

BOUNDARIES OF PORTION SIZE EFFECT: PORTION SIZE EFFECT MEDIATED BY  
SCARCITY AND QUALITY PERCEPTION AND MODERATED BY FOOD TYPE  
PRODUCT

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Abstract

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This thesis examined boundaries of portion size effect mediated by scarcity and quality perception and moderated by food types. After the analysis of the previous literature on portion size manipulation and its effect on behavior and the overall amount of food intake in accordance to the portion size changes – large portion sizes lead to higher consumption rates and small to lower – this thesis suggests the effect of portion size might be attenuated if the food is framed as luxury and mediated by scarcity and quality perception. For the purpose to achieve the thesis set aim – examine whether food framed as luxury through scarcity will attenuate the aforementioned portion size effect – the experimental design was applied, as it allowed to manipulate the variables and examine the causes and effect of the relationships of the variables. The thesis research design consisted of the online questionnaire, containing four scenarios – two luxury food options (small and large portion size) and two regular food options (small and large portion size) - and additional questions, designed to collect further information for the analysis. The analysis of the collected data suggested, that there are significant relationships between portion size changes, food type and perception of both scarcity and quality, leading to conclusions, that if food is framed as luxury the portion size effect will be attenuated.

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**Introduction**

Nudges – various forms of priming, framing and other typically unnoticeable choice architecture methods designed to stimulate favourable decision making outcomes (Thaler and Sunstein, 2008) - have been analysed in different fields of theoretical and empirical studies, including political theory, education, legislation, safety, environment, management, advertising, human resources and health in order to explain its effects (Gigerenzer, 2015, Kusters, 2015, Arno, 2016, Durante, 2016, Choy, 2018, Cadario, 2018) as well as importance of application and influence on behaviour and decision making process (Thaler and Sunstein, 2008, Johnson, 2018). The most extensive research of nudge effects is done on manipulation of food portion sizes (Dubois, 2012, Schröder, 2013, Vermeer, 2014, Buckley, 2016). Previous literature on portion sizes have shown that depending on the size of the portion, whether small or large, the intake of the food varies accordingly – smaller sizes eventually encourages to consume less and larger portion sizes lead to higher food intake (Rolls, 2002). While this effect of portion size is one of the most established nudges, no previous research tried to disentangle how portion size effect changes if food is framed as luxury as well as mediated by perceived scarcity and quality. Indeed, some research point to the possibility that the portion scarcity – limited availability of food per plate – creates the illusion of quality and desirability of the food, leading to slower intake and higher satisfaction (Areni, 2015). Thus, current thesis proposes that framing food as luxury and mediated by perception of scarcity and quality might eliminate negative portion size effect and can possibly be used to encourage consumers eating healthier and consuming less. The aforementioned comprehensive research on portion sizes have taken into account various moderation factors, such as gender, preference, income and status (Ma, 2013), to test their effect on the perception and desire created by manipulation of portion sizes, yet it avoided the deeper consideration of food type, specifically

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luxury, which has a significant influence over consumers' decision making process towards food (White, 2013, Hill, 2016). Moreover, this thesis suggests, that luxury food type might attenuate the aforementioned portion size effect.

In addition, the literature on portion size effect also mostly focuses on the portion size itself, not on willingness and to less extend the actual consumption of the food, especially in accordance to food type (Johnson, 2015).

Therefore, the goal of this thesis is to examine the boundaries of portion size effect mediated by scarcity and quality perception and moderated by food type (luxury versus regular) on willingness to buy and intention to try luxury foods.

In order to accomplish the goal of the thesis, the following objectives are set:

1. To provide comprehensive literature review on the nudge, portion sizes, luxury consumption, perceived scarcity and quality, willingness to buy luxury foods.
2. To design and conduct experimental research.
3. Analyse acquired data to explore the effect of portion sizes changes mediated by perceived scarcity and quality and moderated by food type (luxury versus regular) effect on willingness to buy and intention to try luxury foods.
4. To evaluate research findings and provide recommendations and guidelines for the future research.

The research hypotheses is formulated as follows:

**H1:** Portion size decreases scarcity perception such that small portions are perceived as more scarce compared to large portions.

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**H2:** Portion size decreases quality perception such that small portions are perceived as of higher quality compared to large portions.

**H3:** Portion size effect on willingness to buy is moderated by type of product such that when product is framed as regular portion size effect is present but when product is framed as luxury portion size effect vanishes.

With the purpose to answer the thesis questions and achieve the set aim, experimental design will be applied, as it is typically used to examine the cause and effect relationships in behavioural science (Kirk, 2013). The experimental design also enables not only to measure but to manipulate variables (Haslam, 2008). Conditional process analysis will be performed in order to test the hypothesis and identify the relationships between the variables: independent variable of the research – portion size, moderating factor – food type (luxury versus regular), mediators – perceived scarcity and quality, dependent variables – willingness to buy and intention to try luxury foods.

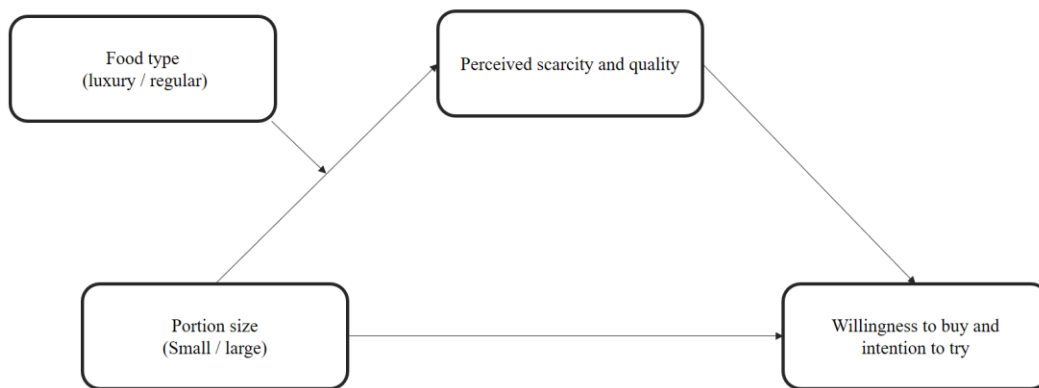
For data collection and analysis the PROCESS macro (Hayes, 2012), Model 1 and 7 procedures will be used to observe and analyze the effect of portion sizes changes mediated by perception of scarcity and quality and moderated food type (luxury versus regular) on willingness to buy and intention to try luxury foods. Afterwards, the final conclusion will be provided to determine if the change in the portion size eliminates the effect of scarcity leading to lower willingness to buy luxury foods.

The first step of the thesis sequence is the literature review and current state of knowledge presentation. Secondly, the experimental research will be carried out to collect the data on observe the effect of portion sizes changes mediated by perception of scarcity and quality and moderated

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food type (luxury versus regular) on willingness to buy and intention to try luxury foods. Afterwards, the analysis of the collected data will be carried out. Finally, the conclusions, based on the experimental research results as well as suggestions for future research will be delivered.

In order to illustrate the main idea of the research, a conceptual model was prepared.



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## **Literature Review**

The literature review section is dedicated to the overview of the main concepts of this research, starting with the definition of the nudge and its use in previous studies, especially on one of the most established nudges - the portion size effect. Then the definition of the luxury food consumption is provided as well as an in-depth explanation of the concepts of perception of scarcity and quality as well as their influence on decision making process and the overall effect on perception of luxury products, particularly food. Finally, the explanation of the willingness to buy is provided. The overall aim of the literature review is to establish the theoretical basis for the implementation and analysis part of this research.

### **Definition of nudge concept**

The first appearance of the term nudge in the scientific literature can be dated back to the end of 20<sup>th</sup> articles on cybernetics, there it was described as micro actions made towards a specific audience with intention to have an effect on it (Wilk, 1999). Yet, a broader and the most recognized definition of the nudge concept was presented by Richard Thaler and Cass Sunstein in their international best seller "Nudge: Improving decisions about Health, Wealth, and Happiness". In their book, Thaler and Sunstein define nudge as various forms of priming, framing and over similar actions and practices, including defaults, that are designed to stimulate favorable decision making outcomes using libertarian paternalism approach – without limiting or restraining any other options or choices (Thaler & Sunstein, 2008, Gigerenzer, 2015), and therefore leading to the higher success rate (Benartzi, 2017). The authors further elaborate on the nudging process itself, calling the aforementioned various actions and practices of priming and framing, that are emphasized to be

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typically unnoticeable and having effect on decision making behavior, a choice architecture (Thaler & Sunstein, 2008, Thaler, Sunstein & Balz, 2013).

A more in-depth definition of what could be considered a choice architecture suggests there are nine choice architecture intervention types (Table 1.), that could be further grouped into two main classes – those amending properties of objects that are considered for a choice, and those amending the placement of the object. (Hollands et al., 2013).

