletion has a significant effect on impulsive buying behaviour as the p-value is lower than 0,05 (p-value = 0,0189) (see Table 8). The coefficient of this effect is 0,3742, meaning that an increase of 1 in the mean of ego depletion increases the likelihood of impulsive buying behaviour by approximately 37%. Hence the more ego depleted consumers in a retail situation are, the more impulsive purchases they will make. Thus, we can accept hypothesis 3 (H3).

Regression Results

	Impulsive buying behaviour					
Predictors	Coefficient	se	Z	p	LLCI	ULCI
Constant	-1,4571	0,6024	-2,4188	0,0156	-2,6378	-0,2764
Social Crowding	0,3703	0,1676	2,2087	0,0272	0,0417	0,6989
Ego depletion	0,3742	0,1594	2,3472	0,0189	0,0617	0,6866
Time	-0,0535	0,1557	-0,3438	0,7310	-0,3587	0,2517
Interaction effect	-0,0243	0,1543	-0,1575	0,8749	-0,3267	0,2781

Table 8: Regression results PROCESS model 8

Next, it is important to investigate if ego depletion mediates the effect of social crowding on impulsive buying behaviour. As the effect of social crowding on ego depletion and the effect of ego depletion on impulsive buying are both positive and significant, we can already assume that there is a mediation based on the theory of Baron and Kenny (1986). Furthermore, in both time conditions, the mediation is statistically significant, as both confidence intervals [0,0404; 0,4105] for the short time condition and [0,0289; 0,3619] for the long time condition do not include 0 (see Table 9). Hence, this output confirmed that ego depletion mediates the effect of social crowding on impulsive buying behaviour and thus we can accept hypothesis 4 (H4).

Conditional indirect effects of Social crowding on Impulsive buying behaviour

Time	Effect	BootSE	BootLLCI	BootULCI
-1	0,1984	0,0960	0,0404	0,4105
1	0,1668	0,0867	0,0289	0,3619

Table 9: Conditional indirect effect PROCESS model 8

Furthermore, in the regression results Table 8 we can see that the direct effect of social crowding on impulsive buying behaviour is statistically significant as its p-value is 0,0272, which is lower than 0,05. This output matches the results from the previously executed Chi-squared analyis (see Appendix I). This means that including the mediator does not cause the direct effect to become insignificant. Hence, we can conclude that the model contains a partial mediation based on the theory of Baron and Kenny (1986). This implies that the effect of social crowding on impulsive buying behaviour is only partially explained by ego depletion. Hence, higher impulsive buying behaviour in the second shopping situation was triggered on the one hand by ego depletion due to the experience of social crowding in the previous shopping scenario and on the other hand by other processes and other potential mediators. This sets the stage for future research to investigate additional mediators and pathways.

The last goal of this thesis is to investigate if the direct effect and the mediation gets moderated by the time spent in the store. The moderated mediation analysis shows that the interaction effect of social crowding and time on ego depletion is not significant, as its p-value is greater than 5% (p-value = 0,5557) (see Table 7). This already explains that the effect of social crowding on ego depletion is not moderated by the time spent in the store. In addition, the index of moderation, explaining if time spent in the store moderates the mediation is not statistically significant as the confidence interval is [-0,1785; 0,0540] and thus includes 0 (see Table 10), which confirms that time does not moderate the direct effect. Hence, there is no moderated mediation and we can reject the hypothesis 5a (H5a).

Index of moderated mediation

	Index	BootSE	BootLLCI	BootULCI
Time	-0,0451	0,0583	-0,1785	0,0540

Table 10: Index of moderated mediation PROCESS model 8

Furthermore, the interaction effect of social crowding and time on impulsive buying behaviour is not significant, as its p-value is 0,8749, which is higher than the alpha of 0,05 (see Table 8). In addition, the conditional direct effect is also not statistically significant in both time conditions, as both p-values are higher than 0,05 (p-value of 0,0814 for the short time condition and p-value of 0,1313 for the long time condition) (see Table 11). This explains that the time spent in the store does also not moderate the direct effect of social crowding on impulsive buying behaviour. Thus, we can also reject hypothesis 5b (H5b).

Conditional direct effects of Social crowding on Impulsive buying behaviour

Time	Effect	SE	Z	p	LLCI	ULCI
-1	0,3946	0,2264	1,7428	0,0814	-0,0492	0,8383
1	0,3460	0,2293	1,5089	0,1313	-0,1034	0,7954

Table 11: Conditional direct effect PROCESS model 8

4.7. Potential change in the output due to control variables

As the goal of this thesis is to predict human behaviour, many other variables besides the ones in the conceptual model can influence this experiment. Thus, the survey included several control questions. Now it is important to investigate if these control variables change the effects between variables in the conceptual model. Hence, the PROCESS analyses were run again, including the control variables one by one.

As previously discussed, the hunger variables have the highest likelihood to influence the output, as there is a significant (and marginally significant) difference in their means across the social crowding experimental conditions. Thus, it is important to closely analyse the PROCESS model 8 output with the two hunger control variables included as covariates. The output shows, that there is a positive and statistically significant effect of 0,9834 (β = 0,4917) of social crowding on ego depletion with a p-value of 0,000 which is lower than 5% (see Table K.1. in Appendix K). In addition, the effect of ego depletion on impulsive buying behaviour is 0,4052 and statistically significant as well with a p-value of 0,0145 which is lower than 5% (see Table K.2. in Appendix K). From these results, we can already assume that there is still a mediation of the effect of social crowding on impulsive buying behaviour even if we control for participants' hunger levels. In order to confirm the mediation, we need to investigate the conditional indirect effect table. From those results, we can confirm that the mediation is still statistically significant, as both time conditions' confidence intervals do not include 0 (see Table K.4. in Appendix K).

Furthermore, the direct effect of social crowding on impulsive buying behaviour is statistically significant with a p-value of 0,0361 which is lower than 0,05 (see Table K.2. in Appendix K). Thus, we still have a partial mediation even with the hunger control variables included in the model. This implies that the hunger control variables do not change the results in terms of the mediation.

Next, it is important to investigate if including the two hunger control variables in the model changes both moderation analyses. From the output, we can see that the interaction effect of social crowding and time on ego depletion is not statistically significant, as the p-value is 0,5186, which is higher than 0,05 (see Table K.1. in Appendix K). This and the fact that the index of moderated mediation is also not statistically significant, as its confidence interval includes 0, prove that time does not moderate the mediation of this thesis (see Table K.5. in Appendix K).

