

**HOW DO CROWDED SHELVES IMPACT CONSUMERS' ATTITUDE TOWARD
MINIMAL DESIGN?**

by

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ABSTRACT

This research aims to understand consumers' motivation to purchase products in retail stores when retail shelves are either crowded or not crowded. Existing research has mostly focused on social crowding. There is limited research on the phenomenon of retail shelf-based crowding and its influence on consumer behavior. How crowded shelves of products trigger consumers to prefer products with minimal or maximal packaging design? subsequently, how does it impact the evaluation of the product? In the current research, we investigate how different levels of shelf crowdedness impact consumer attitudes and intentions toward products in different packaging designs. We conducted an experiment where we manipulated shelf crowdedness and packaging design (maximal vs. minimal) to test our predictions. Our findings revealed that the minimal packaging elicited a more positive attitude and higher purchase intentions towards the product.

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CHAPTER 1 INTRODUCTION

Retail is a fast-moving sector, with 91% of shoppers frequenting their preferred mass-market store monthly, and 83% typically spending \$50 or above during each visit on average (Carufel, 2022). Numerous situational factors impact shoppers' perception of the retail environment and influence final purchase decisions (Eroglu and Machleit, 1990; Harrell, Hutt, and Anderson, 1980). For example, overstocking could confuse consumers and understocking could communicate supply chain issues to potential customers (Agaba, 2024). Overall, there remains a need to better understand how the level of shelf stocking impacts consumers.

Industry experts such as Interlake Mecalux (2021) stated that the optimum level of stocking could be determined by looking at supplier lead time, procurement lead time, and average product demand. These three things partially determine the level of visible product stocking on retail shelves. If the stock suppliers are inconsistent then visible stock on the shelves will be impacted. Additionally, miscalculating demand for particular products and brands can lead to relatively empty product shelves, frustrating consumers. On the other hand, practitioners and researchers state that there is no "one size fits all" stock level or method that can determine the maximum effective level of product stocking on retail shelves (Xue, Demirag, Chen, and Yang, 2017). Vernon (2018) stated that retail store size, retail crowdedness, and demand primarily determine store shelf stocking levels. In this research, we strive to understand how shelves stocked at different levels could have an impact on consumers' attitudes including how shelves crowded with products may influence consumers' evaluation of a subsequent product. We also investigate the role of product packaging design in shaping how shelf-crowdedness impacts product evaluation.

Store crowding is an important factor impacting consumers' behavioral intentions (Eroglu and Machleit, 1990). Crowding is described as a state of high population density (Stokols, 1972) or being filled to an excessive capacity with people or objects (Desor, 1972). Recent research has found that retail social crowdedness (number of shoppers in a retail space) enhances consumers' evaluation of products in minimal packaging (Gong, Suo, and Peverelli, 2023). Minimalist design uses few materials, neutral colors, and simple shapes. It avoids unnecessary decoration. All to achieve refined and elegant simplicity (Hohenadel, 2022). This current research aims to investigate whether shelf-based crowding (the number of products displayed on retail shelves) also impacts consumers' evaluation of products in minimal packaging.

Minimalism has been looked at in the context of social crowding, which is a specific form of physical crowding that involves the density of people (Gong, Suo, and Peverelli, 2023). This research attempts to look at minimalism from a retail shelf-based crowding perspective, another form of physical crowding that consists of the density of objects. How do crowded shelves impact attitudes and purchase intention towards products with minimally vs. maximally designed product packaging? Physical crowding with objects has received little attention in the marketing literature. This research investigates how crowded shelves may raise consumers' need for order in a retail setting and their subsequent attitude regarding a product using a minimal or maximal package design.

Our research aims to contribute both theoretically and practically by extending research on crowding and how it relates to minimalism. First of all, previous studies focused on social crowding scenarios (Gong, Suo, and Peverelli, 2023). Our research extends previous knowledge by focusing on crowding created by objects. Crowding based on products on retail shelves has been understudied until now. This research can be used by researchers to further work on object-based crowding in the retail sector and further identify factors that can

impact shoppers' buying motivation in an object-based crowding scenario. Second, previous research has consistently shown that consumers prefer products in minimal packaging (e.g., Ton, Smith, Silva, 2023), we investigate a potential new moderator of this effect which is the situational factor of shelf-based crowding. We conduct our research with a novel situational factor of shelf-based crowding to gauge its impact on minimal packaging design assessment. Third, shelf-based crowding is something consumers frequently come across. However, researchers have yet to thoroughly examine the relationship between consumer purchasing behavior and the stock levels of products on retail shelves. Our research aims to address this research gap.

CHAPTER 2 LITERATURE REVIEW

2.1 Minimalism

Minimalism represents a mode of expression found in visual art, architecture, music, and literature, characterized by its emphasis on simplicity and a focus on essential geometric elements of specific patterns (Strickland, 1993, p. 5). Over the years, minimalism, transcending its artistic origins, has been studied from the perspective of music, linguistics, lifestyle, and marketing strategies, and regarding its broader role in art and science (Chen, Kou, Hu, and Xiao, 2022; Chomsky, 2014; Johnson, 1994; Pangarkar, Shukla, and Taylor, 2021; Slobodkin, 1986). Recent studies conducted by Wilson and Bellezza (2022) focused on minimalism through the lens of consumer values and developed scales to categorize consumers' consumption patterns in line with the minimalist philosophy of focusing on simplicity.

There is a common consensus among authors that minimalism gained momentum in the early 19th century, be it in music, sculpture, architecture, and painting (Strickland, 1993). The 1918 painting *Tu'm* by Marcel Duchamp roughly translated to "You Bore Me" or "Tu m'emmerdes." In the 1950s and early 1960s, this translation and title of the painting played a big role in making boredom a widely accepted form of beauty in art and design (Scillia, 2008). Along with Kasimir Malevich's *White on White*, these two paintings combined served as the inspiration for the modern pieces of art categorized as Minimalist (Scillia, 2008). These artworks further contributed to the inspiration for Minimalism in design. Furthermore, minimalist design was partially inspired by the minimalist architectural movement, epitomized by figures like Mies van der Rohe, Luis Barragan, and Arne Jacobsen, and was intricately tied to social stratification and popular depictions of upscale modern living (Pracejus, Olsen, and O'Guinn, 2006).

The Bauhaus School of Design had a significant impact on the adoption of minimalism in design (Poon, 2017). Founded in Weimar by Walter Gropius in 1919, it aimed to create innovative living solutions for a more humane society through the design of functional and affordable products (Poon, 2017). O'Donoghue, (2015) stated that the Bauhaus movement played a pivotal role in the modernism movement, gaining international acclaim and leaving a lasting impact globally. The institution sought to rebuild the world by integrating various disciplines and was aptly named the "building house." Bauhaus prioritized simplicity in design with the mantra "Less is more," favoring clean, functional geometric shapes. This approach, rooted in enhancing visual perception, promotes efficient user interactions through legible and intuitive interfaces (O'Donoghue, 2015). According to Kolesnikova (2019), Bauhaus teachings by Vasily Kandinsky laid the groundwork for minimalism by emphasizing simplicity in basic colors like red, yellow, and blue, as well as geometric shapes such as squares, triangles, and circles. These principles of minimalism prioritized simplicity, basic forms, and a reduction of essential elements in design, effectively forming the Bauhaus code. Today, the Bauhaus is synonymous with design and is recognized as a symbol of modernity (Kolesnikova, 2019).