Primarily alter properties of the objects or stimuli	<u>Ambience</u> Alter aesthetic or atmospheric aspects of the surrounding environment
	<u>Functional design</u> Design or adapt equipment or function of the environment
	<u>Labelling</u> Apply labelling or endorsement information to product or at point-of-choice
	<u>Sizing</u> Change size or quantity of the product
Primarily alter placement of objects or stimuli	<u>Availability</u> Add behavioral options within a given micro-environment
	<u>Proximity</u> Make behavioral options easier (or harder) to engage with, requiring reduced (or increased) effort
Alter both properties and placement of objects or stimuli	<u>Priming</u> Place incidental cues in the environment to influence a non-conscious behavioral response
	<u>Prompting</u> Use non-personalized information to promote or raise awareness of a behavior

Table 1. Types of choice architecture interventions (Hollands et al., 2013)

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Overall, for its simplicity of application – typically low cost, easy to implement methods - the nudge concept has been used and researched in various fields including political theory, education, legislation, safety, environment, management, advertising, human resources and health (Gigerenzer, 2015, Kusters, 2015, Arno, 2016, Durante, 2016, Choy, 2018, Cadario, 2018).

The lasting effect of the use of nudge has been also analysed in various fields of theoretical and empirical studies and have shown that nudges can have a long-term effect (Gill, 2018). At the same time, the research on nudge effect take under consideration the lack of knowledge of prior actions taken before nudging effect on decision makers behaviour as well as parallel effect of other aspects, including the decision makers capacity to make a well informed decision (Hertwig, 2017).

### **Definition of portion size effect**

Manipulations of portion size – quantity of food per portion - continues to be the most extensively researched nudge effect due to the overall perceived effectiveness to create desired outcomes as well as to tackle growing demand for inexpensive and efficient methods intended to deal with health related issues, like diabetes, obesity and others (Dubois, 2012, Schröder, 2013, Rozin, 2013, Vermeer, 2014, Buckley, 2016).

The aforementioned interest in prevention and treatment of health problems through nudging portion sizes is closely related to current devastating portion size trends - research on a portion size have shown, that over the past 50 years the average size of food portion has grown, leading to changes in behavior and the overall greater consumption of food (Vermeeren, 2010). Furthermore, because of the enlargement of the portion size a portion distortion – a phenomenon that occurred due to the growth of the portion sizes and the norms associate with regular or standard portion sizing, gradually shifting the perception of normal portion sizing to the larger side - have occurred

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(Vermeen, 2010, Vermeer, 2014), encouraging higher consumption when presented with large portion. Consumption of large portion sizes have been proven to be the cause of different health related issues, including drastic BMI growth and other aforementioned health concerns (Rolls, Morris, & Roe, 2002; Diliberti et al., 2004). As portion size manipulations is the basis for majority of interventions, intended to create long lasting positive effect on health related choices as well as prevention and treatment of health issues (Vermeen, 2010), the interest in the portion size manipulation and effectiveness encouraged array of research in the topic.

### **Previous research on portion size manipulation**

Previous literature on portion size effect has included a wide variety of aspects, like age, gender, status, energy intake, peer influence and to some extent food type, as well as manipulations regarding perceived portion size through package sizing (Ma, 2013) and others that might be considered as having an effect on consumer behavior and overall consumption of food per portion.

### **Portion size manipulation: plate size**

Portion size manipulations based on plate have been used to determine the effect of portion as well as plate size on behavior leading to consumption of the food. Majority of portion size manipulations through place size can be grouped into two main categories - manipulations of only plate size and shape - changes in plate diameter, rim, deepness (Akyol, 2018) - and the manipulations of both the volume of food and plate size (Akyol, 2018). Based on previous research findings, in contrary to the first category, the second category that included manipulation on food volume has been proven to have a significant effect on the overall consumption of the food (Robinson, 2014). Moreover, the same studies have also shown, that with the growth of the portion sizes - from small to large - the consumption intentions have increased by more than 30 %

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(Zlatevska, 2014). These findings lead to the conclusion, that portion size manipulations are the main aspect that affects the behaviour towards food consumption.

### **Portion size manipulation: unit size**

Similarly to previous research category, the literature on portion and unit - singular portion presented for consumption - focuses on portion size manipulation through visual perception of food, particularly of individual portion size for consumption. (Rollo, 2017). The research on portion and unit size suggest, that visual presentation of one unit - packaging as well as the size of it - has the additional effect on perception of portion size (Rollo, 2017). However, the consumption of the food is mostly affected by the food itself (Rollo, 2017). In addition, the visual presentation has a tendency to have a short-term effect, therefore once more the food itself as well as the portion size perception have a more significant effect on the overall consumption in comparison to the affect achieved through packaging (Rollo, 2017).

### **Portion size manipulation: Self-served versus consumed**

Portion size manipulations on self-served portions and actual consumption of the food have shown correlation between portion size and serving style - vast majority of previous research concluded that greater self-served portion sizes lead to the higher levels of food consumption (Koh, 2009, Robinson, 2014, Stephen, 2016). Yet, the aforementioned effect might vanish if the aspect of self-serving is taken out of the equation (Robinson, 2015).

### **Portion size manipulation: Food type**

Another well-established area of the portion size research focuses on the different possible effects of particular food types on portion manipulations (Kerameas, 2015). A vast majority of these studies examined the food products that could be predominantly summed-up into one group -

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regular, mostly daily use or ordinary products (Livingstone, 2014). The research on various categories of foods – snacks as well as regular products like cookies and rice - have shown similar results to other portion size manipulations - the growth of the portion size leads to higher consumption rates of food (Stroebele, 2009, Livingstone, 2014).

### **Portion size manipulation: Gender and age**

A few researches on portion size manipulations have actively taken into account the age and gender as dependent variables for further studies of the portion size effect. The findings on gender and portion size suggest, that both females and males are affected by the portion size manipulations - larger portion sizes lead to higher consumption rates - but at the same time portion size preferences and overall consumption might be more or less affected by their lifestyles and interest in health related aspects (Zlatevska, 2014). The research literature on age and portion size suggest similar conclusions for majority of age groups, except young children (Fisher, 2007, Zlatevska, 2014, Livingstone, 2014). The main reason why children are to less extent affected by the portion size manipulations – the lack of self-awareness at the early years (Livingstone, 2014).

### **Portion size manipulation: perception of energy intake**

In comparison to other portion size effect researches, the portion size manipulation on energy intake particularly focuses on the effect of portion size reduction (Haynes, 2018). The findings of the research on energy intake and portion size changes suggest, that smaller portion sizes eventually lead to lower food consumption (Rolls, 2006). Furthermore, the research has proven that overtime, the reduced portion sizes do not lead to the need of overcompensation (Rolls, 2006), but in some cases only in the short-term period (French, 2014).

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## **Portion size manipulation: peer influence**

The research on portion size manipulations and peer influence focuses on the area of food consumption while eating not alone (Hermans, 2012), as in majority of situations, people face social interaction in situations then the food is being consumed. Besides confirming the significance of the social interaction during food consumption, in unison to previously aforementioned researches, the literature on portion size effect on consumption of food in social surroundings likewise establishes the link between the portion size and the consumption rate - larger portions lead to higher food intake, and the opposite for the smaller portions (Rolls, 2002).

## **Small versus large portion size**

One of the main establishment of the previous research literature on portion sizes - portion sizing has a significant effect on the overall consumption of the food – small portion sizes lead to lower food intake and larger sizes encourage to consume more – and over time the effect strengthens (Rolls, 2002).

To illustrate the overall effect of the portion size itself, Herman et al. (2015) and English et al. (2015) suggested 7 most common explanations of the portion size effect, provided below (Steenhuis, 2017):

*The Appropriateness mechanism* – mental association of portion sizing with well-established norms, leading to consumption of portion sizes in accordance to the reference points based on norms (Marchiori, 2014).

*The 'unit bias' mechanism* – portion size per serving. Similarly to appropriateness mechanism, it carries deep associations with that could be considered acceptable size, yet at the same time could be influenced by the presentation of the food - same portion size units divided into smaller pieces have tendency to be perceived as less appropriate for consumption (Kerameas, 2015).

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*The 'previous experience/expectation' mechanism* – portion size adjustment to previous experience of fullness and the feeling of savor, which has a significant impact on the selection of portion sizes (Brunstrom, 2015).

*The 'visual cue' mechanism* – portion size association with presentation – from packaging and plate size to the size of the plate rim width (Steenhuis, 2017).

*The bite size mechanism* – increased of speed of consumption of large portion size meal (Steenhuis, 2017).

*Mindless eating*- larger portion sizes encourages mindless eating as salvation and experience of food are not stimulated enough (Steenhuis, 2017)

*Awareness and estimation bias* – misconception and unawareness of that is actually considered a regular portion size. This mechanism is mainly influenced by perception of the food quality and BMI. (Steenhuis, 2017).

### **Aspects influencing portion size depiction**

Previous researched have concluded, that in respective of there the food is being consumed, smaller sizes encourage to adjust the speed and experience of salvation, leading to consumption of less food and quicker achievement of fullness (Areni, 2015, Rolls, 2002).

Therefore, besides portion size itself, other, food related aspects should be taken under consideration, including aforementioned savoring, which has been proven to have the tremendous role while eating food from smaller portions (Bryant, 2007). The aforementioned savoring feeling could be grouped in to four main categories - *temporal awareness*, *sensory-perceptual sharpening*, *absorption*, and *comparing*, with temporal awareness - understanding that there are limitations whether time or amount of food on consumption - being the main category, influencing higher rates of salvation (Bryant, 2007).