In addition, the interaction effect of time and social crowding on impulsive buying behaviour is not significant as the p-value is lower than 0,05 (p-value = 0,7546) (see K.2. in Appendix K) and the conditional direct effects in both time conditions are also not statistically significant, as both confidence intervals include 0 (see Table K.3. in Appendix K). Thus, we can conclude that time does also not moderate the direct effect, which is equivalent to the findings without control variables. Once again, this implies that the two hunger control variables do not change the output.

However, the regression results show that both hunger control variables have statistically significant effects on impulsive buying behaviour, as their p-values are lower than 0,05 (p-value of 0,0040 for the first hunger control variable and p-value of 0,0395 for the second hunger control variable) (see Table K.2. in Appendix K). This implies that the cause for higher impulsive buying behaviour is also partially triggered by how hungry participants were during the survey, which was to be expected.

Furthermore, the next control variable, participants' impulsive buying tendency, has a statistically significant effect on ego depletion (p-value = 0,0114), which implies that a higher impulsive buying tendency increases participants' ego depletion state after that first shopping experience (see Table L.1. in Appendix L). However, their impulsive buying tendency did not affect their impulsive buying behaviour in the subsequent shopping scenario, as its p-value is 0,1497, which was not to be expected (see Table L.2. in Appendix L). In addition, when controlling for impulsive buying tendency in the PROCESS analysis, the conditional direct

effect suddenly becomes statistically significant for the short time period group, with a p-value of 0,0497 which is lower than 0,05 (see L.3. in Appendix L).

Next, the control variables, participants' tiredness and their knowledge of the store brand did not change the output in terms of mediation and moderation (see Appendices M and N). However, participants' tiredness and their knowledge of the store brand have statistically significant effects on ego depletion, as both p-values are lower than 0,05 (p-value of 0,0010 for tiredness and p-value of 0,0022 for knowledge of store brand) (see Table M.1. and Table N.1. in Appendices M and N). This implies that participants' level of tiredness and their knowledge of the store brand will increase their ego depletion state, which again was to be expected.

5. Discussion

5.1. General discussion

In our consumer society, a trip to a retail store presents a common everyday activity. Hence, many researchers were eager to investigate consumer behaviour in different shopping situations. This study aimed to further elaborate on which role the situational factor of social crowding plays in consumers' impulsive buying behaviour. Based on existing theory, this work proposed that social crowding in a first shopping scenario causes impulsive buying behaviour in a subsequent shopping scenario and that this effect gets mediated by ego depletion. In addition, we posited that the time consumers spent in the first shopping scenario will further moderate the direct effect and the mediation of this thesis. The output of the experiment conducted for this thesis helped to understand the used concepts in more detail and thus elaborate on their theory. Hence, this section will focus on the interpretation of the results and the comparison to the findings of existing literature.

First, the experiment showed that social crowding increases consumers' impulsive buying behaviour in a subsequent shopping scenario. This finding matches the outcome of previous studies, as those showed that experiencing social crowding in a retail store emphasises negative feelings, such as discomfort, stress and frustration (Evans, 1979; Sherrod, 1974), and that impulsive buying behaviour can be used to comfort oneself and cope with one's negative feelings (Verplanken & Herabadi, 2001). Therefore, as social crowding in this experiment could emphasise negative emotions among participants, they may have used the impulsive purchase in the second shopping scenario to deal with their experience during the first social crowding situation.

In addition, the reason why participants increased their impulsive buying behaviour after having experienced social crowding in a previous shopping scenario is ego depletion, which is a psychological state of low self-control capacity (Baumeister, 2002). Ego depletion can be triggered by many previous experiences, in which the person needed to exert self-control to cope with that situation. One of those triggers is social crowding, as this situation creates a lot of stress and bad stimuli, for which consumers need to exert self-control to cope with these aspects (Muraven & Baumeister, 2000). Having low self-control capacities means that the person finds himself/herself ego depleted, which leads to changes in their behaviour, such as acting more on emotions (Muraven et al., 1998), using a less effortful decision-making (Pocheptsova et al., 2007) and being more vulnerable to temptations and impulsive spending (Baumeister, 2002). These previous findings clearly create the assumption that ego depleted consumers are more engaged in impulsive buying, which this experiment confirmed. Hence, ego depletion perfectly explains why social crowding in one shopping scenario increases a consumer's impulsive buying behaviour in a subsequent shopping scenario. All steps of this process including the three variables are illustrated in the figure below (see Figure 3).

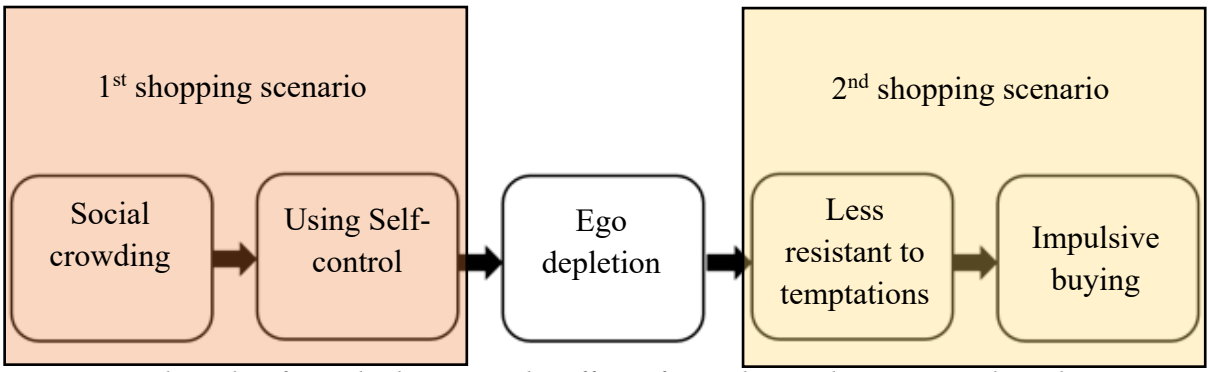

Figure 3: The role of ego depletion on the effect of social crowding on impulsive buying

As the results prove that ego depletion significantly mediates the effect of social crowding on ego depletion, it is important to define if this mediation is full or partial. As the direct effect of social crowding on ego depletion is statistically significant before and after the mediator ego depletion has been included, we can confirm that the mediation is only partial. This implies that besides ego depletion, there exist other mediators that explain this direct effect. As impulsive buying behaviour gets triggered by many different aspects, such as for example product characteristics, customers' pre-purchase mood (Ozer & Gultekin, 2015), money availability (Badgaiyan & Verma, 2015) and retail characteristics (Kacen et al., 2012) and social crowding gives rise to negative feelings, such as discomfort, stress and frustration

(Evans, 1979; Sherrod, 1974), many different aspects could present valid mediators to explain the relationship between these two phenomena.