Over the past decade, minimalism has grown in popularity among consumers (Weinswig, 2016). The rising popularity of minimalism has been exemplified by increased attention in the media like Netflix producing a show regarding organizing living spaces featuring Marie Kondo who advocates minimalistic values (Youn, 2019). Over the years, brands also capitalized on the increased focus on minimalism; Nike's famous "swoosh" logo is a testament to the power of simplicity (Kar, 2023)

When it comes to minimalism as a lifestyle, Pangarkar, Shukla, and Taylor (2021) have identified three types of minimalist consumers in their research: voluntary simplicity, anti-consumption, and inconspicuous minimalism. To elaborate voluntary simplicity as a

minimalist lifestyle advocate redirecting resources from materialistic pursuits to more meaningful and personally satisfying aspects of life. This philosophy, increasingly embraced by consumers, aims to limit consumption to foster non-materialistic self-fulfillment activities (Etzioni, 1999). Voluntary simplifiers may engage in sharing concepts. Such as car sharing, and communal laundry (Shaw and Newholm, 2002) which is an indicator of living simply as minimalism advocates. Related to voluntary simplicity, in recent years numerous scholars have explored the concept of anti-consumption, with existing research defining it as a profound aversion, strong dislike, and rejection of consumption practices (Seegebarth, Peyer, Balderjahn, and Wiedmann, 2016; Zavestoski, 2002). These consumers hold the belief that their actions contribute to society, leading to a heightened preference for actively boycotting consumption that is deemed undesirable or wasteful (Pangarkar, Shukla, and Taylor, 2021). Arising from inconspicuous consumption is inconspicuous minimalism. Economically affluent individuals who embrace minimalism due to societal expectations tend to appreciate discreet minimalistic elements. They favor subtle, muted, and graceful designs, styles, and logos. Furthermore, Pangarkar and Shukla's (2023) recent study revealed a rise in inconspicuous minimalism in the luxury fashion sector.

Previous studies have looked at how voluntary simplicity and anti-consumption patterns impact consumers' well-being, and life satisfaction (Alexander and Ussher, 2012; Boujbel and d'Astous, 2012; Hook, Hodge, Zhang, Tongeren, and Davis, 2021; McGouran and Prothero, 2016; Seegebarth, Peyer, Balderjahn, and Wiedmann, 2016). An analysis with self-identified voluntary simplifiers reported that they felt happier, and experienced a sense of well-being living with simplicity compared to their past life when they were focused on living less simply (Alexander and Ussher, 2012). Boujbel and D'Astous (2012) further reinforce that voluntary simplifiers' lifestyle not only boosts their overall subjective well-being but also represents a route to happiness. The findings revealed that individuals who

embrace simplicity had notably higher scores on life satisfaction scales compared to those who did not simplify, which is attributed to the simplifiers' adept control of their consumption desires. A study conducted on anti-consumption also found that high control over consumption, and low material desire have a positive impact on consumers' daily well-being & happiness (Oral and Thurner, 2019).

More recently, Wilson and Bellezza (2022) argued that minimalism is a consumer value and developed a scale to measure it. Their research revealed three components that identify the degree to which consumers adopt minimalism as a value.

The first component is valuing ownership of a lower number of possessions. Minimalists and practitioners alike define minimalism as living with less, buying only what's necessary, and focusing on essential needs. Books promoting minimalist values also stress the importance of limiting one's possessions (Wilson and Bellezza, 2022). Consumers tend to prefer a simple and minimalist aesthetic, favoring clean lines, simple designs, and monochromatic colors. They associate minimalism with terms like "simplistic design" and "sparseness," often seen in minimalist living spaces and wardrobes. Minimalist design is defined by simplicity, featuring limited decoration and basic geometric shapes, contrasting with the richness and decorative patterns of maximalist design (Wilson and Bellezza, 2022). The third component is a preference for mindfully curated consumption - Minimalists are deliberate in choosing and curating their possessions, focusing on items that add value and align with their priorities. This intentional approach to ownership distinguishes mindful minimalism from other consumer behaviors. Minimalists prioritize deliberate living, constantly evaluating whether possessions enhance their lives, as depicted in documentaries and echoed in survey responses (Wilson and Bellezza, 2022). Together these three key components, accurately measure and define whether an individual can be categorized as a minimalist or not. These dimensions not only determine and define minimalist value but also

these dimensions directly follow the principles of minimalist design, such as limited design elements, monochromatic colors, and basic geometric shapes.

Besides past studies focusing on the role of minimalism and its values on consumer behavior, limited research has investigated minimalism from a design perspective and its impact on consumers. We next elaborate on some of the research findings on the impact of minimalist design elements. Typically, in design, minimalism adopts a straightforward geometric style and employs a restrained color palette (Breidenich, Christ, and Takayasu 2021). One of the core elements of minimalist design is white space, which was consistently present in the historical events that gave prominence to minimalist design in advertising (Pracejus, Olsen, and O'Guinn, 2006). The minimalist design principles provide an emphasis on shape and materials, that ought to be pure, uncomplicated, and straightforward (VanEenoo, 2011). Minimalist design refers to a design aesthetic, that prioritizes the efficient use of resources, and the elimination of merely ornamental aspects that serve no use (Zafarmand, Sugiyama, and Watanabe, 2003). Pracejus, Olsen, and O'Guinn's (2006) studies revealed that, as part of minimalist design, brands, and advertisers have realized the importance of utilizing simple color palettes such as white space since the 1960s. Their studies found that using white space in print advertising increased the perception of prestige, trust, and quality by consumers (Pracejus, Olsen, and O'Guinn, 2006). Furthermore, research showed that the inclusion of messages in white space enhances the effectiveness of product-related messages (Kwan, Dai, and Wyer, 2017). Thus, including a persuasive message in a minimally designed space may impact consumers' perceptions.

As per the definition of minimal design above (Breidenich, Christ, and Takayasu, 2021; Chen and Liu, 2023; Strickland, 1993, p. 5), we expect that minimal packaging design would be simple, utilizing reduced color palettes, straightforward patterns, and minimal text. Our literature search revealed that there is a lack of research on the impact of minimal packaging

design. However, there is ample research on simple packaging. Thus, we will be discussing that literature especially since simple packaging designs have been interpreted and addressed as minimalist (Chen, Sun, Zhou, and Shu, 2023). In other words, minimalist design in recent literature has been identified and referred to as simple design based on visual simplicity (Chen, Ponomarenko, Xiao, Lv, and Liu, 2023).

2.2 Simple packaging

Simple packaging design can be described as the degree to which a product's packaging features a limited number of uncomplicated design elements that are “organized in a common manner” (Ton, Smith, and Sevilla, 2023). The concept of simplicity in design involves eliminating as many superfluous elements as possible (Maeda, 2006). The principle of simplicity is commonly regarded as a primary guiding factor in design (Maeda, 2006). Attaining a simplistic aesthetic necessitates particular skills (Walker, 2017). Consequently, adopting a simple style can signal the mastery of artistic proficiency, distinguishing it from ornamental elements associated with mere decoration (Edwin, 2016). Ambrose and Harris (2011) pointed out that simplicity is a surprisingly intricate concept, and realizing it is not as straightforward as one might assume. Cavassilas (2007) suggested that choosing between simple and intricate designs is similar to selecting colors, as it falls within the brand's means of expressing its unique messages to consumers.

Simple packaging design impacts how consumers judge products (e.g., Ambrose and Harris, 2011). Favier, Celhay, and Pantin-Sohier (2019) stated that items featuring uncomplicated visuals often exude a sense of luxury and superior quality compared to those adorned with intricate graphics. Ton, Smith, and Sevilla (2023) stated that simple packaging designs or products that come in simple packaging are interpreted by consumers as having fewer product ingredients compared with complex packaging designs in both consumable and non-consumable products. As a result, a product that comes in simple packaging is

interpreted by consumers as purer. Thus, consumers are willing to pay a higher price for it (Ton, Smith, and Sevilla, 2023). Chen et al. (2023) studies found that consumers prefer simple designs in food packages. Further research on simple product packaging design found that consumers see brands with simple product packaging as honest, trustworthy (Ambrose and Harris, 2011), competent, and reliable (Faviera, Celhay, and Pantin-Sohiera, 2018). Furthermore, Wang et al. (2023) studies revealed that consumers interpret simple design as a sign of authenticity for an unfamiliar brand. When a brand is familiar simple packaging does not impact brand perception.

Several factors impact consumers' perception of simple packaging (e.g. Chen, Ahlstrom, and Xiao, 2023). According to Chen, et al. (2023), situational variables can influence consumers' decisions between simple and intricate designs. For example, individuals primed with a specific temporal landmark, such as the morning or the first day of a new school term, generally show a preference for products with simpler packaging. Chen, et al. (2023), split participants into two groups based on when they took the study (start on Monday or end on Friday). Participants in the start group reflected on their typical Monday feelings and activities, while those in the end group reflected on their Friday experiences. Afterward, participants were shown simple and complex cake packages, and the results revealed that participants in the start group had a higher intention to purchase products with simple packages vs. products with complex packages than those in the end group. This happens because consumers who are influenced by a starting point in time feel less need for arousal compared to those influenced by an ending point in time. As a result, they tend to prefer food products with simpler designs.