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Besides the savoring, additional aspects that must be taken under consideration while acknowledging the effect of portion sizes on decision making process – sensory pleasure or taste, smell, texture and visual presentation of the food (Cornil, 2016). Research have shown, that smaller portions typically increases food savoring and leads to higher overall satisfaction of the eating experience, as more attention is being given to taste, smell as well as other aforementioned aspects. Furthermore, smaller portions sizes occasionally lead to slower intake speed, leading to quicker satisfaction and the feeling of fullness (Bryant, 2007, Galak, 2013).

### **Limitations of previous research on portion sizes**

Previous literature on portion size effect has included a wide variety of aspects such as gender, age, peer influence (Ma, 2013) for the analysis of the portion size manipulation effect on consumer behavior and overall consumption of food per portion. Yet, the research is typically focused on portion size itself (Johnson, 2015), wherefore the effect of additional mediators and moderators, including aforementioned aspects as well other influential ones like type of food, might be overseen, leading to gaps in literature. One of examples of this inequity - the aforementioned sensory pleasure is considered to be a major aspect for the consumption of the food in the effect of portion size changes, yet its effect on the overall consumption has not been analyzed to the full extension as a focus is given on the portion size (Raghunathan, 2006). Furthermore as a majority of research on portion sizes is mainly focused on the aforementioned portion size itself, there is a scarcity of knowledge, how portion size manipulation affect the overall consumption as well as the willingness to buy particular food products, previously analyzed in the research (Johnson, 2015).

Due to the extensive focus on the portion size itself, the research literature is absent of consistent systematic findings, suggesting that besides well-established portion size affect - larger portions

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lead to higher consumption rates, smaller - to lower - there are inconsistencies in conclusions that could enable to determine the most significant aspects affecting not only portion size manipulation but at the same time measure willingness to buy the researched product.

At the same time, the research on portion size effect that include experimental designs indicate, that testing the actual portion size manipulations and their effect on choices are limited, as the participants may become too aware of being watched and therefore start acting in a different manner in accordance to that might be perceived as a normal behavior (Areni, 2015). Besides the aforementioned possible awareness of the participants that might drastically influence the results of the research, the studies on the subject lack consistency in the use of visual presentation of the food - researchers use images in accordance to their own preferences, leading to a variety of examples that cannot be used for further research (Zlatevska, 2014).

### **Definition of luxury consumption**

In the research literature on luxury product consumption luxury goods are usually defined as products having exclusive and unique aspects that distinguishes them from so called regular - ordinary and in most cases of daily use - products (Veen, 2003). Furthermore, the luxury goods are associated with higher perceived quality of the products as well as higher price, that further determine luxury good from the aforementioned regular ones (Veen, 2003).

A vast majority of the research literature on consumption of luxury products suggest that product characteristics that help to define whether the product could be considered as luxury are essential for the overall perception and desire of the luxury good, yet are not the main drivers of the need for luxury consumption. (Veen, 2003). As luxury products are deeply associated with conspicuous consumption - the desire to consume social status enhancing products (Veen, 2003), the aspiration for the consumption of luxury goods is mostly directed by the need to show of status, impress

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others and showcase individuals ability to obtain products, that are desired by others, but not within reach for majority of consumers (Veen, 2003). For this reason, vast majority of research on the subject suggest that there are two main categories of needs to consume luxury goods - functional and psychological (Arghavan, 2000, Wiedmann, 2007), with the latter being of higher significance for the consumer. Two illustrate the main aspects of the luxury goods leading to desire of consumption and the overall purchase intention, the table of the most frequent aspects (Ingsa, 2017) covering both functional and psychological are presented below in the Table 2.

Luxury product characteristics (functional aspects)
Price Quality Rareness/scarcity Uniqueness
Luxury value perceptions (psychological aspects)
Social value Personal value Price-quality value

Table 2. Functional and psychological aspects of luxury products leading to desire to consume and purchase intention

Functional aspects

*Price.* Starting with the price, the luxury goods are typically seen as of higher price as it carries the associations with status and ability to obtain the product that can not be obtained easily by everyone due to the price tag (Ingsa, 2017). Moreover, the price of the luxury product significantly correlates with the perception of quality (Kapferer, 2016, Ingsa, 2017), therefore luxury goods are seen as being of higher price also for the quality of higher standards.

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*Quality.* Luxury goods are deeply associated with the perception of the previously aforementioned quality (Gentry, 2001, Wiedmann, 2007), that encourages the consumption and the overall interest in purchase of the luxury products. In the research literature, quality is shown to have an association with scarcity or limited availability as it encourages to perceive the product as having more superior characteristics (Dubois, 2005, Wiedmann, 2007).

*Rareness.* One of the most aspects that encourage the consumption and interest in the purchase of luxury goods is the aspect of scarcity -perceived rareness of the good (Ingsa, 2017).

*Uniqueness.* As other previously mentioned aspects, the uniqueness of the luxury product or in other words - exclusivity - encourages higher positive perception of the product and therefore encourages desire to consume and obtain luxury goods. (Ingsa, 2017).

All of the aforementioned functional features are interconnected and altogether encourage higher perception of the luxury products as well as enhance the differentiation from the regular products and therefore encourage the need for consumption and interest in purchase of luxury goods.

### Psychological aspects

As presented in the table.2, the aforementioned aspects of luxury value perception - social value, personal value and price-quality value - are the main psychological aspects that deeply affect the perception of the luxury product and therefore influence the desire to consume and obtain the product (Ingsa, 2017).

*Social value.* As previous research suggest luxury goods consumption is more associated with the desire to obtain and showcase status to others (Ingsa, 2017) and can be easily encouraged by the peer influence, social trends and indulgence of luxury good in social scenarios (Chevalier, 2012, Ingsa, 2017). Therefore, social value obtained through luxury goods consumption plays a significant role on consumption of luxury goods and have led to various research on the topic

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throughout the years. The most significant psychological aspects' - social value - influence on luxury consumption was first analyzed by the Bourne (1957), who concluded the previously mentioned social consumption and peer influence as the aspects leading to higher desire of luxury goods. Further research on the social values and luxury goods highlighted the difference of consumption of luxury goods, confirming the assumption that luxury goods are more consumed in public than it could be seen by others than by oneself (Vigneron, 2004) as well as lead to a higher positive perception of the luxury product while consumed in social scenarios (Wiedmann, 2007).

### **Definition of luxury food**

The literature on luxury consumption suggest that like any other luxury good, luxury food carries similar characteristics that define the product as a luxury, yet there is substantial lack of research done on the desire to consume and purchase luxury foods (Hartmann, 2016). Therefore, the term luxury food is used to describe food with various distinctive characteristics including price, quality and exclusivity created through limited accessibility and presentation (Wiedmann, 2009). All of the aforementioned characteristics can all be summarized to two main predominant features - the higher quality and scarcity (Wiedmann, 2009) that will be explained later in the paragraph below. There are no limits per se of that categories of products can be considered as luxury foods as it can include traditional examples like saffron and caviar as well as form the first glance ordinary products such chocolate, various condiments and even water, as long as the products have previously mentioned attributes of the luxury product (Buchner, 2012) and satisfies the needs associated with luxury product consumption, including status (Veen, 2003).

Overall, due to its differentiation from ordinary, or in other worlds, regular products, luxury food, as any other luxury products, are considered as part of the conspicuous consumption (Bagwell,

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1996) evoking higher mental association with exclusivity as oppose to the aforementioned regular food (Berger, 2010).

Previous scarce research literature on luxury food consumption has established that the desire and the actual consumption of luxury foods can be triggered by numerous aspects of customer's motives and perceptions, including social, functional and financial (Wiedmann, 2000). The aforementioned motives and perceptions typically include desire for status as well as the need to differentiate amongst others (Balachander, 2009, Dubois, 2012, Roy, 2015), interest in self-esteem embossment and in some cases desire to attract romantic partner (Griskevicius, 2007, Berger 2007, Janssens, 2011). All of these stimulus lead to a higher interest in unique and exclusive products that could be considered as a luxury (Balachander, 2009, Dubois, 2012, Roy, 2015). At the same time, the consumption of luxury foods lead to a quicker perceived feeling of fullness (Bryant, 2007) as well as higher purchase intention due to perception of value associated with the aspect of luxury (Hennigs, 2009).

Recent literature on desire of luxury consumption suggest the growing interest to associate luxury consumption with trending social topics, such as ethical consumption and healthy eating (Goy, 2015) as well as desire for authenticity (Hartmann, 2016).

### **Luxury food association with scarcity**

As mentioned before, one of the main predominant features of luxury foods, that distinguish it from regular food products, is scarcity (Wiedmann, 2009). Previous research on luxury food consumption has indicated, that the higher the perception of scarcity is associated with the luxury food product, the higher the desire of the consumption is (Youngseon, 2018). At the same time, the aforementioned interest in consumption of scarce luxury food products could be enhanced by the overall desire of exclusivity – strong desire leading to higher desire of consumption, as opposed

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to weak desire for exclusivity (Youngseon, 2018). Yet, despite the establishment of the relation between the exclusivity and scarcity effect with desire of luxury consumption, the literature on the aspect lacks research on exclusive, luxury food products effect on scarcity. (Youngseon, 2018).