Next, the time participants spent watching a video of a person browsing through a store did not influence the effect of social crowding on impulsive buying behaviour nor did it alter the mediation of this work (ego depletion). This finding does not align fully with the existing theory, as Baumeister (2002) suggested that every situation in which a person needs to exert self-control depletes the self-control resources even more. This is particularly true for consumers, as they are often facing multiple decisions (Baumeister, 2002). Hence, we assumed that spending more time in a crowded store will lead to an increased ego depletion state and thus an increased impulsive buying behaviour. As the results of the experiment show, this is not the case and time does not play a role in this experiment. One possible explanation for this non-effect is the experimental setting. The time participants spent watching the video does not present a natural shopping scenario as they are forced to imagine themselves in this situation for a very specific time instead of simply staying for as long as they want. Otherwise, the time consumers spent in the store could simply not increase their ego depletion state or their impulsive buying behaviour. This uncertainty sets the stage for future research.

Last, the control variables from this work have been included in the analysis in order to control for factors that could potentially influence the results. When we included impulsive buying tendency in the analysis, the conditional direct effect of social crowding on impulsive buying behaviour becomes statistically significant only in the short time period. As the inclusion of impulsive buying tendency as a control variable makes the model more specific but decreases the research power as too many variables might be in included in the model compared to our relatively small sample size, this change in output cannot be defined clearly, which leaves room for future research. In addition, participants' impulsive buying tendency has a positive and significant effect on their ego depletion state after the first shopping situation but not on their impulsive buying behaviour in the second shopping scenario. This was not to be expected as previous research discovered that consumers' impulsive buying tendency increases their impulsive buying behaviour in retail situations (Ozer & Gultekin, 2015).

The next two hunger control variables have a positive and significant effect on impulsive buying behaviour in this experiment. This implies that their level of hunger in fact causes a higher impulsive buying behaviour in the second shopping scenario. As this scenario consists of buying decisions regarding sweat dishes, this effect was to be expected.

Last, the tiredness and store brand control variables have a positive and significant effect on ego depletion, meaning that participants' level of tiredness and their knowledge of the store

brand from the first scenario increased their level of ego depletion. This was also to be expected, as ego depletion gets associated with mental fatigue and participants could associate negative arousals with the store brand, causing them to exert additional self-control and leading to a higher level of ego depletion.

5.2. Theoretical implications

There are multiple theoretical contributions this work has to offer. Much research has been done on consumer behaviour in many different settings. However, little research has been done on consumer behaviour change when experiencing multiple offline shopping scenarios. Hence, this work fills in some theory gaps in this specific setting. This experiment proves that the effect of certain aspects on consumer behaviour can change drastically in a subsequent shopping scenario. For example, many studies identified the negative outcome of social crowding on consumers' willingness to purchase due to low in-store browsing, early departure from the store (Xia, 2010; Bandyopadhyay, 2020) or experience of stress in this situation (Muraven & Baumeister, 2000). Thus, one could assume that these negative effects remain in subsequent shopping scenarios. However, this work's results show that after experiencing social crowding in one shopping scenario, people tend to purchase more impulsively in the subsequent scenario. Thus, this finding provides not only more elaborate knowledge on social crowding, impulsive buying behaviour and the effect of social crowding on a consumer's impulsive buying behaviour but also proves that the effect of one variable on another can change quickly once the setting changes, as impulsive buying behaviour is reduced when experiencing social crowding in the store (Xia, 2010; Bandyopadhyay, 2020) but increased in a subsequent shopping scenario. Researchers can further use this knowledge and investigate if the existing findings on consumer behaviour may be different in multiple shopping scenarios.

Furthermore, this work contributes to the theory and findings of social crowding. More specifically, this thesis increased the knowledge of how social crowding affects the consumers' minds and psychological states. Additionally, it was detected how this psychological state influences people's decision-making process and their buying behaviour.

Besides these contributions to the social crowding theory, the knowledge of ego depletion has also been expanded. Most researchers investigated different factors that led to ego depletion or how ego depletion changes people's behaviour. However, little research has investigated the antecedents and consequences in one experiment in the form of a mediator nor in subsequent shopping scenarios. Hence besides contributing to the theory that social crowding evokes ego depletion, as this setting demands self-control resources and that ego depleted people tend to

make more impulsive purchases, this thesis proves that the psychological state of ego depletion can be a perfect explanation of why consumers or people, in general, behave a certain way. This could incite researchers to further investigate what other human behavioural changes could be explained by ego depletion.

The last phenomenon, whose theory has been expanded is impulsive buying behaviour. Not only did the results prove that a reason why consumers are buying impulsively is the experience of social crowding in a previous shopping scenario but also ego depletion. Hence, two other antecedents besides the existing ones of impulsive buying behaviour have been confirmed by this experiment. Furthermore, this outcome shows that the cause for impulsive buying behaviour does not always have to be just one predictor but can also be a combination of multiple ones. For example, social crowding causes consumers to become ego depleted after leaving the shopping scenario, which in turn has ensured that those consumers are more willing to purchase products impulsively. Last, impulsive buying behaviour does not automatically need to be affected by aspects of the same situation, but also by triggers from previous experiences.

Overall, this thesis deepened the understanding of consumer behaviour in offline shopping scenarios and the relationship between social crowding, ego depletion and impulsive buying behaviour.

5.3. Managerial implications

The outcome of this thesis presents multiple managerial implications, as it describes consumer behaviour in certain situations. Especially relevant are these findings for managers whose stores are placed close to their competitors, which is very common nowadays. First, from the output of this experiment, store leaders can learn how to strategically organize their store design and layout to avoid their clients having a negative shopping experience and leaving their store ego depleted, ready to impulsively purchase products from competitors next door. As the perception of crowdedness among consumers can arise from limited space and too many people (Machleit et al., 1994), it might be helpful to optimize aisle spacing, assure enough customer space, manage customer queuing etc to maximise customers' experience and avoid that they become ego depleted. On the other hand, store managers would want an engaging store that attracts consumers who have been ego depleted by the competitive stores next door and thus are more likely to make impulsive purchases.