In contrast to younger adults, older individuals typically lean towards simplicity over complexity, as straightforward designs are more easily comprehensible to them (Eytam, Lowengart, and Tractinsky, 2021). Individuals tend to gravitate toward simple product

aesthetics in response to perceived threats to their well-being (Su, Wan, and Jiang, 2019).

One such threat to well-being may be disorder or loss of perceived control in the environment. He, Jiang, and Gorn (2022) stated that acquiring products for their aesthetic design represents a form of symbolic consumption as a response to external threats. In an external threat scenario like goal conflict, Chen, Ahlstrom, and Xiao (2023) found from their experiments that loss of control induces tourists to consume products with simple designs.

In our research, we would like to study one factor that may impact consumers' attitudes toward products in minimally designed packaging. This factor is retailers' shelf-based crowding. We build our predictions based on recent findings in the domain of social crowding where research has shown that social crowding (i.e., a large number of people) impacts attitudes towards products in minimally designed packaging (Gong, Suo, & Peverelli, 2023). We next discuss the crowding literature.

2.3 Crowding

Crowding refers to a condition characterized by being densely populated with people or objects (Desor, 1972). Crowding happens when entities are closely grouped, thus creating an inconvenience due to the insufficient availability of space (Desor, 1972). Past studies on crowding have examined it through the lens of constrained mobility resulting from limited physical space (Rapoport, 1975). Crowding is usually defined using a variable that can be easily measured objectively: density (Stokols, 1972). Density is defined as "The mass of a substance per unit of volume" (Oxford Lexico, n.d.). Rapoport (1976) identified two main kinds of density: what we feel (affective) and what we think we see (perceived). Perceived density is our judgment of how many people there are, how much space there is, and how the space is arranged. In a retail environment, elements like shopping carts, displays, and the type of shoppers, as well as how items are arranged, can influence shoppers' perception of crowding (Eroglu and Machleit, 1990). Affective density, on the other hand, is how people

personally judge this feeling of crowding based on their standards and desired levels of information and interaction (Eroglu and Machleit, 1990; Rapoport, 1976). Both affective and perceived density fall under the realm of physical crowding.

Physical crowding is of two distinct types: one involves human beings and the other involves non-sentient elements such as objects, and products. When physical crowding consists of sentient beings, it is referred to as a social crowd (Eroglu and Machleit, 1990). Social density is defined as the population of a specific area, usually expressed as the number of people per unit area (Baumeister and Vohs, 2007). Social crowding is primarily defined by spatial factors, which arise from the interplay of individual, social, and spatial elements around a defined space (Huang, Wyer, Dahl, and Hoegg, 2018; Thomas and Saenger, 2020). Usually, crowding has been measured by just counting the number of people in a space, without taking into account other factors like signs, noise, light levels, and shopping carts. These additional stimuli are known to influence how crowded a place feels and the overall experience of crowding (Eroglu and Machleit, 1990). Our literature search revealed that the density of non-human factors such as objects has not been studied extensively from a crowdedness perspective, specifically the crowdedness of products on retail shelves. Shelf-based crowding is not a new category of crowding, rather it falls under the category of physical crowding.

There is substantial evidence highlighting the role of physical interaction in the examination of crowding, observed in both animal and human studies (Calhoun, 1962; Christian, Lloyd, and Davis, 1965; Goeckner, 1973; Kollar, Edgerton, and Beckwith, 1968). Kollar, Edgerton, and Beckwith (1968) discovered higher levels of aggression in chimpanzees living in crowded conditions mainly taking place near a central food distribution area where they were forced to be in close contact. There is some indication of the impact of crowding from studies on human behavior as well. For example, Leo (1972)

discovered that children in crowded play areas interacted less compared to children in less crowded areas.

Some research has examined how social crowding and in-store human crowding impact consumers' shopping behavior (Eroglu and Machleit, 1990; Harrell, Hutt, and Anderson, 1980; Hui and Bateson, 1991; Machleit, Kellaris, and Eroglu, 1994). For example, Eroglu and Machleit (1990) showed that in a crowded scenario, when consumers are faced with a multitude of stimuli, they are unable to process them all at the same time. Harrell, Hutt, and Andersons (1980) explored consumers' journey from entering and exiting the store in a crowded scenario and their subsequent behavior due to crowding. Consumer attitudes in retail under the condition of social crowding were investigated. They found that consumers' traits and past experience, impatience, aggressiveness, and time awareness played a role in the perception of crowding. Besides consumer traits, the high density of shoppers in-store led to increased wait times in aisles and created a sense of crowding. These factors limited free movement and made the retail space feel closed off when there were too many shoppers.

Consumers react to socially crowded situations in a multitude of ways, depending on the state of social crowding and spatial factors (e.g., Harrell, Hutt, and Anderson, 1980). In a retail setting, increased social crowding diminished consumers' ability to process information, leading to a decrease in their cognitive resources (Michon, Chebat, and Turley, 2005). Hui and Bateson (1991) studied and discovered that feeling in control was crucial for how customers reacted emotionally and behaviorally to the physical environment and service staff during an interaction. The study findings revealed that in a service encounter consumer density and consumer choice impact consumers' pleasure with the service and determine approach-avoidance to service situations. The reason for this is due to consumers perceived control in the service store.

Consumers use several strategies to cope with crowding. To account for discontent in the crowd, consumers adopt compensatory consumption behavior (Mandel, Rucker, Levav, and Galinsky, 2017) for instance a consumer may have planned to buy headphones according to his requirements like noise cancellation, and wireless from a superstore. However, due to social crowding in the store, they rather opted to buy the headphones that were easily accessible on the shelves. These headphones may or may not have the features they initially wanted. To avoid staying in the crowded situation the customer made a quick decision that contradicted their original objective. To compensate for the crowdedness, Harrell, Hutt, and Anderson (1980) stated that adaptation strategies were followed by consumers as they deviated from their planned shopping time, used in-store evaluation criteria, and made unplanned purchases. These compensatory strategies resulted in store satisfaction, confidence in shopping behavior, and enjoyable consumption time. Distractions caused by crowding not only prompted consumers to reaffirm their perceived self-control but also triggered compensatory consumption behavior (Gong, Suo, and Peverelli, 2023).

Research has studied consumers' adoption of compensatory strategies in crowded situations (Gong, Suo, and Peverelli, 2023; Zhao, Huang, and Chen, 2022;). In general, people tend to feel uneasy and confused when a store is crowded, but they feel happy and relaxed when it is not too crowded (Mackintosh, West, and Saegert, 1975). At the same time, these bad feelings made people think negatively about products, services, and stores (Hui and Bateson, 1991; Harrell, Hutt, and Anderson, 1980). Moreover, being around a lot of people made consumers feel stressed and out of control (Collette and Webb, 1976; Sherrod, 1974). This, in turn, led to avoiding certain behaviors (Harrell, Hutt, and Anderson, 1980), like being less willing to spend money on products they came across (O'Guinn, Tanner, and Maeng, 2015). Huang, and Chen (2022) found that high levels of crowding caused consumers

to feel like they had less control, prompting them to adopt compensatory behaviors by shifting between online and offline purchasing channels.

Research has established that crowding can create a sense of belonging. Cai and colleagues (2021) found that being in a crowded place could strengthen the connection between consumers and brands, known as brand attachment. It also encouraged interaction between consumers and online personalities and increased the likelihood of people sharing information through word of mouth. This happens because when people feel crowded, they might feel a bit disconnected and lose their sense of belonging. In response, they tried to connect with others around them to regain that feeling of belonging (Cai, et al., 2021). According to Andrews, Luo, Fang, and Ghose (2015), in crowded places, people are more likely to feel connected to things like brands, and they become even more attached to brands they often purchase.

A crucial aspect of our research is the documented evidence showing that crowding serves as a significant factor driving consumers to opt for minimalistic products (Gong, Suo, and Peverelli, 2023). Their studies found that social crowding in a shopping scenario drove consumers towards minimal products. The authors manipulated social crowding by showing participants one image of a shopping mall full of people, and participants showed a high likelihood of choosing a minimal-designed product. In the following studies, the authors manipulated actual crowding situations in the lab. In the experimental condition, they had (12-14) participants in a small lab room, in the control condition the room remained the same but the number of participants was reduced to (3-4). Their studies revealed that participants in crowded conditions expressed a higher intention to reduce their number of possessions, a stronger preference for sparse aesthetics and a higher intention to mindfully curated consumption. The underlying reason the authors showed for choosing minimalistic practices

was due to the need for order. In other words, crowdedness increased participants' need for order which in turn led them to prefer minimalistic consumption practices.