### **Definition of scarcity**

The concept of scarcity – limited availability of resource due to lack of time or limitations of quantity – is known to have a positive effect on the perception of value (Cialdini, 2008). Previous research has proven that scarcity creates the impression of perceived higher value, which leads to a significant increase of desire towards the resource and the overall higher willingness to buy, especially the products that are considered a luxury (Lee & Seidle, 2012). Overall, scarcity seems to have a positive effect on desire to obtain scarce products of various categories (Cialdini, 2008), yet the effect of scarce demand is proven to be a stronger stimulus for desire in comparison of scarcity evoked by time limitations, leading to a stronger scarce product association with exclusiveness (Wiedmann, 2009).

The overall effectiveness of the scarcity can be affected by other aspects, including status, self-esteem and social needs in general (Gierl, 2008), that have a significant impact on decision-making process. According to the heuristic approach, the negative aspects like low income, poverty and experience of having a lack of resources, whether financial or physical, lead to increased desirability and attraction of products with perceived higher value (Mullainathan and Sharif, 2013). Furthermore, the interest in higher perceived value resources can also be stimulated by the longing for status in the presence of aforementioned negative aspects (Hill, 2016). The positive aspects like socioeconomic stability, has the potential to increase the desire towards the higher perceived product, but for the reasons related to ones the well-being, including benefits for health

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(Buckley, 2012). For this reason, previous research literature have used scarcity as an effective choice architecture method to stimulate the desire of the favourable choice, especially the interest in the healthier food options (Johnson, 2012). At the same time, scarcity has been used as a successful tool in marketing research as it has been proven to lead to a higher willingness to pay due to a mental association with perceived exclusiveness and quality (Lee & Seidle, 2012, Mullainathan, 2013).

### **Definition of perceived quality**

The perception of food quality is determined by various food attributes from its overall appearance, taste and presentation to standards that are commonly known and used to identify the production, manufacturing and overall product features that could be considered as well as associated with higher quality (Youngseon, 2018). The research on quality perception of the food suggest to group these attributes into two main categories for the evaluation of the food quality - internal or product features - the composition of the food, overall aesthetics as well as presentation and external or aspects affecting the product quality - distribution and production as well as certifications (Mascarello, 2015, Sadilek, 2019). At the same time perception of quality has been shown to have strong associations with scarcity and luxury consumption. (Youngseon, 2018).

For further in detail analysis of perception of the quality and the attributes affecting it, Grunert et al. (1996) created a “Total food quality model”, that provides visual cues of the perception of quality through the eyes of the consumer as well as indicate ways to encourage higher willingness to buy the product once it is considered to be of higher quality. The model also deepened the knowledge on consumer perception of quality food, suggesting how expectations and experience lead to higher perception of the food quality as well as broadened definition of food types of

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perception of quality based on the expectations and experience of the customer (Grunert et al., 1996). The aforementioned food types are listed below:

*Product-oriented quality* or physical traits associated the product, including presentation and taste. According to this type, variety of foods can be considered as of higher value as long as it has internal features associated with quality (Grunert et al., 1996).

*Process-oriented* food type is oriented into “clean” and environmentally friendly production and manufacturing as well as the use of healthy products and methods for production. This type typically include information on the process of the production of the product to create and emphasize the feeling of quality of the product (Grunert et al., 1996).

*Quality control* food type has similarities with the previous process-oriented type, yet it is more based on the restrictions and limitations put on the production process of the food and follows well-established rules and standards that define that could be considered as of high quality (Grunert et al., 1996).

*User-oriented* food type is the most abstract type, as it is solely based on the expectations and experience of the customer, leading to product association with quality even then the attributes or the aspects of the product might not be overall considered to be as of high quality as it being perceived by the consumer. (Grunert et al., 1996)

The latter food type has been used to explain how perception of quality affects the consumption and willingness to buy products based purely on the customers’ point of view. One of the most well-established user-oriented food type is interaction of perception of quality and brand name (Sadilek, 2019). The literature on perception of food quality suggests that the irrational association of quality and brand name, leads to higher interest to purchase and consume the products due to belief that the brand only creates high quality goods (Sadilek, 2019). Same literature suggested

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that the link between quality and brand name can be created with both well-known as well as completely made up brands as long as consumer is convinced the product carries only products of higher quality (Hoogland, 2007). Similar links can be found between perception of quality and the need for feeling of safety as the perception of quality and its association of safety is based on the consumers' level of need to satisfy the aforementioned need (Van Rijswijk, 2008).

Overall, the literature on perception of quality suggests that there are multiple attributes, internal and external, that can influence the perception of quality of the food, yet the customer's point of view seems to have a significant effect perception as well as consumption of quality foods.

### **Willingness to buy**

Consumers' willingness to buy - or purchase intention - luxury foods is typically driven by the perceived value of the luxury food characteristics like price, quality, aesthetics or presentation and the overall perceived satisfaction of the products (Buchner, 2012).

At the same time, willingness to buy can be affected by the other aspects like scarcity-enhanced perceived value and the customers' behavioural attributes, including personal, financial, social (Youngseon, 2018), as well as desire of social status and self-expression (Veeraraghavan, 2012). For this reason, the willingness to buy can be affected by the product type, specifically luxury products, leading to higher purchase intention of the product. Besides aforementioned attributes, the research literature on willingness to buy suggest that the perception of quality is one of the main aspects of the product that affects willingness to buy - the higher the perception of the products' quality, the higher willingness to buy is predicted (Brunso, 2002). Furthermore the perception of quality can lead to willingness to buy products of a higher price, especially then there are no other information provided about the product expect the indication of perceived quality (Zeithaml, 1988, Brunso, 2002). Besides quality perception, the recent literature on willingness to

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buy indicates other aspects, including attitude towards health, environmental issues and ethical production as influential on willingness to buy products, including food, of a higher price (Brunso, 2002).

## **Conclusions of previous research findings**

The literature on portion size manipulation have established a significant effect between the size of the product and its consumption, stating that smaller portion sizes lead to lower intake and larger to higher rates of food consumption. (Rolls, 2002) The effect has been analyzed with various moderators, including power, status, peer influence, stress (Ma, 2013). Yet the search on portion size changes lacks the knowledge on other influential moderator –food type, particularly luxury food. The food type has been included in the previous portion size manipulation research, but mostly focused on the regular products as the studies were more on portion size manipulation itself and less on the willingness to buy and consume the products (Johnson, 2015).

As the research on portion sizing mostly focuses on portion size itself, it leads to the aforementioned gaps in research as well as lack of structure in literature on moderation and mediation effect on willingness to buy and consume products. These previously mentioned moderations and mediations include luxury consumption (MO) and perception of scarcity (ME) as well as quality (ME) that have been shown to have a significant effect on overall willingness to buy products that the research on portion size mostly lacks of.

For this reason, the main goal of this thesis to examine the portion size changes mediated by perceived scarcity and quality and mediated by food type, to establish the effect on willingness to buy and intention to try luxury food. Furthermore, the link between portion size changes and the

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perception of scarcity and quality as well as the food type will be determined to gain a better knowledge for the future analysis on the subject.

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## **Research Methodology**

The following chapter of the research paper provides the information on the theoretical framework of the study as well as the hypotheses for the empirical testing. Furthermore, each dependent and independent variables of the research are indicated and discussed. Finally, the justification of the design of the research is provided with the sample of participants and the instruments for collecting data.

### **Theoretical Framework**

As it has been stated in the previous chapter, the aim of this research is to examine how portion size differences mediated by perception of scarcity and quality as well as moderated by food type (luxury versus regular) affect the willingness to buy and the intention to try luxury foods.

As a product category chocolate is chosen because it's a fast-moving consumer good, that is well established in the marketing scene and widely consumed as well as purchased and at the same time has a variety of options – chocolate can be luxurious or regular.

Perception of scarcity and quality were included in the model as a mediators because portion size changes perception of scarcity as well as quality: small portions are seen as less scarce compared to large portions, same goes for the perception of the quality – smaller portions have a stronger association with perception of quality. However this mediation of scarcity as well as quality effect may be moderated by type of the product – luxury versus regular. Finally, the portion size effect on willingness to buy is analyzed in overall moderated mediation Process macro (Hayes, 2012) model: mediated by perception of scarcity and quality and moderated by product type (luxury

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versus regular). In order to illustrate the main idea of the research, a conceptual model is presented below in Table 3.

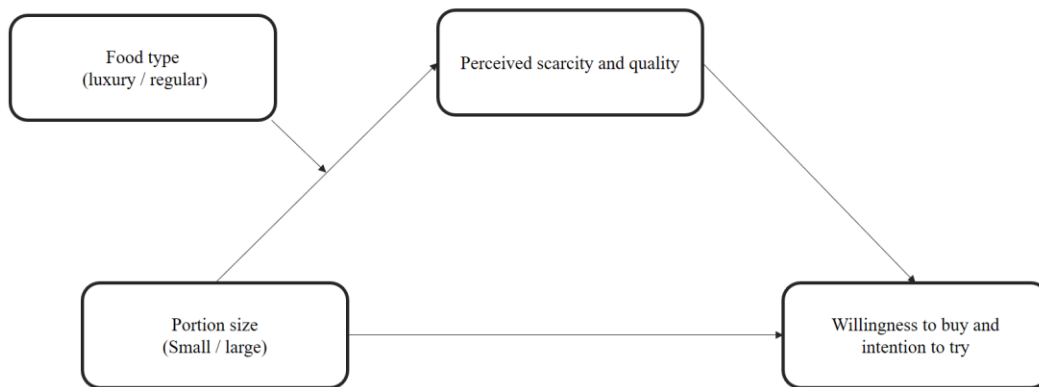


Table 3. Conceptual model of the research

Based on the presented conceptual model of the research, the following hypotheses are formulated as follows:

**H1:** Portion size decreases scarcity perception such that small portions are perceived as more scarce compared to large portions.