In addition, store managers can use the findings of this thesis to implement marketing and promotion strategies. Dellaert et al. (1998) showed that during a shopping trip, consumers

consider multiple stores and multiple product categories. Hence, lots of people visiting a specific store might have visited other stores already. This allows the store managers to use consumers' impulsive buying behaviour, due to their ego depletion state, in combination with marketing and promotion strategies to even intensify their willingness to purchase. These strategies could for example include a pleasant store atmosphere incorporating a good scent, music (Mattila & Wirtz, 2001), light, layout or friendly employees (Mohan et al., 2013). In addition, different product attributes could also be part of the strategy, such as hedonic attributes, ready-to-use products, low prices, products being on sale and displayed products (Kacen et al., 2012). As these attributes were defined as triggers of impulsive buying behaviour by existing literature, store managers can perfectly incorporate them to increase their sales.

Besides offline stores benefitting from the findings that social crowding leads to ego depletion which again leads to a higher impulsive buying behaviour, websites and e-commerce businesses can also use this to their advantage. Once these companies know that many people will visit stores to make certain purchases, which is the case during the holiday season (Machleit et al., 1994), especially for Christmas or Black Friday, certain marketing strategies can be used to attract consumers to their online shop and make impulsive purchases. As 60% of people struggle to find gifts, especially during the holiday season (People Staff, 2020) and women are spending 20 hours on average shopping for Christmas presents (Ubbenga, 2022), lots of consumers might be tempted to shop online instead, after this negative and crowded shopping experience. Hence, marketing strategies, such as e-mail or social media marketing with personal messages addressing exactly this problem and presenting their online shop as the solution or price promotions in combination with these negative and potential ego depletion scenarios could lead to an increase in impulsive purchases.

Overall, managers of offline and online businesses can benefit from this thesis' findings to better organise their shops in order to avoid negative experiences and increase impulsive purchases among all consumers.

5.4. Social implications

Besides the theoretical and managerial implications, this thesis also offers multiple social implications. First, readers of this thesis will understand social crowding, ego depletion and impulsive buying behaviour more in-depth. This knowledge will help them increase their awareness while shopping. A deeper knowledge of impulsive buying behaviour, especially its antecedents and its consequences can help consumers become more conscious about their decisions. In addition, this knowledge makes consumers more aware of what type of purchase

they are facing in shopping situations. Thus, the realisation that a certain desire to buy a product might be triggered by their impulsive buying behaviour helps store visitors to evaluate the product in more detail, investigate if it contradicts their long-term goals or might cause regret after the purchase. Nowadays, lots of people have certain long-term goals that could get affected by their consumer behaviour, such as saving money or eating healthy. In worst cases, certain consumer behaviour can even cause the opposite of these long-term goals, such as bankruptcy or bulimia (Rook & Hoch, 1985). Hence good control over one's impulsive buying behaviour is very important.

In addition, from this thesis, consumers can understand in what psychological state they are likely to fall for impulsive purchases. As this thesis presents a detailed explanation of what ego depletion is and how this state can affect a person's decision-making in offline shopping scenarios, people can use that knowledge to evaluate at which stage in their shopping trip they are most vulnerable to an increased impulsive buying behaviour. More specifically, if consumers realize that their self-control resources have been reduced and enter the ego depletion state, they can better control their behaviour when facing a potential impulsive buying situation or even avoid those situations, such as avoiding entering one's favourite bakery stand.

Furthermore, as this thesis extensively explains social crowding and how this situation affects store visitors' psychological state and their consumer behaviour, readers can use this knowledge to cope with such social crowding situations or avoid it if not desired. More specifically, people who are more likely to make impulsive purchases in general might want to avoid big social crowding shopping situations, when aiming to achieve long-term goals. For example, those people might want to buy their Christmas gifts very early or online in order to avoid the big crowds during the holiday Christmas shopping. Another way to deal with social crowding and the tendency to impulsively purchase is to become aware of the situation and realise if the crowd might affect one's psychological state. This realisation can cause people to become more aware of situations which would increase their ego depletion state and which in turn would lead to a higher impulsive buying behaviour. Hence, people will have a better ability to cope with or avoid such situations.

Last, many different organizations that are protecting consumer rights and consumer well-being can use the gained knowledge and design programs or interventions to inform consumers about these effects on their shopping behaviour. A higher awareness of such shopping situations can improve the quality of people's purchases and make them less regret their decisions. This does not automatically signify that impulsive buying behaviour is always a bad

thing, however, it makes consumers more aware, which allows them to better control this type of behaviour.

All in all, readers of this thesis can use these findings to improve their shopping experience and behaviour and thus allowing them to achieve long-term goals.

5.5. Limitations

While this study explains the relationships between social crowding, ego depletion and impulsive buying behaviour, it also comes with limitations.

First, the study consists of an online survey in which participants needed to imagine themselves in a shopping scenario they could see through a video. Hence, the setting of this experiment does not represent an everyday shopping scenario, due to multiple reasons: participants were not physically present in the store, they did not have the chance to choose the store they like nor the path of browsing through the store nor the amount of time they spent in the store. The same aspects are valid for the second shopping scenario (bakery stand), as this was presented to the participants in the form of a picture. Due to the imagination of the shopping scenarios, participants might have perceived social crowding differently compared to them actually being physically present in the store. Hence, the level of ego depletion might be different. In addition, in the second shopping scenario, participants' impulsive buying behaviour might also be different than it would be in a real shopping scenario, as they did not need to pay actual money for a product and did not receive the product if they decided to buy.

Furthermore, despite the theory having given multiple reasons why the time spent in the store might have an effect in the experimental setting, the survey proved otherwise. This contrasting finding can be explained by the unnatural time people spent in the store. As in this thesis, we want to manipulate for different time periods participants spent in the store, they did not have the free choice to exit the store earlier or later. This might have made the shopping experience not realistic as some participants might would have liked to stay a longer or shorter time in the store.

In addition, the goal of this thesis is to predict customers' impulsive buying behaviour after having experienced social crowding. However, we defined this effect with only one shopping trip including two shopping scenarios. Hence, during that specific day, participants filled in the survey, some other aspects might have influenced their answers, such as previous self-control situations or previous shopping trips.

Last, this experiment controlled for different aspects that could have had an influence on the output in the form of covariates in the analysis. Every control variable did not change the output

in any way, except for the control variable "impulsive buying tendency". This variable caused the direct effect of the short time condition to become significant in the conditional direct effect output table, while the interaction of time and social crowding did not have a significant effect on impulsive buying behaviour. Due to the limited research power because of a relatively small sample size, this work cannot fully explain why impulsive buying tendency caused the direct effect of one time condition to become significant.