Based on our reading of Gong, Suo, and Peverelli's (2023) research on minimalism and crowding, we identified that there was a definitive lack of research on the impact of other forms of physical crowding especially in a minimalism-related context. Thus, we were interested in studying another form of physical crowding which was the crowding of products on shelves. We expected a crowded shelf full of products to also contribute to consumers' desire for order, thus impacting their evaluation of minimalistic products.

2.4 Need for Order

In a crowded setting, the underlying reason for consumers' preference for a minimal product, is the need for order among shoppers in a crowded setting (Gong, Suo, and Peverelli, 2023). The need for order represents an individual's mental desire for a well-defined organization and a distaste for unchecked disorder in their existence (Webster and Kruglanski, 1994). People are highly inclined to perceive the external world as an organized and structured environment, characterized by a predictable system governed by rational relationships (Heine, Proulx, and Vohs, 2006; Kay, Gaucher, Napier, Callan, and Laurin, 2008). According to earlier studies, disorder impaired one's ability to maintain self-control and generated an array of stress and anxiety feelings (Cutright, 2012). In a study where shelf space was manipulated by organizing or disorganizing the items, participants chose the organized shelf more when their feeling of personal control was low (Cutright, 2012). Thus, a disorganized shopping space raised consumers' need for order. A crowded shopping space could also trigger a need for order.

Believing in an inherent order governing our surroundings promotes both physical health and psychological well-being (Albrecht, Hattula, and Lehmann, 2017). As a result, people typically invest significant effort in rectifying and preventing the perception of

randomness and disorder in their surroundings, actively working to uphold a sense of order. For instance, in a retail scenario, research in retail density (number of people in retail space) noted that high retail density contributed to an unfavorable experience characterized by constraints and limited space, diminishing the sense of freedom in movement and control over one's surroundings (Stokols, 1972). The belief that density hindered the achievement of shopping objectives was substantiated by research exploring the impact of perceived control, which refers to the extent to which the environment either impeded or aided in goal accomplishment (Rompay, Krooshoop, Verhoeven, and Pruyn, 2012; Ward and Barnes, 2001). Fennis and Wiebenga (2015) observed that in a retail setting when contextual cues evoke a sense of chaos and disorder, consumers tend to adopt a compensatory strategy by establishing and pursuing goals that are simpler, clear, and well-defined.

Maintaining order in both the physical environment and the mental space is a notable benefit of minimalism (Lloyd and Pennington, 2020). In Lloyd and Pennington's research interviews, there was some evidence of well-being as a direct result of minimalism. Participants indicated that a minimalistic lifestyle increased their mental clarity and clarity of thought (Lloyd and Pennington, 2020). Additionally, minimalism in art and music was said to have an aesthetic appeal to it (Johnson, 1994). Townsend and Sood (2012) found that aesthetically designed products raised one's sense of self and confidence. So, choosing a minimally designed packaged product as a compensatory consumption behavior for crowded product shelves may fulfill consumers' need for order. Chen, Lee, and Yap (2017) found that when the feeling of personal control was low, participants were motivated to purchase utilitarian products. Those who identified themselves as minimalists focused on functionality and utilitarianism in their approach to everyday life (Pangarkar, Shukla, and Taylor, 2021).

2.5 Research Predictions

In this research, we study the impact of physical crowding in the form of crowded shelves on consumers' attitudes toward minimal design in product packaging. We expect that similar to social crowding, crowded shelves (many products displayed on the shelves) will enhance attitudes and purchase intentions towards products in minimally designed packaging. Based on Gong, Suo, and Peverelli's (2023) findings from their studies on the minimalistic consumption approach, we propose that a crowded shelf of products would trigger a high need for order among consumers, which would be fulfilled by minimally packaged designed products and would have a positive attitude and purchase intention for the product.

CHAPTER 3 CONCEPTUAL MODEL AND PREDICTION

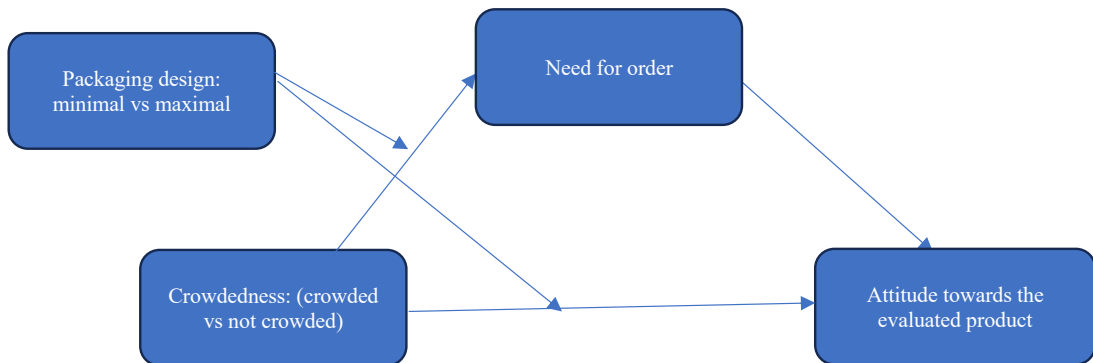


Figure 1. Conceptual model

Hypothesis - When faced with crowded shelves (not crowded shelves) consumers will have a higher (lower) need for order which will lead to a higher (lower) attitude towards the minimally (maximally) packaged design product.

CHAPTER 4 RESEARCH METHODOLOGY

4.1 Overview of the study

We ran an experiment to test whether crowded shelves impacted consumers' need for order and attitudes toward minimally and maximally packaged products. Specifically, we expected customers who encounter a shelf crowded with products to show a higher need for order and hold more positive attitudes toward products in minimally designed packaging as opposed to maximally designed packaging.

4.2 Participants & Design

A total of 220 individuals who live in Canada or the USA were recruited from Prolific in exchange for 2.53 CAD per participant. Participants were randomly assigned to one of four experimental conditions, following a 2 (Crowdedness: not crowded vs. crowded) by 2 (Packaging Design: maximal vs. minimal) between-subjects design. We excluded participants who did not consent for their data to be used in the analysis or did not consent for their data to be stored in a repository. Furthermore, we also excluded participants who failed any of our attention check questions. Thus, the final sample comprised of 190 participants (57.4 % female, $M_{Age} = 35.5$).

4.3 Procedure

All participants read a scenario and were instructed to imagine that they were the person in that scenario. The scenario mentioned that they were in search of kitchen appliances for a new apartment they had just moved in. All participants were told to imagine that they proceeded toward the small kitchen appliances section. As they navigated through the aisles, they were asked to imagine they were passing by the toaster aisle. Participants read a description of the shelves displaying seven different toaster models. In the crowded conditions, shelves were crammed with products, indicating the shelves were overstocked, and devoid of any empty spaces. In the not-crowded condition, the shelves were described as

partially stocked and there was some breathing room (see Appendix A for the text of each condition). Participants were then told to visualize the shelves.

After reading the scenario, participants were told to imagine that they needed to buy a blender for themselves and headed for the blender aisle. All participants were shown a blender product in full packaging. We manipulated minimalism by showing participants either the minimal or maximal packaging of a blender. Packaging for both blenders featured a fictitious brand name “Rico”, a barcode, and a QR code. Both the maximal and minimal blender packaging featured the same amount of text and information on the front of the packaging. The maximal blender packaging had additional text on the side and more visual distraction in the form of small abstract shapes. On the other hand, the minimal blender had more white space. (See Appendix B, for pictures of blender).

After seeing the blender, participants were asked to fill out a questionnaire that measured attitude towards the evaluated product, purchase intention for the product, perceived control, need for order, manipulation check items, need for cognitive closure, and demographic questions. After completing the questionnaire, participants were thanked for their cooperation and debriefed. (see Appendix D for more details).

4.4 Measures

Crowdedness manipulation check. The participants reported how much they agreed with the following statement “The toaster shelf was crowded” (1 = strongly disagree; 7 = strongly agree).