**H2:** Portion size decreases quality perception such that small portions are perceived as higher quality compared to large portions.

**H3:** Portion size effect on willingness to buy is moderated by type of product such that when product is framed as regular portion size effect is present but when product is framed as luxury portion size effect vanishes.

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The presented hypotheses are based on the presumption, that in accordance to previous research findings – smaller portion size lead to lower rate of consumption and large to higher – as well as taking under consideration the conclusions on portion size moderations by such as peer influence, status and desire for power, the portion size effect will be attenuated such that people will tend to eat more from large portions compared to small but the effect vanishes for luxury products.

### **Independent and Dependent Variables**

For the purpose of achieving the indicated the aforementioned goals the following variables were used in the research: independent variable– portion size, moderator – luxury versus non-luxury food type, mediators – perception of scarcity and quality, dependent variables – willingness to buy and intention to try luxury foods.

### **Context of the Study**

This particular research focuses on the portion size effect on willingness to buy luxury foods. As it has been stated in the previous chapter, the portion size effect has been analyzed in various theoretical and empirical studies, yet the majority of the aforementioned studies focused mostly on the portion size itself, specifically the regular food categories, suggesting the effect of portion sizing - whether small or large - varies in accordance – small portion sizes lead to lower consumption and larger portion sizes to higher rates of consumption (Rolls, 2002). Yet, the aforementioned studies typically lack of focus on willingness to buy as well as the intention to try the food as it mostly focuses on portion size (Johnson, 2015).

As previous research literature on portion sizing of luxury foods suggests, in comparison to regular food products, the luxury food options carry different attributes, in particular perceived quality, typically is associated with scarcity (Lee & Seidle, 2012). Therefore, the effect of portion sizes

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may carry a different effect on willingness to buy and actual consumption of the luxury product in comparison to the regular food products.

## **Research Design**

With the purpose to answer the research questions and achieve the set aim, experimental design was applied, as it is typically used to examine the cause and effect relationships in behavioral science (Kirk, 2013). The experimental design also enables not only to measure but to manipulate variables (Haslam, 2008), which has a significant importance in this study in determining the effect of portion size on willingness to buy and consume luxury foods and the overall attenuating effect for luxury food category comparison to typical food products.

For data collection and analysis the PROCESS macro (Hayes, 2012), Model 1 and 7 procedures will be carried out in order to test the hypotheses and identify the relationships between the variables: independent variable of the research – portion size, moderating factor – food type (luxury versus regular), mediator – perception of scarcity and quality, dependent variables – willingness to buy and intention to try luxury foods.

## **Questionnaire Structure**

The questionnaire of the survey consists of introduction and consent form for the survey, first part of questionnaire, randomly presenting 1 of the 4 conditions (luxury attribute / small portion, luxury attribute / large portion, regular attribute / small portion, regular attribute / large portion) for experimental testing, the second part of questionnaire, consisting of mediators, manipulation check, moderators, covariates and additional moderators for exploratory reasons. The last part of questionnaire consists of the demographic questions and debriefing. Full questionnaire is provided in the Appendix. 1.

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The first part of the questionnaire consists of 4 experimental conditions with visuals of the chocolate with 15 and 36 pieces as well as the descriptions of luxurious and regular chocolate. The table below shows the 2x2 design prepared for this questionnaire:

		Food type	
		Luxury	Regular
Portion size	Small (15 pieces)	15 pieces + luxury chocolate description	15 pieces + regular chocolate description
	Large (24 pieces)	24 pieces + luxury chocolate description	24 pieces + regular chocolate description

All 4 conditions were randomly assigned and equality distributed to the participants. The visual representation of the conditions is provided in the Appendix. 2.

After the conditions – visual and description of the chocolate – the following question on consumption intention (Petit et al. 2017) is asked, to collect the information on whether the information provided about the product (1 of the 4 conditions), have influenced decision making process, leading to predictable behavior of the participant, described in the previous chapters of this research.

The second part of the questionnaire consists of questions that could be further grouped into 4 categories:

Mediators – consists of 5 blocks of questions – adapted Purchase intention scale (Putrevu, 1994), Intention to try scale (Aqueveque, 2016), Perceived scarcity scale (Vigneron, 2004), adapted

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Perceived quality scale (Alavi, 2015), the appeal of food (Petit et al. 2017). All scales are measured by the likert 7 point scale.

Manipulation check – consists of 3 questions - portion size manipulation check - “Please evaluate the size of chocolate that you previously have seen”, luxury attribute manipulation check – “Please evaluate how luxurious was the chocolate that you previously seen” and chocolate manipulation check – “Please describe how this chocolate looks to you? (no more than 5-7 sentences)”. The questions on portion size and luxury attribute are measured by the likert 7 point scale.

Moderators – consists of 4 question blocks – Power scale (Anderson, 2006), Status scale (Anderson, 2012), Social Ladder SES scale (Adler, 2000), Desire for exclusivity scale (Rosenspan, 2001, Tian, 2001).

Control questions/covariates – consists of 6 question blocks – Food liking scale (Marchiori, 2014), Frequency of consumption scale (Brunstrom, 2008), Hunger level scale (Marchiori, 2014, Brunstrom, 2008), as well as questions on the last time the participant eat or drank and additional questions on preference for luxury goods.

The last part of the questionnaire consists of 7 demographic questions (height, weight, gender, age, income, education, marital status) and additional question whether the participant of the survey understood the aim of the study.

Lastly, the questionnaire provides short debriefing of the survey.

## **Survey sample**

The study will employ a 2 (portion size: small vs. large) x 2 (food type: regular vs. luxury) between subjects design and will be run online. Randomized participants sample. Required number of participants for the survey: study with 2x2 design with at least 30-50 per cell requires from 160 to 200 participants (Haslam, 2008).

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**Empirical Research Results**

The following chapter presents the main empirical research findings of the survey. First of all, the chapter describes the initial steps that were taken for the preparation of collected data for analysis – recoding dummy variables of two main variables – size (small versus large) and attribute type (luxury versus non-luxury), preparing means of scales used in the survey questionnaire as well as validity and reliability of data check. Afterwards, the main results of analysis of correlations and regressions, as this research carried out an experiment, the Hayes Process macro are delivered. Finally, the chapter presents main conclusions whether the research hypotheses were supported or not.

**Participants**

198 participants have completed the online questionnaire in the Qualtrics survey system. However, due to the length of the questionnaire not all participants have answered the entire questionnaire, leaving data set with partial input. Yet, the majority of unanswered questions were at the second part of the survey, dedicated to additional moderators for exploratory reasons and demographic questions, therefore did not have a significant effect on the overall analysis of the data. The demographic profile of the participants of the survey is provided in the table 4. below.

Gender:	
Male	70 (45.8%)
Female	83 (54.2%)
Age:	
19-25	35 (17.7%)
26-35	53 (26.8%)
36-45	27 (13.6%)
46-55	18 (9.1%)
56-65	62 (31.3%)
66-75	3 (1.5%)
Income:	

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< 5000	38 (19.2%)
5001-10,000	14 (7.1%)
10,001-15,000	31 (15.7%)
15,001-20,000	30 (15.2%)
20,001-25,000	14 (7.1%)
25,001-30,000	6 (3%)
30,001	20 (10.1%)
Education:	
Primary	44(22%)
Secondary	13(6.6%)
College	58 (29.3%)
Higher education	38 (19.2%)

Table 4. The Demographic profile of the participants

### **Data preparation and reliability check**

Before the validity and reliability checks, the initial collected data was prepared by recoding the two main variables of the survey - size (small versus large) and attribute (luxury versus non-luxury) were entered using dummy coding. Then, reverse wording was included to the survey questions with the negative meaning - Q4. Intention to try scale, part 1. “Nothing will make me try this food”; Q15. Power scale, part 2. “My wishes do not carry much weight”, 4. “Even if I voice them, my view have little sway”, 6. “My dreams and opinions are often ignored”, 7. “Even when I try, I am not able to get my way”; Q29. Self-control scale, part 2. “I have a hard time breaking bad habits”, 3. “I am lazy”, 4. “I say inappropriate things”, 5. “I do certain things that are bad for me, if they are fun”, 7. “I wish I had more self-discipline”, 9. “Pleasure and fun sometimes keep me from getting work done”, 10. “I have trouble concentrating”, 12. “Sometimes I can’t stop myself from doing something, even if I know it is wrong”, 13. “I often act without thinking through all the alternatives”. This step allowed to prepare the data for analysis by avoiding the distortion of the aforementioned scales data, leading to discrepancies in results. Afterwards, the means of all survey

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scales - Willingness to buy (Q3. Purchase intention, Q4. Intention try), Scarcity (Q5. Perceived scarcity), Perception of quality (Q.9 Perceived quality) - were counted.