All in all, this study helped to explain social crowding, ego depletion, impulsive buying behaviour and the relationships of these phenomena but some limitations left some open questions, which future research could potentially answer.

5.6. Future Research

As the experiment has been done with the help of an online survey and simulated shopping scenarios, future research could repeat the testing of this thesis' conceptual model in a real offline shopping scenario. This would present a more natural setting and participants' reactions to the stimuli would be closer to their actual behaviour. In addition, the time should be manipulated differently or not manipulated at all in order to let participants freely decide when to exit the store.

Next, a longitudinal study would predict impulsive buying behaviour more accurately, as the tracking of participants' behaviour over time would be more accurate than a single shopping trip. This would help to control for participants' previous activities.

Last, future research could include other mediators and variables in the model. As ego depletion only partially mediates the effect of social crowding on impulsive buying behaviour, other processes and mediators could further explain the relationship between these two variables. In addition, many other factors could be included in this conceptual model because only 21% of impulsive buying behaviour has been explained by the conceptual model of this thesis. This means that future research including additional variables could help to explain impulsive buying behaviour in more depth.

Last, future research could repeat the analysis in a different setting, which would allow them to better control for external aspects that could influence the output in any way, such as the control variables of this work or additional variables. Especially participants' impulsive buying tendency needs to get further investigated, as this variable presented the biggest influence in this thesis.

5.7. Conclusion

Despite many studies having identified what effect social crowding has on consumers' decision-making and what factors are causing people to make impulsive purchases, little research has been done on how these aspects affect each other in subsequent shopping scenarios. As consumers consider multiple product categories and enter multiple stores on a shopping trip (Dellaert et al., 1998), the analysis of consecutive shopping scenarios is important to fully understand customer behaviour. Hence, this research aimed to explain how social crowding in a first shopping scenario impacts impulsive buying behaviour in a subsequent shopping scenario and if this relationship is mediated by ego depletion. Based on the quantitative analysis conducted in this thesis, it can be concluded that social crowding in a first shopping scenario increases consumers' impulsive buying behaviour in a subsequent shopping scenario. Furthermore, the psychological state of ego depletion mediates and explains why social crowding increases impulsive buying behaviour. However, the time participants spent in the store did not influence either of these two effects.

Thus, these findings contribute to the understanding of consumer behaviour in subsequent shopping scenarios from a theoretical, managerial and social perspective.

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Appendices

Appendix A

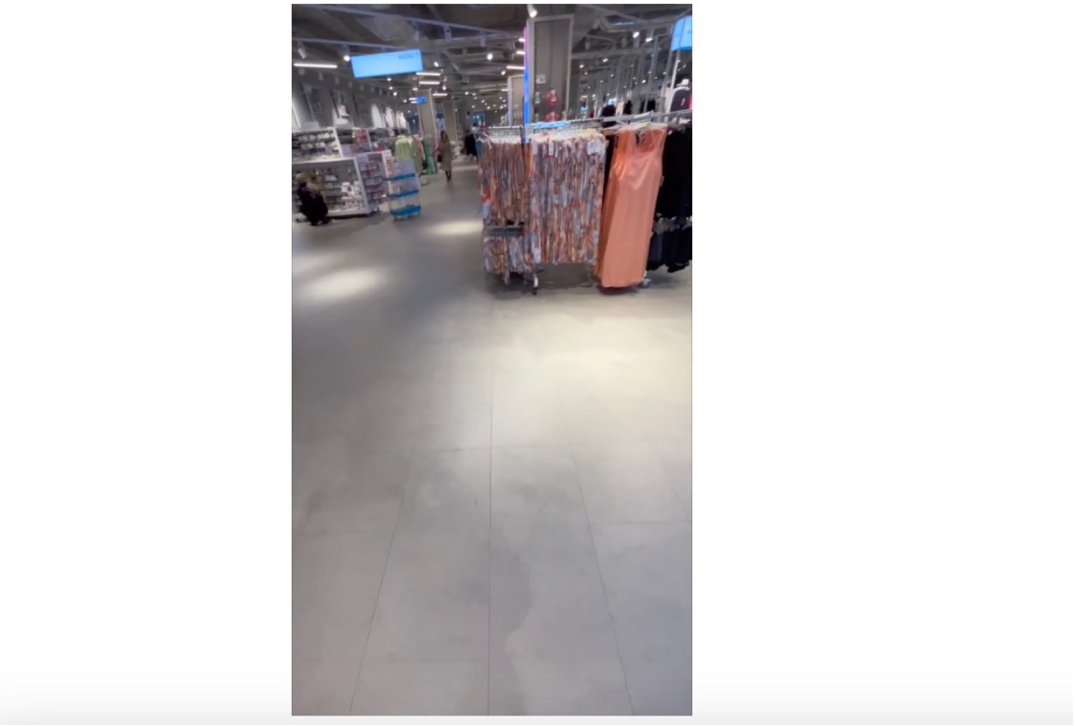

Figure A.1.: Non-crowded first shopping scenario.

Figure A.2.: Crowded first shopping scenario.

Now you decide that you have seen enough of the new store and leave. You want to keep browsing through the shopping mall but not for too long, as you have plans with friends tonight. Suddenly, a bakery stand that you can see in the picture below catches your interest.

Do you want buy something from this bakery stand?

- ◯ Yes. Please click on the item(s) you would like to buy
- ◯ No

Figure A.3.: Second shopping scenario (bakery stand).

Appendix B

Item	Factor loading	Mean	SD
1. I often buy things spontaneously.	.81	3.08	1.18
2. "Just do it" describes the way I buy things.	.75	2.65	1.17
3. I often buy things without thinking.	.73	2.33	1.19
4. "I see it, I buy it" describes me.	.71	2.36	1.15
5. "Buy now, think about it later" describes me.	.65	2.25	1.20
6. Sometimes I feel like buying things on the spur-of-the-moment.	.64	3.40	1.04
7. I buy things according to how I feel at the moment.	.63	3.17	1.19
8. I carefully plan most of my purchases.[a]	.62	2.81	1.16
9. Sometimes I am a bit reckless about what I buy.	.60	2.99	1.08

NOTE.—n = 212. Possible range for scale: 9–45; observed scale range: 9–43; $\bar{X}$ = 25.1; SD = 7.4; α = .88. Response format: 1 = strongly disagree; 5 = strongly agree.
[a]Reverse-coded item.