Product packaging design manipulation check. The participants reported whether the blender packaging they saw had a minimal design. (1 = strongly disagree; 7 = strongly agree).

Level of organization manipulation check. The participants reported whether the toaster shelves they saw were organized or not. (1 = strongly disagree; 7 = strongly agree).

Attitude toward the product. Participants evaluated the blender product on a six-item 7-point semantic differential scale anchored on unlikable/likable, bad/good, Unappealing/Appealing, pleasant/unpleasant, and unfavorable/favorable. This scale is commonly used in marketing research to measure attitude (Spears, 2004). All items showed high internal consistency ($\alpha = .964$) and were averaged in a single attitude score.

Purchase intention toward the product. After seeing the product, participants rated their intention to purchase the blender product on a three-item 7-point semantic differential scale anchored on I am going to never buy/ I am going to buy, I definitely do not intend to buy/ I definitely do intend to buy, I have very low purchase interest/I have high purchase interest (Spears, 2004). All items showed high internal consistency ($\alpha = .957$) and were averaged in a single score.

Need for order. We measured Need for order on a 7-point Likert scale (1 = strongly disagree; 7 = strongly agree) using four items adapted from (Gong, Suo, & Peverelli, 2023; Fennis & Wiebenga, 2015). The items are: I find that establishing a consistent routine enables me to enjoy life more, my personal space is usually messy and disorganized (reverse), I prefer clear rules and order in life, I like to have a place for everything and everything in its place ($\alpha = .678$).

Perceived control. We asked participants to identify how they would feel during their visit to the store on a 7-point Likert scale (1 = strongly disagree; 7 = strongly agree) using four items adapted from (Consiglio, Angelis, and Costabile, 2018). The items are: I would feel in control, I would have control over my surroundings, the current situation would feel out of my control (reverse), I would feel a loss of personal control(reverse) ($\alpha = .817$). We measured perceived control as it is a situational variable, that is related to the need for order.

Need for Cognitive closure. The measurement of this variable has 41 items. These items are categorized in subscales of need for predictability ($\alpha = .809$) (e.g. I like to have

friends who are unpredictable), decisiveness ($\alpha = .794$) (e.g. I almost always feel hurried to reach a decision, even when there is no reason to do so), avoidance of ambiguity ($\alpha = .804$) (e.g. I don't like situations that are uncertain), closed-mindedness ($\alpha = .611$) (e.g. I feel irritated when one person disagrees with what everyone else in a group believes), and need for order ($\alpha = .758$) (e.g. I find that a well-ordered life with regular hours suits my temperament). The need for order scales has been separated based on the source of the scales. The four items of need for order directly adapted from Gong, Suo, & Peverelli's (2023) studies were measured. The rest of the items and subscales are from the original scale and were measured with all the other subscales (Roets & Van Hiel, 2007; Webster, & Kruglanski, 1994). ($\alpha = .864$).

4.5 Results

Crowdedness manipulation check - A 2 (Crowdedness: crowded vs not crowded) \times 2 (packaging design: maximal vs minimal) ANOVA showed only a significant main effect of crowdedness on whether participants believed the toaster shelves they read about are crowded ($M_{crowded} = 6.16$ vs. $M_{not\ crowded} = 2.17$, $F(1,186) = 489.88$, $p < .001$). Our results indicated participants in the crowded condition perceived the crowded shelves to be more crowded.

Level of organization manipulation check - A 2 (Crowdedness: crowded vs not crowded) \times 2 (packaging design: maximal vs minimal) ANOVA showed a significant main effect of crowdedness on whether participants believed that the toaster shelves they saw were organized or not. ($M_{crowded} = 4.12$ vs. $M_{not\ crowded} = 5.96$, $F(1,186) = 36.11$, $p < .001$). This indicates that participants perceived the not crowded shelves as more organized. This was not an intended consequence of our manipulation.

Packaging design manipulation check - A 2 (Crowdedness: crowded vs not crowded) \times 2 (packaging design: maximal vs minimal) ANOVA showed a significant main effect of

packaging design on whether participants believed that the blender packaging they saw was minimal ($M_{\text{minimal}} = 5.56$ vs. $M_{\text{maximal}} = 4.23$, $F(1,186) = 36.11$, $p < .001$). Thus, indicating our packaging manipulation to be successful.

Attitude toward the product. We submitted our attitude toward product score to a two-way ANOVA using crowdedness and packaging design as factors. Results showed a significant main effect of packaging design on attitude toward the product ($M_{\text{maximal}} = 4.07$ vs. $M_{\text{minimal}} = 4.68$, $F(1,186) = 8.876$, $p < .001$), people had more positive attitude toward minimal design packaged product than maximal design packaged product regardless of crowdedness conditions. No significant effect of crowdedness on attitude toward the product ($M_{\text{not crowded}} = 4.25$ vs. $M_{\text{crowded}} = 4.51$, $F(1,186) = 1.50$, $p = .222$). More importantly, the interaction between crowdedness and packaging design on participants' attitudes toward the product was not significant ($F(1,186) = .145$, $p = .703$). For exploratory purposes, we investigated whether packaging design has an impact on attitude toward the product in each crowded condition. A one-way ANOVA limited to the not crowded condition, showed that packaging design had a marginally significant impact on attitude toward the product ($M_{\text{maximal}} = 3.99$ vs $M_{\text{minimal}} = 4.52$) $F(1,97) = 3.655$, $p < .059$). Another one-way ANOVA showed that in the crowded conditions, packaging design had a significant impact on attitude toward the product ($M_{\text{maximal}} = 4.16$ vs $M_{\text{minimal}} = 4.85$), $F(1,89) = 5.213$, $p < .025$), people who were in the crowded shelf condition liked the minimal designed packaging more than the maximal designed packaging. Both these results are consistent with the main effect of packaging design identified and the results in the crowded condition are consistent with (Gong, Suo, & Peverelli, 2023) Further analysis showed that in each packaging design condition, crowdedness had no significant impact on attitude toward the product.

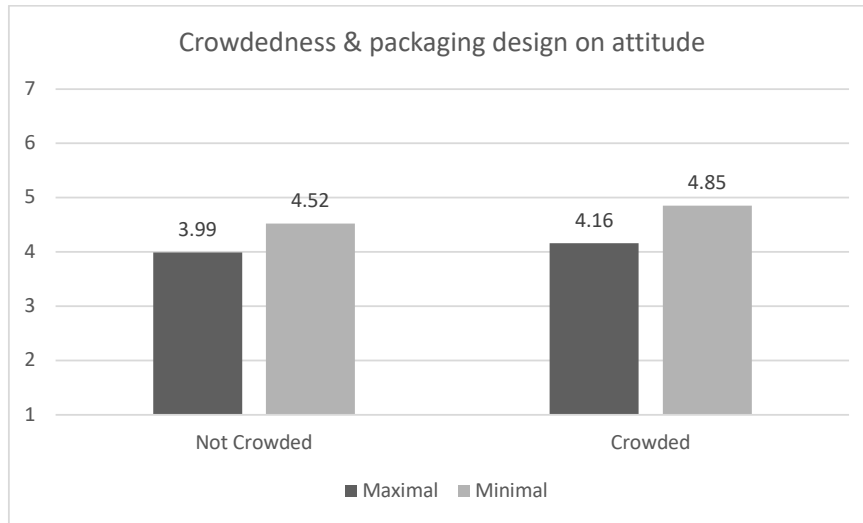


Figure 2: attitude toward the product

Purchase intention. Our purchase intention scores were subjected to a two-way ANOVA, with crowdedness and packaging design as factors. The findings revealed a significant effect of packaging design on purchase intention ($M_{\text{maximal}} = 3.5$ vs. $M_{\text{minimal}} = 4.2$, $F(1,186) = 9.769$, $p < .001$). Regardless of the level of crowding, individuals showed a stronger inclination to purchase the product packaged in minimalistic design compared to the product packaged in maximalist design. No significant effect of crowdedness on purchase intention was observed ($M_{\text{not crowded}} = 3.76$ vs. $M_{\text{crowded}} = 3.89$, $F(1,186) = .272$, $p = .602$). Importantly, the interaction between crowdedness and packaging design on participants' purchase intention did not reach significance ($F(1,186) = .274$, $p = .601$). To delve deeper, we explored whether packaging design influenced purchase intention in each crowded condition. A one-way ANOVA indicated that in the not crowded condition, packaging design yielded a marginally significant result ($M_{\text{maximal}} = 3.46$ vs $M_{\text{Minimal}} = 4.05$), $F(1,97) = 3.83$, $p < .069$). However, in the crowded conditions, packaging design showed a significant impact on purchase intention ($M_{\text{maximal}} = 3.46$ vs $M_{\text{minimal}} = 4.29$), $F(1,89) = 6.714$, $p < .011$). This means people who were in the crowded shelf condition had higher intention to buy products with minimal designed packaging than maximal designed packaging. Moreover, within each

packaging design condition, crowdedness did not significantly affect purchase intention, as evidenced by one-way ANOVAs.