Once the data was prepared for the analysis, the normality and reliability of all survey scales were analyzed by using Cronbach's Alpha procedure.

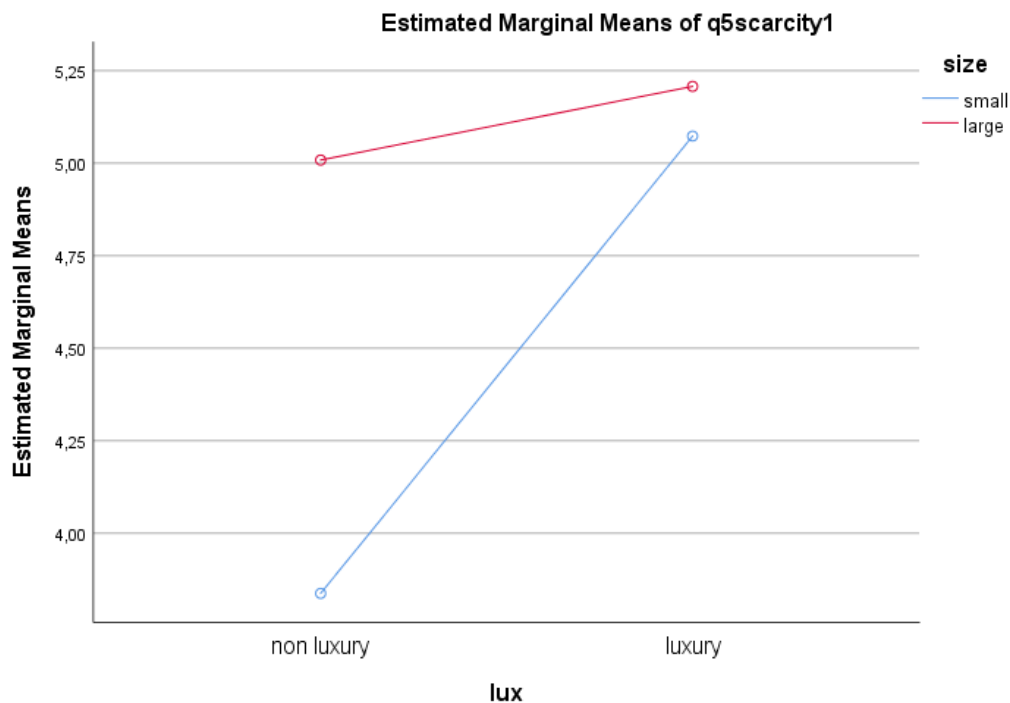
*Reliability.* The Cronbach's Alpha for the research scales are as follows – Purchase intention (Q.3) is .869, Intention to try (Q.4) is .605, Perceived scarcity (Q.5) is .905, Perception of quality (Q.9) is .883, which indicates high level of reliability and close correlations between the measured scales, as Cronbach's alpha  $\geq 0.6$  meaning is considered adequate. Furthermore, Cronbach's Alpha test Item-Total statistics indicates, that if any measured scale was deleted, it would significantly decrease the Cronbach's Alpha, suggesting all scales are significant for further analysis of the survey. Yet, it should be taken under consideration that Intention to try (Q.4) has the lowest Cronbach's alpha in comparison to other scales and was help in mind in further analysis of the data. The results of the Cronbach's Alpha test for reliability will be provided in appendix.3.

**Manipulation check**

Univariate Analysis of Variance was used for the analysis of the manipulation checks on size (Q.12 “Please evaluate the size of chocolate that you previously have seen”, 7 point likert scale) and food type (Q.13 “Please evaluate how luxurious was the chocolate that you previously seen”, 7 point likert scale). The analysis on manipulation checks have shown the size (small versus large) has been proven to be significant ( $p=.000$ ), while attribute (luxury versus non-luxury/regular) has been proven to be not significant ( $p= .095$ ), leading to conclusions that portion size differences have an effect on chocolate consumption, yet the effect of food type do not, as then the portion size changes (from small to large) luxury effect vanishes and both food types - luxury and regular (non-luxury)

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– therefore the chocolate is consumed more. The effect of portion size and food type is presented in the graph below:



### Hypotheses testing

Due to the nature of this research - experimental design - the hypotheses were tested by using Hayes Process macro 3.3 version for SPSS procedure. To test the first part of the hypothesis, Process macro Model 1 was used. The main variables that were used for the analysis were portion size (small versus large) as independent variable and food type (luxury versus regular) as moderator, testing the presumption of the thesis hypothesis with following dependent variables for the questionnaire - Purchase intention (Q3.), Intention to try (Q4.), Perceived scarcity (Q5.), Vividness (Q6.), BIS scale (Q7.), Perceived quality (Q9.), Q10. The appeal of food (Q10.) and Susceptibility to Peer Influence (Q11.). After testing all possible combinations with aforementioned variables in Process macro Model 1, two significant effects occurred with

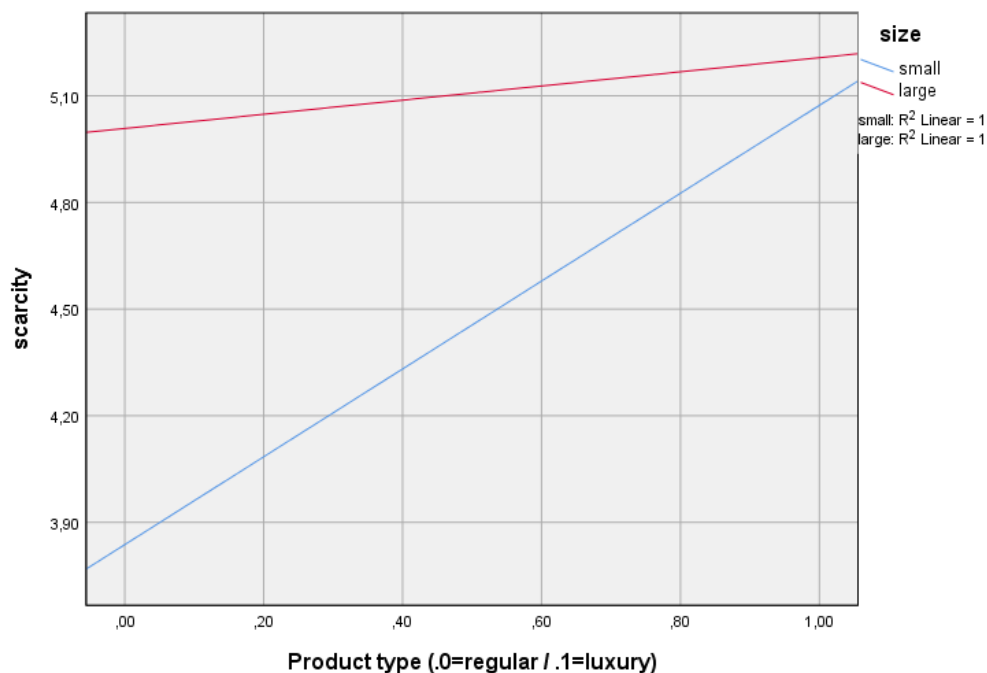
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dependent variables - Perceived scarcity (Q5.) and Perceived quality (Q9.). The reports of the aforementioned effects are reported below:

## Perceived scarcity (Q5.) as dependent variable

A regression analysis (Hayes' (2012), PROCESS Model 1) was performed on perception of scarcity with the portion size (dummy coded - small versus large portion size), and food type (luxury versus regular) as predictors. A significant main effect of presence of attribute on scarcity ( $B=1.23$ ,  $SE=.33$ ,  $t(3,163)=3.80$ ,  $p=.0002$ ) was observed, while the main effect of size was also significant ( $B=1.17$ ,  $SE=.33$ ,  $t(3,163)=3.58$ ,  $p=.0005$ ). The interaction between size and food type proved to be significant and qualified the main indirect effect ( $B=1.04$ ,  $SE=.46$ ,  $t(3,163)=-2.27$ ,  $p=.02$ ). The analysis further showed that exposure to a size predicted lower levels of perceived scarcity only for regular food conditions ( $B = .13$ ,  $SE = .31$ ,  $p = .6735$ ). For luxury food condition the portion size effect vanished ( $B = .117$ ,  $SE = .33$ ,  $p = .0005$ .)