Table B.1.: Impulsive buying tendency control scale (Rook & Fisher, 1995)

Question	Factor loading
1. When I'm tired, I can't say no	0.228
2. After I have worked very hard at something, I am not good at reloading to start a new task	0.526
3. I get mentally fatigued easily	0.714
4. When I am (mentally) fatigued, I am easily tempted to do things that are actually no good for me	0.645
5. After I have made a couple of difficult decisions, I can be truly mentally "depleted"	0.497
6. After I exerted a lot of mental effort, I need to take a rest first before I can do another complicated task	0.655
7. It is hard for me to persist with a difficult task	0.715
8. When I'm tired, I have difficulties doing something that needs to be done, instead of doing something fun (e.g., studying instead of watching TV)	0.297
9. I cannot make a good decision when I'm stressed	0.385
10. When I'm tired, I have difficulties to suppress my emotions whenever that's necessary (for example: not falling out with someone you're angry with)	0.477
11. I have difficulties focusing my attention after I exerted a lot of mental effort	0.708
12. When I'm tired I have difficulties concentrating	0.574
13. At the end of a working day I often have difficulties staying focused	0.628
14. When I'm tired I sometimes have difficulties to remain friendly or polite	0.521
15. When I'm tired I rather buy something that I like, even when it's expensive	0.135

Table B.2.: Ego depletion Likert scale (Salmon et al., 2014)

their agreement on 8 statements (*I feel tired / energetic / fit / drowsy / not clear / exhausted / I don't feel like doing anything / I have the feeling I can handle the world*).

Figure B.1.: Ego depletion Likert scale (Martijn et al., 2002)

Appendix C

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Age	187	18	84	32.04	14.042
Valid N (listwise)	187				

Table C.1.: Mean age.

Please indicate your age:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18	1	.5	.5	.5
	19	6	3.2	3.2	3.7
	20	7	3.7	3.7	7.5
	21	6	3.2	3.2	10.7
	22	17	9.1	9.1	19.8
	23	41	21.9	21.9	41.7
	24	15	8.0	8.0	49.7
	25	17	9.1	9.1	58.8
	26	5	2.7	2.7	61.5
	27	2	1.1	1.1	62.6
	29	3	1.6	1.6	64.2
	30	2	1.1	1.1	65.2
	31	2	1.1	1.1	66.3
	32	2	1.1	1.1	67.4
	33	4	2.1	2.1	69.5
	34	1	.5	.5	70.1
	35	3	1.6	1.6	71.7
	36	4	2.1	2.1	73.8
	38	2	1.1	1.1	74.9
	39	1	.5	.5	75.4
	40	1	.5	.5	75.9
	41	2	1.1	1.1	77.0
	42	3	1.6	1.6	78.6
	43	1	.5	.5	79.1
	47	2	1.1	1.1	80.2
	48	1	.5	.5	80.7
	49	2	1.1	1.1	81.8
	50	3	1.6	1.6	83.4
	52	2	1.1	1.1	84.5
	53	2	1.1	1.1	85.6
	54	3	1.6	1.6	87.2
	55	2	1.1	1.1	88.2
	56	6	3.2	3.2	91.4
	57	1	.5	.5	92.0
	58	1	.5	.5	92.5
	59	1	.5	.5	93.0
	60	7	3.7	3.7	96.8
	61	1	.5	.5	97.3
	62	1	.5	.5	97.9
	65	1	.5	.5	98.4
	67	1	.5	.5	98.9
	72	1	.5	.5	99.5
	84	1	.5	.5	100.0
	Total	187	100.0	100.0	

Table C.2.: Age percentage

Appendix D

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	90	48.1	48.1	48.1
	Male	93	49.7	49.7	97.9
	Prefer not to say	3	1.6	1.6	99.5
	Other. Please specify:	1	.5	.5	100.0
	Total	187	100.0	100.0	

Table D.1.: Gender percentage

Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High school	51	27.3	27.3	27.3
	Bachelor's degree	61	32.6	32.6	59.9
	Master's degree	72	38.5	38.5	98.4
	Other. Please specify:	3	1.6	1.6	100.0
	Total	187	100.0	100.0	

Table D.2.: Education percentage

Appendix E

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.823	.821	8

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Q13_1	25.32	58.034	.649	.602	.788
Q13_2	24.96	62.676	.533	.451	.805
Q13_3	25.50	56.886	.713	.659	.779
Q13_4	25.68	73.099	.051	.071	.863
Q13_5	25.76	56.848	.694	.590	.781
Q13_6	26.09	59.186	.581	.399	.798
Q13_7	25.96	61.692	.470	.301	.813
Q13_8	25.53	55.035	.708	.580	.778

Table E.1.: Ego depletion reliability test

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.864	.854	10

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Q15_1	28.33	72.737	.710	.545	.839
Q15_2	29.30	75.630	.684	.490	.843
Q15_3	29.58	72.664	.727	.598	.838
Q15_4	29.49	75.552	.622	.458	.847
Q15_5	29.76	74.721	.668	.539	.843
Q15_6	28.12	76.743	.595	.427	.850
Q15_7	31.27	91.702	.093	.048	.878
Q15_8	27.96	80.058	.438	.306	.863
Q15_9	28.93	79.252	.477	.301	.859
Q15_10	28.82	73.877	.650	.474	.845

Table E.2.: Impulsive buying tendency reliability test

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.862	.862	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Q25_1	6.82	6.848	.808	.655	.739
Q25_2	6.57	7.956	.733	.569	.810
Q25_3	7.28	8.860	.686	.488	.854

Table E.3.: Tiredness reliability test

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.952	.953	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Q14_1	7.90	18.733	.905	.855	.926
Q14_2	8.12	21.201	.860	.753	.960
Q14_3	8.07	18.317	.939	.889	.899

Table E.4.: Crowdedness reliability test

Appendix F

Cronbach Alpha Criteria	Classification
$a \geq 0.9$	Very good
$0.8 \leq a < 0.9$	Good
$0.7 \leq a < 0.8$	Be accepted
$0.6 \leq a < 0.7$	Doubtful
$0.5 \leq a < 0.6$	Bad
$a < 0.5$	Not acceptable

Table F.1.: Cronbach's alpha interpretation table (Siswaningsih et al., 2017)