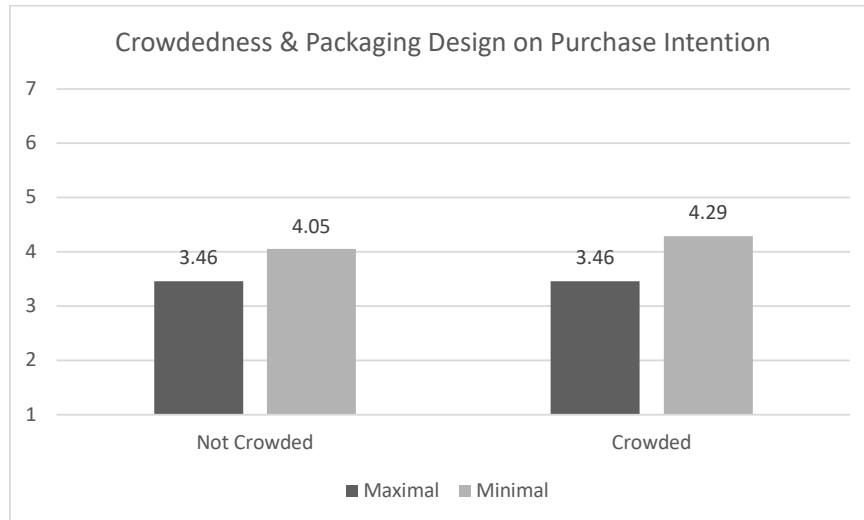


Figure 3: Purchase Intention

Perceived Control. Our perceived control scores underwent analysis via a two-way ANOVA, utilizing crowdedness as the independent variable and packaging design as a moderator. The findings revealed no significant effect of packaging design on perceived control ($M_{\text{maximal}} = 5.45$ vs. $M_{\text{minimal}} = 5.51$, $F(1,186) = .210$, $p < .647$), but a noteworthy effect of crowdedness on perceived control ($M_{\text{not crowded}} = 5.75$ vs. $M_{\text{crowded}} = 5.19$, $F(1,186) = 13.827$, $p = .001$). Crucially, the interaction between crowdedness and packaging design on participants' perceived control did not reach significance ($F(1,186) = 2.142$, $p = .145$). To further explore, we examined whether packaging design influenced perceived control in each crowdedness condition. A one-way ANOVA indicated that in the not crowded condition, packaging design yielded no significant results ($M_{\text{maximal}} = 5.83$ vs $M_{\text{minimal}} = 5.68$), $F(1,97) = .855$, $p < .357$). Similarly, in the crowded condition, packaging design did not significantly impact perceived control ($M_{\text{maximal}} = 5.05$ vs $M_{\text{minimal}} = 5.34$), $F(1,89) = 1.249$, $p < .267$). However, in the maximal packaging condition, crowdedness significantly affected perceived control ($M_{\text{crowded}} = 5.05$ vs $M_{\text{not crowded}} = 5.83$), $F(1,91) = 12.626$, $p < .001$). People in the

maximal designed packaging condition felt more control when the shelves were not crowded than when they were crowded. Conversely, in the minimal packaging condition, crowdedness did not yield significant effects on perceived control ($M_{\text{crowded}} = 5.34$ vs $M_{\text{not crowded}} = 5.68$), $F(1,95) = 2.704$, $p < .103$).

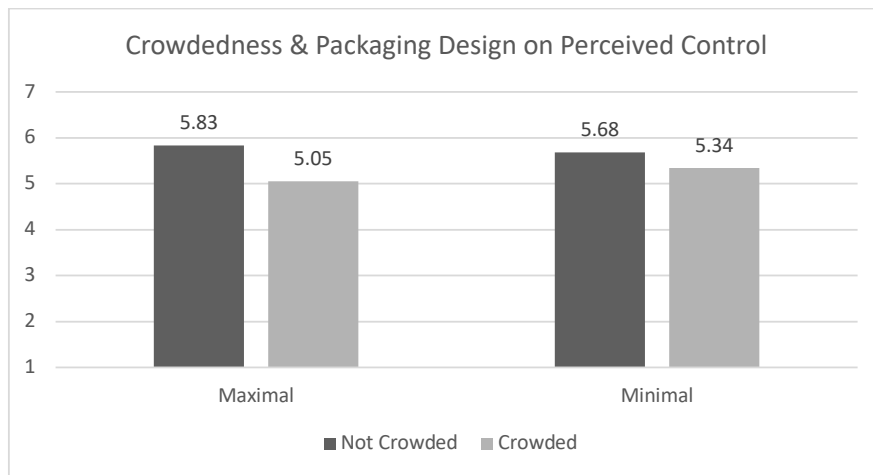


Figure 4: Perceived Control

Need For Order. Our need for order scores, derived from four items, were subjected to a two-way ANOVA, with crowdedness as the independent variable and packaging design as a moderator. The results revealed no significant effect of packaging design on the need for order ($M_{\text{maximal}} = 4.55$ vs. $M_{\text{minimal}} = 4.56$, $F(1,186) = .019$, $p < .891$), nor any significant effect of crowdedness on the need for order ($M_{\text{not crowded}} = 4.55$ vs. $M_{\text{crowded}} = 4.57$, $F(1,186) = .41$, $p = .840$). Notably, the interaction between crowdedness and packaging design on participants' need for order did not reach significance ($F(1,186) = 1.473$, $p = .226$). To delve further, we explored whether packaging design influenced the need for order in each crowded condition. A one-way ANOVA showed that in the not crowded condition, packaging design did not yield significant results on the need for order ($M_{\text{maximal}} = 4.61$ vs $M_{\text{minimal}} = 4.48$), $F(1,89) = .587$, $p < .445$). Similarly, in the crowded condition, packaging design had no significant impact on the need for order ($M_{\text{maximal}} = 4.48$ vs $M_{\text{minimal}} = 4.64$), $F(1,91) = .906$,

$p < .344$). Furthermore, within each packaging design condition, crowdedness did not significantly affect the need for order, as demonstrated by one-way ANOVAs.

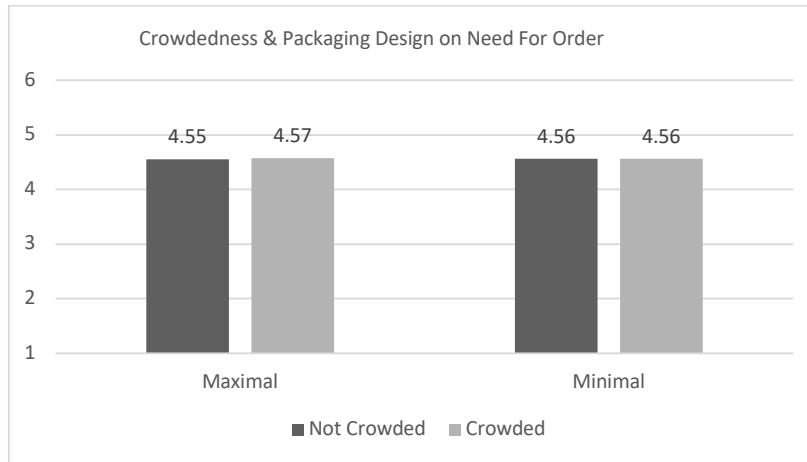


Figure 5: Need For Order

The mediating role of the need for order. We conducted a moderated mediation analysis (Hayes 2013; SPSS PROCESS model 7, bootstrapped with 5,000 samples) using crowdedness as the independent variable, packaging design as the moderator, need for order as a mediator, and attitude toward the product as the dependent variable. The index of moderated mediation was not significant (CI [-.0645, .1528]) indicating that the moderated mediation model was not significant. Further, results revealed no significant interaction of crowdedness and packaging design to predict the need for order ($\beta = .2981$, $t(186) = 1.213$, $p = .2263$). Results also revealed no significant effect of the need for order on attitude toward the product. We conducted the same analysis with purchase intention as the dependent variable, but no significant results were found either.