Graph of the analyzed interaction is provided below:

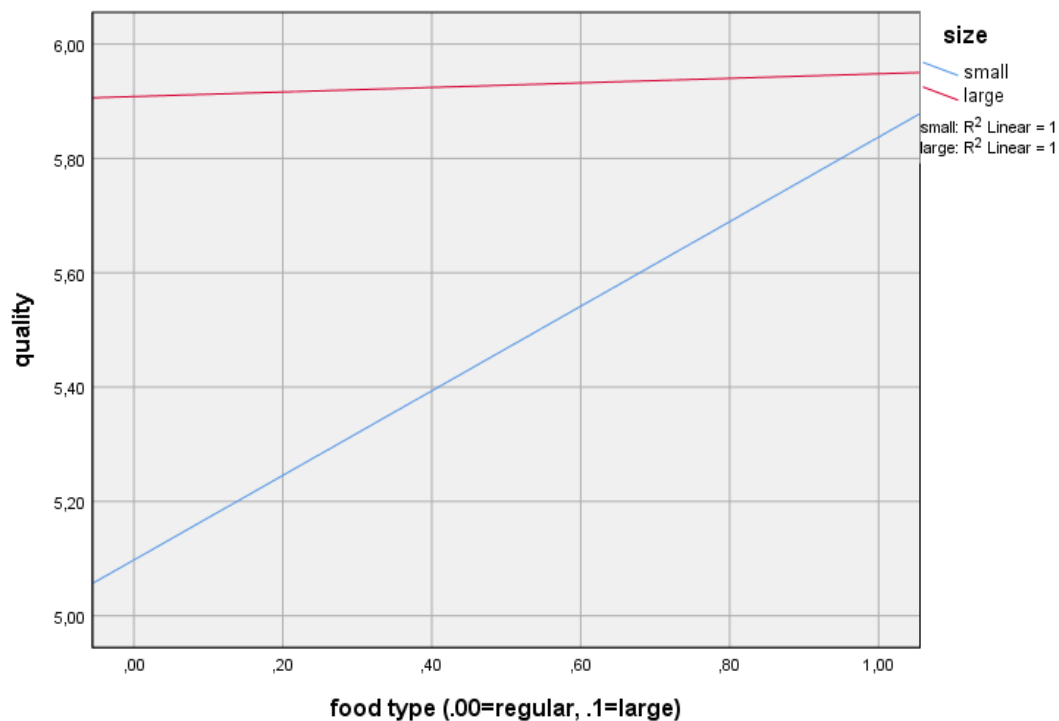


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Perceived quality (Q.9) as dependent variable

To ensure the validity of the previous results, a second regression analysis ( Hayes' (2014), PROCESS Model 1) was performed on perception of quality with the portion size (dummy coded - small versus large portion size), and attribute (luxury versus regular) as predictors. A significant main effect of presence of attribute on quality perception ( $B=.74$ ,  $SE=.24$ ,  $t(3,163)=3.13$ ,  $p=.002$ ) was observed, while the main effect of size was also significant ( $B=.81$ ,  $SE=.24$ ,  $t(3,163)=3.41$ ,  $p=.0008$ , n.s.). The interaction between size and attribute proved to be significant and qualified the main effect ( $B=-.74$ ,  $SE=.33$ ,  $t(3,163)=-2.27$ ,  $p=.0361$ ). The analysis further showed that exposure to a size predicted lower levels of perceived quality only for regular food conditions ( $B =.81$ ,  $SE =.23$ ,  $p =.6320$ ). For luxury food condition the portion size effect vanished ( $B = .11$ ,  $SE = .23$ ,  $p = .0008$ .)

Graph of the analyzed interaction is provided below:



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After testing the Process macro model 1 and collecting the results - establishing significant models with dependent variables perception of scarcity (Q.5) and perception of quality (Q.9), the Process macro Model 7 was used to perform further analysis. The main variables that were used for the analysis were portion size (small versus large) as independent variable, attribute (luxury versus regular) as moderator, Perceived scarcity (Q.5) and Perceived quality (Q.9) as mediators, testing the presumption of the hypothesis with following dependent variables for the questionnaire, that represent willingness to buy - Purchase intention (Q.3) and intention to try (Q.4). After testing all possible combinations with aforementioned variables in Process macro Model 7, two significant effects occurred. The reports of the aforementioned effects are reported below:

### Perceived scarcity (Q.5) as a mediator purchase intention (Q.3) as D.V.

Using Hayes' (2012) PROCESS macro Model 7, we observed that portion size leads to greater scarcity perception of the product (**path a**:  $B=1.2$ ,  $SE=.33$ ,  $t(3,163)=3.6$ ,  $p=.0005$ ). Furthermore, such scarcity evaluations predict purchase intentions (**path b**:  $B=.3$ ,  $SE=.06$ ,  $t(2,164)=4.4$ ,  $p=.0000$ ). Next, we tested the extent to which attributes (luxury versus regular) moderates the relationship between exposure to size differences and purchase intention through scarcity perception. The interaction between exposure to portion size differences and food type proved to be significant ( $B=-1.03$ ,  $SE=.46$ ,  $t(3,163)=-2.3$ ,  $p=.02$ ). Analysis revealed that an **indirect effect**, mediated by scarcity was present for control condition of product type (effect  $B=.29$ ;  $SE=.13$ , 95%  $CI= [.08, .58]$ ). However, when people saw luxury product item the effects of portion size via scarcity on willingness to buy vanished (no effect  $B=.03$ ;  $SE=.09$ , 95%  $CI= [-.13, .23]$ ). Thus, portion size differences lead to greater purchase intention via scarcity only for regular products and vanishes for luxury products (for full moderated mediation model, see Figure 1).

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Perceived scarcity (Q.5) as a mediator, intention to try (Q.4) as D.V.

Using Hayes' (2012) PROCESS macro (Model 7), we observed that portion size leads to greater scarcity perception of the product (**path a**:  $B=1.17$ ,  $SE=.33$ ,  $t(3,163)=3.58$ ,  $p=.0005$ ). Furthermore, such scarcity evaluations predict intention to try (**path b**:  $B=.15$ ,  $SE=.06$ ,  $t(2,164)=2.79$ ,  $p=.006$ ). Next, we tested the extent to which attributes (luxury versus regular) moderates the relationship between exposure to size differences and purchase intention through scarcity perception. The interaction between exposure to portion size differences and attributes proved to be significant ( $B=-1.04$ ,  $SE=.46$ ,  $t(3,163)=-2.27$ ,  $p=.02$ ). Analysis revealed that an **indirect effect**, mediated by scarcity was present for control condition of product type ( $B=.18$ ;  $SE=.1$ , 95%  $CI= [.03, .40]$ ). However, when people saw luxury product item the effects of portion size via scarcity on willingness to buy vanished (no effect  $B=.03$ ;  $SE=.09$ , 95%  $CI= [-.13, .23]$ ). Thus, portion size differences lead to greater intention to try via scarcity only for regular products and vanishes for luxury products (for full moderated mediation model, see Figure 2).

Perceived quality (Q.9) as a mediator, purchase intention (Q.3) as D.V.

Using Hayes' (2012) PROCESS macro (Model 7), we observed that portion size leads to greater quality perception of the product (**path a**:  $B=.81$ ,  $SE=.24$ ,  $t(3,186)=3.41$ ,  $p=.0008$ ). Furthermore, such quality evaluations predict purchase intentions (**path b**:  $B=.56$ ,  $SE=.09$ ,  $t(2,164)=6.23$ ,  $p=.00$ ). Next, we tested the extent to which attributes (luxury versus regular) moderates the relationship between exposure to size differences and purchase intention through quality perception. The interaction between exposure to portion size differences and attributes proved to be significant ( $B=-.70$ ,  $SE=.33$ ,  $t(3,163)=-2.11$ ,  $p=.036$ ). Analysis revealed that an **indirect effect**, mediated by perception of quality was present for control condition of product type ( $B=.46$ ;  $SE=$

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.15, 95%  $CI$  = [.17, .74]). However, when people saw luxury product item the effects of portion size via perception of quality on willingness to buy vanished (no effect  $B$  = .06;  $SE$  = .13, 95%  $CI$  = [-.17, .32]). Thus, portion size differences lead to greater purchase intention via perception of quality only for regular products and vanishes for luxury products (for full moderated mediation model, see Figure 3).

Perceived quality (Q.9) as a mediator, intention to try (Q.4) as D.V.

Using Hayes' (2012) PROCESS macro (Model 7), we observed that portion size leads to greater quality perception of the product (**path a**:  $B$  = .81,  $SE$  = .24,  $t(3,186)$  = 3.41,  $p$  = .0008). Furthermore, such quality evaluations predict purchase intentions (**path b**:  $B$  = .43,  $SE$  = .07,  $t(2,164)$  = 6.01,  $p$  = .00). Next, we tested the extent to which attributes (luxury versus regular) moderates the relationship between exposure to size differences and purchase intention through quality perception. The interaction between exposure to portion size differences and attributes proved to be significant ( $B$  = -.70,  $SE$  = .33,  $t(3,163)$  = -2.11,  $p$  = .036). Analysis revealed that an **indirect effect**, mediated by perception of quality was present for control condition of product type ( $B$  = .38;  $SE$  = .18, 95%  $CI$  = [.11, .79]). However, when people saw luxury product item the effects of portion size via perception of quality on willingness to buy vanished (no effect  $B$  = .05;  $SE$  = .11, 95%  $CI$  = [-.14, .28]). Thus, portion size differences lead to greater purchase intention via perception of quality only for regular products and vanishes for luxury products (for full moderated mediation model, see Figure 4).

**Chocolate consumption analysis**

Perceived scarcity (Q.5) as a mediator, chocolate consumption (Q.2) as D.V.