Appendix G

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	ConH2	23.984[a]	3	7.995	2.286	.080
	ConH1	36.896[b]	3	12.299	2.508	.060
	ConIBB	3.769[c]	3	1.256	1.112	.346
	ConTired	.938[d]	3	.313	.167	.918
	ConStoBr	.898[e]	3	.299	1.362	.256
Intercept	ConH2	2072.440	1	2072.440	592.484	<.001
	ConH1	2692.706	1	2692.706	549.009	<.001
	ConIBB	2254.428	1	2254.428	1994.910	<.001
	ConTired	2217.177	1	2217.177	1185.871	<.001
	ConStoBr	20.028	1	20.028	91.161	<.001
SocCrow	ConH2	20.886	1	20.886	5.971	.015
	ConH1	17.505	1	17.505	3.569	.060
	ConIBB	.002	1	.002	.002	.968
	ConTired	.711	1	.711	.380	.538
	ConStoBr	.549	1	.549	2.499	.116
Time	ConH2	2.735	1	2.735	.782	.378
	ConH1	3.798	1	3.798	.774	.380
	ConIBB	.126	1	.126	.112	.739
	ConTired	.030	1	.030	.016	.899
	ConStoBr	.146	1	.146	.666	.416
SocCrow * Time	ConH2	.028	1	.028	.008	.929
	ConH1	13.902	1	13.902	2.834	.094
	ConIBB	3.662	1	3.662	3.240	.073
	ConTired	.223	1	.223	.119	.730
	ConStoBr	.224	1	.224	1.020	.314
Error	ConH2	640.113	183	3.498		
	ConH1	897.553	183	4.905		
	ConIBB	206.807	183	1.130		
	ConTired	342.148	183	1.870		
	ConStoBr	40.204	183	.220		
Total	ConH2	2753.000	187			
	ConH1	3653.000	187			
	ConIBB	2467.617	187			
	ConTired	2563.222	187			
	ConStoBr	61.000	187			
Corrected Total	ConH2	664.096	186			
	ConH1	934.449	186			
	ConIBB	210.576	186			
	ConTired	343.086	186			
	ConStoBr	41.102	186			

a. R Squared = .036 (Adjusted R Squared = .020)
b. R Squared = .039 (Adjusted R Squared = .024)
c. R Squared = .018 (Adjusted R Squared = .002)
d. R Squared = .003 (Adjusted R Squared = -.014)
e. R Squared = .022 (Adjusted R Squared = .006)

Table G.1.: Manova: Significant levels

Appendix H

ANOVA

ConCrow

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	694.325	1	694.325	685.012	<.001
Within Groups	187.515	185	1.014		
Total	881.841	186			

Table H.1.: Anova test for manipulation check: Significance

Appendix I

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	12.920[a]	1	<.001		
Continuity Correction[b]	11.889	1	<.001		
Likelihood Ratio	13.077	1	<.001		
Fisher's Exact Test				<.001	<.001
N of Valid Cases	187				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 44.28.

b. Computed only for a 2x2 table

Table I.1.: Chi-squared test for direct effect: Significance

Symmetric Measures[c]

		Value	Approximate Significance
Nominal by Nominal	Phi	.263	<.001
	Cramer's V	.263	<.001
N of Valid Cases		187	

c. Correlation statistics are available for numeric data only.

Table I.2.: Chi-squared test for direct effect: Phi value

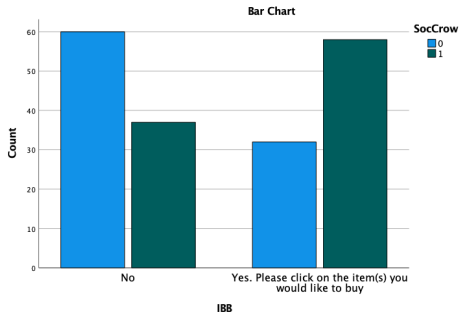

Figure I.1.: Chi-squared test for direct effect: Barchart

Appendix J

Interpretation of Phi and Cramer's V.

Phi and Cramer's V	Interpretation
> 0.25	Very strong
> 0.15	Strong
> 0.10	Moderate
> 0.05	Weak
> 0	No or very weak

Table J.1.: Phi and Cramer's V interpretation table (Akoglu, 2018)

Appendix K

Regression Results

	Ego depletion					
Predictors	Coefficient	se(HC4)	t	p	LLCI	ULCI
Constant	3,6533	0,0722	50,5826	0,0000	3,5108	3,7958
Social Crowding	0,4917	0,0737	6,6683	0,0000	0,3462	0,6373
Time	0,1294	0,0720	1,7981	0,0738	-0,0126	0,2714
Interaction effect	-0,0462	0,0714	-0,6468	0,5186	-0,1870	0,0947
Hunger 1	-0,0147	0,0412	-0,3557	0,7225	-0,0959	0,0666
Hunger 2	0,0023	0,0526	0,0441	0,9649	-0,1014	0,1061

Table K.1.: Regression results with Hunger control variables

Regression Results

	Impulsive buying behaviour					
Predictors	Coefficient	se	Z	p	LLCI	ULCI
Constant	-1,5686	0,6262	-2,5048	0,0123	-2,7960	-0,3412
Social Crowding	0,3686	0,1759	2,0960	0,0361	0,0239	0,7133
Ego depletion	0,4052	0,1658	2,4436	0,0145	0,0802	0,7302
Time	-0,0433	0,1607	-0,2694	0,7876	-0,3582	0,2716
Interaction effect	0,0502	0,1607	0,3126	0,7546	-0,2648	0,3653
Hunger 1	0,2547	0,0884	2,8810	0,0040	0,0814	0,4279
Hunger 2	-0,2126	0,1033	-2,0586	0,0395	-0,4151	-0,0102

Table K.2.: Regression results with Hunger control variables

Conditional direct effects of Social crowding on Impulsive buying behaviour

Time	Effect	SE	Z	p	LLCI	ULCI
-1	0,3184	0,2355	1,3519	0,1764	-0,1432	0,7800
1	0,4189	0,2410	1,7383	0,0822	-0,0534	0,8911

Table K.3.: Conditional direct effect with Hunger control variables

Conditional indirect effects of Social crowding on Impulsive buying behaviour

Time	Effect	BootSE	BootLLCI	BootULCI
-1	0,2180	0,1056	0,0493	0,4591
1	0,1805	0,0963	0,0361	0,4024

Table K.4.: Conditional indirect effect with Hunger control variables

Index of moderated mediation

	Index	BootSE	BootLLCI	BootULCI
Time	-0,0374	0,0656	-0,1815	0,0936

Table K.5.: Index of moderated mediation with Hunger control variables

Appendix L

Regression Results

	Ego depletion					
Predictors	Coefficient	se(HC4)	t	p	LLCI	ULCI
Constant	3,6533	0,0707	51,6894	0,0000	3,5138	3,7927
Social Crowding	0,4875	0,0707	6,8932	0,0000	0,3479	0,6270
Time	0,1360	0,0706	1,9257	0,0557	-0,0033	0,2753
Interaction effect	-0,0679	0,0712	-0,9539	0,3414	-0,2083	0,0725
Impulsive buying tendency	0,1833	0,0717	2,5576	0,0114	0,0419	0,3247