Need for cognitive closure. We conducted multiple moderation analyses to consider the impact of the different facets of the need for cognitive closure by considering each subscale. We did not investigate the role of close-mindedness any further as it showed low internal consistency. We also could not test avoidance of ambiguity and decisiveness as moderators because our crowdedness manipulation was impacting avoidance of ambiguity ($F(1,186) =$

5.604, $p < .019$) and decisiveness ($F(1,186) = 1.899$, $p < .170$). Thus, we conducted our moderation test with the full need for order and predictability subscales through a hierarchical regression. In step one we entered the main effects for packaging design, crowdedness, and the need for cognitive closure subscale (predictability or need for order); in step two we included the two-way interaction terms; and in step three we included the three-way interaction term. The results did not reveal any significant results of the subscales (need for order or predictability) on our main dependent variable.

4.6 Discussion

Our studies seem to suggest that overall, the minimal packaging elicited a more positive attitude towards the product. The minimal design package also generated more positive purchase intentions. We could not, however, provide support for our core prediction that crowdedness and packaging design interact to predict attitude and purchase intention towards the product. A follow-up analysis showed that in the crowded shelf condition, packaging design had a significant impact on both attitude and purchase intentions. This difference was only marginally significant in the not crowded condition. This directionality in the change of magnitude of the effect of minimally packaged design could indicate that with a stronger and cleaner manipulation (that would not interfere with the perception of how organized the shelves are); we might anticipate the main effect of minimal package design to replicate in the crowded condition but not in the not crowded condition. Additionally, results did not show a role of need for order in any indirect effect.

CHAPTER 5 GENERAL DISCUSSION

This research investigated how crowded shelves impact attitudes and purchase intention towards products with minimally vs. maximally designed product packaging. Our results showed a main effect of packaging design on the attitude and purchase intention toward the evaluated product. Specifically, consumers had a more positive attitude and higher purchase intention towards the minimally packaged product as opposed to the maximally packaged product. We did not find a significant interaction between crowdedness and packaging design. However, our analysis revealed that in crowded conditions, and consistent with the main effect observed, consumers have a more positive attitude and higher purchase intentions towards the minimally packaged product as opposed to the maximally packaged product. In the not crowded condition, consumers also held a positive attitude and high purchase intention for the minimally packaged product as opposed to the maximally packaged product, but that difference was marginally significant suggesting that with a stronger manipulation the effect may not hold when the shelves are not crowded.

One factor that may have contributed to our partial success could be due to the confounding factor of the level of organization impacting our manipulation. Participants perceived the not-crowded shelves as more organized than the crowded shelves. Even though we have tried to control for this factor in our scenario, our results indicated participants still perceived a difference in the shelves of both conditions in terms of level of organization. Another factor that could have impacted our results was the fact that the maximal packaging was not perceived as overwhelmingly maximal; it did not receive a very low average score on the manipulation check question asking participants whether the packaging is of minimal design ($M_{\text{minimal}} = 5.56$ vs. $M_{\text{maximal}} = 4.23$). We still limited the color palette of the maximal package design to one similar to the minimal one and the hue chosen is more in line with minimal design principles in general (light blue). Thus, the weaker packaging design

manipulation could have influenced our results. A stronger manipulation could have helped us tease apart the interaction we were expecting.

Crowdedness and packaging design did not produce a significant interaction on the need for order. Additionally, none of the need for cognitive closure subscales had an impact on the relationship between crowdedness, packaging design, and attitude toward the product. This is in contrast to Gong, Suo, and Peverelli's (2023) findings that social crowding has an impact on the need for order. This underlines that shelf-based crowding may not have the same impact as social crowding.

Shelf crowdedness manipulation may not have been strong enough. Past research has mostly focused on social crowding (Eroglu & Machleit, 1990; Gong, Suo, & Peverelli, 2023). Social crowding is a factor people frequently experience. They may therefore be more sensitive to it and that could translate into something that is easier to visualize and imagine. Shelf-based crowding may be more intangible and more difficult to imagine. Since our manipulation consisted of a scenario in which participants imagined crowded or not-crowded shelves, the task may have been harder than a case of social crowding. The potential weakness of this manipulation may be at the root of our failure to find meaningful differences between our crowded and not crowded condition.

5.1 Contributions

This research can contribute to the investigation of optimal shelf-based stock. Our research attempted to prove that crowded retail shelves lead consumers to more positive attitude toward minimally packaged products. Our results if they failed to show a significant difference between crowded conditions were consistent with (Gong, Suo, and Peverelli's, 2023). This framework therefore warrants future research. To the best of our knowledge, there is no research contributing to the knowledge of retail shelf-based inventory and consumers' subsequent attitudes toward minimalism.

Second, research on retail crowding focused on the number of people in retail stores (Eroglu & Machleit, 1990). However, no research until now looked at physical crowding caused by objects. This research is the first to investigate the novel impact factor of shelf-based crowding on shoppers' purchase intention toward evaluated products. Consequently, this study can help other researchers continue studying how products are arranged on shelves and how it affects consumers' purchase behavior.

Third, our research contributes to the literature on minimalism, specifically minimal design and minimal product packaging. Previous research regarded minimal design and simple packaging as a sign of trust, prestige, and quality (Pracejus, Olsen, & O'guinn, 2006; Ton, Smith, and Sevilla, 2023). Past studies have consistently found that people like products with simple packaging (for example, Chen et al., 2023) which is consistent with our observations. We looked into a new factor that might change this preference, which is how crowdedness on the shelves impacts consumers' attitudes toward products with minimally designed packaging. With some exceptions, existing research hasn't looked deeply into the factors that may impact consumers' preference towards products in minimal packaging. Our study aims to fill in this gap by investigating how the number of products on the shelves relates to whether shoppers choose to purchase products in minimally vs. maximally designed packaging.

This research also has a managerial contribution. Store managers can decide on where to display products with minimally designed packaging depending on store shelf crowdedness. As per our investigation, consumers may have a more positive attitude toward products with minimally designed packaging when they see crowded shelves. Thus, store managers can strategically place products with minimally designed packaging in areas of the store that are more crowded.

5.2 Limitation and direction for future research

We need to acknowledge certain limitations and indicate directions for future research. First, our utilization of a text-based scenario description left a significant portion of the manipulation to the imagination of participants. And as already mentioned imagining shelf-based crowding may be more challenging than imagining a socially crowded situation. Controlling for situational factors in a scenario reading situation left a lot of room for speculation by participants. An image-based manipulation would have accounted for many of the situational factors and limited imagination parameters. This could have been one of the largest factors contributing to the misalignment between our hypothesis and results.

Second, situational factors we attempted to control in our study were not possible to isolate based on our study design and manipulation. Participants' perception of shelf organization was impacted by the crowdedness manipulation. This could be a key factor in our results.

Third, our research did not take into consideration minimalism as a consumer value. Wilson & Bellezza's (2022) scale identifies if a consumer has adopted minimalism as a value. We could have used this measure to identify participants who could be categorized as minimalists. Comparing their study results with the results of the other participants could have given us a more robust result that could have been interpreted more effectively.

Future research can mimic our study in a real-world situation, taking consumers to shop in a retail store with two product shelves condition and seeing consumers' subsequent evaluation of product packaging may account for several factors that may have impacted our study and affected our outcome. This will also give external validity to our study and establish the novel shelf-based crowding factor.

Additionally, future research should consider shelves-based crowding in online shopping behavior. E-commerce is a growing medium, said to replace brick-and-mortar stores someday in the future (Rigby, 2011). Research conducted in the near future regarding

product search-based crowding, where the number of search results for products on a single page could also contribute toward the feeling of crowdedness in online shopping scenarios.

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APPENDIX A STUDY MATERIALS

Please read before proceeding.

Imagine you moved to a new apartment and you need to shop for new kitchen appliances.

Imagine that you head to a large store to look for these products. You walk down the aisles towards the small kitchen appliances section.

Crowded

On your way to that section, you walk through the toaster aisle. You see 7 different models on display. The shelves are relatively well organized. You notice that the shelves are crammed with products. The shelves are overstocked and there are no empty spaces.

Please take a few seconds to visualize the toaster shelves.

Not Crowded

On your way to that section, you walk through the toaster aisle. You see 7 different models on display. The shelves are relatively well organized. You notice that the shelves contain a reasonable number of products. The shelves are partially stocked, and there is some breathing room.

Please take a few seconds to visualize the toaster shelves.

After browsing the toaster section, you head towards the blenders section as you needed to buy a blender.

Next you see this blender

APPENDIX B STUDY PICTURES

1. Maximal designed packaging.



2. Minimal designed packaging.



APPENDIX C MEASUREMENT INSTRUMENTS

Q 1 and 2.

		How would you evaluate the blender?							
Attitude toward the product (Spears, 2004)	Unappealing	1	2	3	4	5	6	7	Appealing
	Bad	1	2	3	4	5	6	7	Good
	Unpleasant	1	2	3	4	5	6	7	Pleasant
	Unfavorable	1	2	3	4	5	6	7	Favorable
	Unlikeable	1	2	3	4	5	6	7	Likeable
		On the items below, please indicate what are your thoughts regarding purchasing the blender.							
Purchase intention toward the product (Spears, 2004)	I am never going to buy it	1	2	3	4	5	6	7	I am definitely going to buy it
	I Definitely do not intend to buy	1	2	3	4	5	6	7	I Definitely intend to buy
	I have very low purchase Interest	1	2	3	4	5	6	7	I have very high purchase Interest

Q3. Please indicate to what degree you agree with the following statements during your shopping in the store and in the aisle you visited.

- **Perceived control**

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

1. I would feel in control
2. I would have control over my surroundings
3. The current situation would feel out of my control
4. I would feel a loss of personal control

Q4. Please indicate to what degree you agree with the following statements during your shopping in the store and in the aisle you visited.

- **Need for order**

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

1. I find that establishing a consistent routine enables me to enjoy life more
2. My personal space is usually messy and disorganized
3. I prefer clear rules and order in life
4. I like to have a place for everything and everything in its place.

Q5. Manipulation Check for Crowdedness of shelves

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

1. The toaster shelf was crowded.

Q6. Manipulation Check for Packaging Manipulation

**Please indicate to what degree you agree with the following statements.
The Blender packaging you saw has:**

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

1. Minimal design.

Q7. Control

Please indicate your level of agreement on the following statements:

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

1. The shelves in the scenario you read are well-organized

Q8. Need for cognitive closure: predictability

Please indicate your level of agreement on the following statements:

Strongly disagree 1 2 3 4 5 6 Strongly agree

1. I like to have friends who are unpredictable
2. When dining out, I like to go to places where I have been before so that I know what to expect
3. I don't like to go into a situation without knowing what I can expect from it
4. I think it is fun to change my plans at the last moment
5. I enjoy the uncertainty of going into a new situation without knowing what might happen
6. I don't like to be with people who are capable of unexpected actions
7. I prefer to socialize with familiar friends because I know what to expect from them
8. I dislike unpredictable situations
9. Choose "moderately disagree"

Q9. Need for cognitive closure: decisiveness

Please indicate your level of agreement on the following statements:

Strongly disagree 1 2 3 4 5 6 Strongly agree

1. When I have made a decision, I feel relieved

2. When I am confronted with a problem, I'm dying to reach a solution very quickly
3. I would quickly become impatient and irritated if I would not find a solution to a problem immediately
4. I would rather make a decision quickly than sleep over it
5. Even if I get a lot of time to make a decision, I still feel compelled to decide quickly
6. I almost always feel hurried to reach a decision, even when there is no reason to do so

Q10. Need for cognitive closure: avoidance of ambiguity

Please indicate your level of agreement on the following statements:

Strongly disagree 1 2 3 4 5 6 Strongly agree

1. I don't like situations that are uncertain
2. I feel uncomfortable when I don't understand the reason why an event occurred in my life
3. When I am confused about an important issue, I feel very upset
4. In most social conflicts, I can easily see which side is right and which is wrong
5. I like to know what people are thinking all the time
6. I dislike it when a person's statement could mean many different things
7. It's annoying to listen to someone who cannot seem to make up his or her mind
8. I feel uncomfortable when someone's meaning or intention is unclear to me
9. I'd rather know bad news than stay in a state of uncertainty

Q11. Need for cognitive closure: closed mindedness

Please indicate your level of agreement on the following statements:

Strongly disagree 1 2 3 4 5 6 Strongly agree

1. Even after I've made up my mind about something, I am always eager to consider a different opinion
2. I dislike questions which could be answered in many different ways
3. I feel irritated when one person disagrees with what everyone else in a group believes
4. Choose "slightly agree"
5. When considering most conflict situations, I can usually see how both sides could be right
6. When thinking about a problem, I consider as many different opinions on the issue as possible
7. I prefer interacting with people whose opinions are very different from my own
8. I always see many possible solutions to problems I face
9. I do not usually consult many different opinions before forming my own view

Q12. Need for cognitive closure: need for order

Please indicate your level of agreement on the following statements:

Strongly disagree 1 2 3 4 5 6 Strongly agree

1. I find that a well-ordered life with regular hours suits my temperament

2. I hate to change my plans at the last minute
3. I believe that orderliness and organization are among the most important characteristics of a good student
4. I think that I would learn best in a class that lacks clearly stated objectives and requirements
5. I dislike the routine aspects of my work (studies)

Q13. From the list below, please choose your favorite fast-food restaurant.

This is an attention question, please choose “Pizza Hut”.

- Taco Bell
- McDonald’s
- Pizza Hut
- KFC
- Blue
- Domino’s Pizza
- Wendy’s
- A&W
- Subway
- Five Guys

Q14. What year were you born?

Q15. Gender:

I identify as:

1. Male
2. Female
3. Prefer not to say
4. Prefer to self-describe

Q16. Is English your first language?

1. No
2. Yes

Q17. Race.

Please select the ethnicity you identify with

1. Black
2. East Asian
3. Latino
4. Middle eastern
5. South Asian

6. Southeast Asian
7. White
8. Other

APPENDIX D EXPERIMENT DEBRIEFING STATEMENT

Thank you very much for participating in this study! Your cooperation, work, and enthusiasm are all greatly appreciated. Your participation in this research is completely voluntary. There is no penalty if you choose to withdraw your data. If you choose to withdraw your consent for the use of your data, we will directly remove your data from the database. Your compensation for this study will not be affected by your decision to withdraw. If you have any further questions or concerns or questions regarding this research, please feel free to contact Apratim Dhar (apratim.dhar@dal.ca).

In this study we aimed to explore the impact of crowded and not crowded product shelves on consumers preference and attitude towards minimally designed packaged products and maximally designed products. Previous research has indicated that a social crowding scenario makes consumers choose minimal products. We specifically chose a novel type of crowding. Crowding of physical shelves. Participants were asked to imagine shopping for kitchen appliances and were given to read either a dense crowded product shelf other participants read a not crowded product shelf. Furthermore, some participants saw a blender in minimal packaging, some in maximal. These are key factor in our study. Participants were asked to provide their purchase intention for a minimally packaged product, attitude towards the product, need for order in a shopping setting, perceived control, need for cognitive closure, manipulation checks and lastly some demographic information. By analyzing the data, we aim to get insights regarding how different level of product shelf crowdedness impact minimally designed packaged product selection and preference.

Our main hypothesis was that participants who read a crowded product shelf would have a favorable evaluation of minimally designed products. We anticipated that a crowded shelf would induce participants to have high purchase intention and high favorable attitude towards the minimally packaged product. This is because crowded shelves lead to a higher desire for consumers to be in control and minimalism in general helps achieve this goal.

The plan for this study has been reviewed by the Research Ethics Board at Dalhousie University. if you have questions about your rights or how research should be conducted, you can contact Research Ethics, Dalhousie University at (902) 494 – 3423, or email ethics@dal.ca and reference REB file # (2024-7062). If you are interested in learning the result of this study, please contact Apratim Dhar, we will share the overall result with you when it is available.

Use the button below to either confirm your consent for the use of your data or, if you wish, to withdraw your data.

- I confirm my consent and you can use my data
- I wish to withdraw my data