Table L.1.: Regression results with Impulsive buying tendency control variable

Regression Results

	Impulsive buying behaviour					
Predictors	Coefficient	se	Z	p	LLCI	ULCI
Constant	-1,3044	0,6133	-2,1270	0,0334	-2,5064	-0,1024
Social Crowding	0,3969	0,1700	2,3351	0,0195	0,0638	0,7300
Ego depletion	0,3324	0,1626	2,0439	0,0410	0,0137	0,6511
Time	-0,0418	0,1568	-0,2664	0,7899	-0,3491	0,2655
Interaction effect	-0,0603	0,1572	-0,3836	0,7013	-0,3683	0,2477
Impulsive buying tendency	0,2178	0,1512	1,4406	0,1497	-0,0785	0,5142

Table L.2.: Regression results with Impulsive buying tendency control variable

Conditional direct effects of Social crowding on Impulsive buying behaviour

Time	Effect	SE	Z	p	LLCI	ULCI
-1	0,4572	0,2330	1,9624	0,0497	0,0006	0,9137
1	0,3366	0,2300	1,4634	0,1434	-0,1142	0,7874

Table L.3.: Conditional direct effect with Impulsive buying tendency control variable

Conditional indirect effects of Social crowding on Impulsive buying behaviour

Time	Effect	BootSE	BootLLCI	BootULCI
-1	0,1846	0,1001	0,0147	0,417
1	0,1395	0,0835	0,0101	0,3362

Table L.4.: Conditional indirect Impulsive buying tendency control variable

Index of moderated mediation

	Index	BootSE	BootLLCI	BootULCI
Time	-0,0451	0,0583	-0,1785	0,054

Table L.5.: Index of moderated mediation with Impulsive buying tendency control variable

Appendix M

Regression Results

	Ego depletion					
Predictors	Coefficient	se(HC4)	t	p	LLCI	ULCI
Constant	3,6531	0,0694	52,6237	0,0000	3,5162	3,7901
Social Crowding	0,5021	0,0695	7,2272	0,0000	0,3650	0,6391
Time	0,1262	0,0697	1,8104	0,0719	-0,0113	0,2637
Interaction effect	-0,0386	0,0694	-0,5566	0,5785	-0,1756	0,0983
Tiredness	0,1827	0,0544	3,3570	0,0010	0,0753	0,2901

Table M.1.: Regression results with Tiredness control variable

Regression Results

	Impulsive buying behaviour					
Predictors	Coefficient	se	Z	p	LLCI	ULCI
Constant	-1,4780	0,6183	-2,3904	0,0168	-2,6899	-0,2661
Social Crowding	0,3660	0,1700	2,1524	0,0314	0,0327	0,6993
Ego depletion	0,3800	0,1641	2,3151	0,0206	0,0583	0,7017
Time	-0,0539	0,1557	-0,3461	0,7293	-0,3591	0,2513
Interaction effect	-0,0243	0,1543	-0,1574	0,8749	-0,3267	0,2782
Tiredness	-0,0177	0,1186	-0,1493	0,8813	-0,2502	0,2147

Table M.2.: Regression results Tiredness control variable

Conditional direct effects of Social crowding on Impulsive buying behaviour

Time	Effect	SE	Z	p	LLCI	ULCI
-1	0,3903	0,2282	1,7103	0,0872	-0,0570	0,8376
1	0,3417	0,2310	1,4790	0,1391	-0,1111	0,7946

Table M.3.: Conditional indirect effect with Tiredness control variable

Conditional indirect effects of Social crowding on Impulsive buying behaviour

Time	Effect	BootSE	BootLLCI	BootULCI
-1	0,2055	0,1001	0,0388	0,4313
1	0,1761	0,1761	0,0323	0,3931

Table M.4.: Conditional indirect with Tiredness control variable

Index of moderated mediation

	Index	BootSE	BootLLCI	BootULCI
Time	-0,0294	0,0607	-0,1602	0,0892

Table M.5.: Index of moderated mediation with Tiredness control variable

Appendix N

Regression Results

	Ego depletion					
Predictors	Coefficient	se(HC4)	t	p	LLCI	ULCI
Constant	3,7316	0,0724	51,5486	0,0000	3,5888	3,8744
Social Crowding	0,5126	0,0694	7,3895	0,0000	0,3757	0,6495
Time	0,1185	0,0706	1,6799	0,0947	-0,0207	0,2578
Interaction effect	-0,0265	0,0701	-0,3779	0,7060	-0,1649	0,1119
Store Brand	0,2265	0,0729	3,1093	0,0022	0,0828	0,3703

Table N.1.: Regression results with Store brand control variable

Regression Results

	Impulsive buying behaviour					
Predictors	Coefficient	se	Z	p	LLCI	ULCI
Constant	-1,2524	0,6283	-1,9934	0,0462	-2,4838	-0,0210
Social Crowding	0,4142	0,1733	2,3897	0,0169	0,0745	0,7539
Ego depletion	0,3363	0,1629	2,0645	0,0390	0,0170	0,6556
Time	-0,0571	0,1562	-0,3657	0,7146	-0,3632	0,2490
Interaction effect	-0,0115	0,1553	-0,0740	0,9410	-0,3159	0,2929
Store Brand	0,1937	0,1715	1,1291	0,2588	-0,1425	0,5299

Table N.2.: Regression results with Store brand control variable

Conditional direct effects of Social crowding on Impulsive buying behaviour

Time	Effect	SE	Z	p	LLCI	ULCI
-1	0,4257	0,2293	1,8564	0,0634	-0,0238	0,8752
1	0,4027	0,2361	1,7056	0,0881	-0,0601	0,8655

Table N.3.: Conditional direct effects with Store brand control variable

Conditional indirect effects of Social crowding on Impulsive buying behaviour

Time	Effect	BootSE	BootLLCI	BootULCI
-1	0,1813	0,1020	0,0173	0,4201
1	0,1635	0,0928	0,0154	0,3783

Table N.4.: Conditional indirect effects with Store brand control variable

Index of moderated mediation

	Index	BootSE	BootLLCI	BootULCI
Time	-0,0178	0,0562	-0,1485	0,0836

Table N.5.: Index of moderated mediation with Store brand control variable