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Using Hayes' (2012) PROCESS macro Model 7, we observed that portion size leads to greater scarcity perception of the chocolate (**path a**:  $B=1.2$ ,  $SE=.33$ ,  $t(3,163)=3.6$ ,  $p=.0005$ ). Yet, such scarcity evaluations do not predict actual chocolate consumption (**path b**:  $B=-.1$ ,  $SE=.34$ ,  $t(2,164)=-.24$ ,  $p=.81$ ). Next, we tested the extent to which attributes (luxury versus regular) moderates the relationship between exposure to size differences and chocolate consumption through scarcity perception. The interaction between exposure to portion size differences and attributes proved to be significant ( $B=-1.03$ ,  $SE=.46$ ,  $t(3,163)=-2.3$ ,  $p=.02$ ). Analysis revealed **no effect** mediated by scarcity for both conditions – controlled condition (effect  $B=-.09$ ;  $SE=.12$ , 95%  $CI=[-.96, .25]$ ) as well as luxury product ( $B=-.01$ ;  $SE=.12$ , 95%  $CI=[-.30, .23]$ ). Thus, portion size differences do not lead to greater chocolate consumption via scarcity (For full moderated mediation model, see Figure 5).

Perceived quality (Q.9) as a mediator, chocolate consumption (Q.2) as D.V.

Using Hayes' (2012) PROCESS macro Model 7, we observed that portion size leads to greater quality perception of the chocolate (**path a**:  $B=.81$ ,  $SE=.24$ ,  $t(3,186)=3.41$ ,  $p=.0008$ ). Yet, such scarcity evaluations did not predict chocolate consumption (**path b**:  $B=.16$ ,  $SE=.48$ ,  $t(2,164)=.33$ ,  $p=.74$ ). Next, we tested the extent to which attributes (luxury versus regular) moderates the relationship between exposure to size differences and chocolate consumption through quality perception. The interaction between exposure to portion size differences and attributes proved to be significant ( $B=-.70$ ,  $SE=.33$ ,  $t(3,163)=-2.11$ ,  $p=.036$ ). Analysis revealed **no effect** mediated by perception of quality for both conditions – controlled condition (effect  $B=.13$ ;  $SE=.36$ , 95%  $CI=[-.74, .71]$ ) as well as luxury product ( $B=.02$ ;  $SE=.11$ , 95%  $CI=[-.18, .28]$ ). Thus, portion size

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differences do not lead to greater chocolate consumption via quality perception (For full moderated mediation model, see Figure 6).

The overview of all hypotheses of the research - whether supported or rejected after the empirical analysis - is presented in the table below.

<i>Hypothesis results</i>
<b>H1:</b> Portion size decreases scarcity perception such that small portions are perceived as more scarce compared to large portions. <i>Supported.</i>
<b>H2:</b> Portion size decreases quality perception such that small portions are perceived as of higher quality compared to large portions. <i>Supported.</i>
<b>H3:</b> Portion size effect on willingness to buy is moderated by type of product such that when product is framed as regular portion size effect is present but when product is framed as luxury portion size effect vanishes. <i>Supported.</i>

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## **Discussion and conclusions**

The final chapter of this research is dedicated discussion and conclusions of the thesis findings. Starting with the discussion part, the overview of the empirical findings in the context of the literature review, consideration of the research results in the context of previously discussed research literature as well as provision of managerial implications of the thesis research is offered. Afterwards, the examination of the research results – whether the hypotheses were not supported or partially supported– as well as the limitations of this research are provided. Finally, the conclusions part provides the summary of the main points of the thesis, suggests possible points for the future research.

### **Overview the significant findings of your empirical research**

*Portion size effect on luxury consumption.* The results of the research confirms the effect on portion size manipulations previously described in the literature review – the portion size changes from small to large lead to a higher consumption rates of food (Rolls, 2002). The thesis further establishes the significance of the portion size effect on the food type of the product - the analysis of manipulation check on portion size (small versus large) have been proven to be significant ( $p=.00$ ), leading to conclusions, that the portion size have an effect on the perception and possible consumption of the chocolate. At the same time, manipulation check on luxury (food type: luxury versus regular) was proven to be not significant ( $p=.95$ ), meaning that the food type did not have a significant effect on the perception and possible consumption of the chocolate. The analysis of both portion size and luxury manipulations suggest, that portion size changes also have an effect on the luxury perception – portion size dictates whether the chocolate will be associated with luxury food type. Furthermore, the analysis of the portion size and food type have shown, that

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larger portion sizes lead to the vanishing effect of quality perception and scarcity of the luxury food as the same time assimilation of luxury and regular foods leaving no distinguishing features that could differentiate the luxury product from regular option.

*Portion size effect and perception of scarcity and quality.* Hayes' Process macro Model 1 analysis on two D.V.s - perception of scarcity (Q.5) and quality (Q.9) - have indicated, that portion size changes play a significant role on both aforementioned D.V.s leading to a higher perception of scarcity and quality of the chocolate. Furthermore, the interaction between the portion size changes and food type (luxury versus regular) have been proven to be significant, leading to conclusions that food type as moderator enhances the effect of portion size changes on perception of scarcity and quality. Further analysis on portion size changes provide evidence on significant changes of perception of scarcity and quality whether portion is small or large. Small portion sizes indicate, that luxury chocolate was perceived as being more scarce and of higher quality in comparison to regular chocolate, but the effect vanished then portion sizes were large – both regular and luxury chocolate where perceived as being not scarce and of similar quality. As literature on food type suggests, the perception of quality as well as scarcity could be completely dependent on the participants perception of what quality and scarcity of the product is, leading to vanishing effect of scarcity and assimilation of luxury and regular food of larger portion due to the fact that the participants of the study might be influenced by previous experience with larger portion size and associated features with it. Moreover, the effect of portion size changes might also be explained by previous research findings on portion size effect, suggesting there is a well-established association with larger portion sizes, leading to aforementioned assimilation of luxury and regular food products.

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*Portion size effect on willingness to buy luxury foods.* The analysis on portion size effect on willingness to buy and consume the luxury products once more confirmed the significance of the portion size changes as well as the previously described effect on perception of scarcity and quality.

As literature on perception of scarcity and quality suggests, further Hayes' Process macro Model 7 analysis analysis confirmed, that both scarcity and quality have a significant effect and prediction of willingness to buy the chocolate. Yet, the analysis on portion size changes and food type (luxury versus regular) previously suggested, the effect of scarcity and perception of quality was completely dependent on the portion size changes. While small portions indicated the difference in perception of scarcity and quality whether the chocolate was luxurious or regular, the scarcity and perception of quality effect vanished then the participants were presented with the large portion size of the chocolate, leading to higher willingness to buy chocolate without particular differentiation between the luxurious and regular chocolate.

*Portion size effect on consumption of chocolate.* Hayes' Process macro Model 7 on possible consumption of the chocolate suggested a contradictory findings to the previous analysis on willingness to buy the chocolate. While the size effect on perception of scarcity and quality was significant, the overall effect of aforementioned scarcity and quality had no significant effect on food type, meaning both luxurious and regular chocolate, whether small or large, was seen as being similar. These findings suggest that portion size changes are of higher significance then perception on scarcity and quality on intention to consume the product, therefore establishing new knowledge in the area of research on perception of scarcity and quality as it previously stated only significance of the aforementioned perception of scarcity and quality effect on willingness to buy luxury goods.

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The overall results of the analysis suggest, that portion size of the chocolate was a significant variable that affected the overall perception of scarcity and quality of the chocolate as well as willingness to buy and intention to try the chocolate. While small portion sizes have shown that where were difference between the luxurious and regular chocolate, large portions drastically affected the perception of scarcity and quality, leading to assimilation of luxurious and regular chocolate and similar willingness to buy as well as intention to try chocolate – both higher in comparison to small portion size of luxurious and regular chocolate.

### **Implications of findings**

The current thesis have confirmed the significance of the portion size changes for the overall perception of scarcity and quality and therefore contributed to portion size literature on luxury food consumption by establishing the vanishing effect of perception of scarcity and quality once associated with larger portion size in the luxury food category. At the same time, the thesis research results added knowledge to the existing literature on perception of scarcity and quality in effect of larger portion size of the aforementioned luxury products – large portion size diminishes the perception of scarcity and quality association with luxury product, leading to assimilation of the products, suggesting that the effect of portion size is of higher significance for overall willingness to buy and intention to try luxury products and has complete validity other the perception of scarcity and quality of the product.

### **Managerial implications**

With the confirmation of the portion size effect on perception of scarcity and quality as well as the willingness to buy and intention to try luxury goods, the findings of this thesis can be implicated as luxury food product marketing tool. As the thesis findings have proven the significance of the

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portion size manipulations and established vanishing effect of the perception of scarcity and assimilation of the regular and luxury food, the portion size manipulation effect provides knowledge on the established links of portion size and perception of scarcity and quality as well as contribute to the knowledge on the consumer behavior towards the portion size manipulation on luxury food products. Furthermore, the aforementioned knowledge has a potential to be used to encourage consumers eating consuming less as could be seen as a positive move towards prevention of overconsumption as well as distinguishing trade used in marketing to avoid assimilation of luxury and regular foods. In addition, the research provided additional knowledge on the changes perception of scarcity and quality in accordance to portion size manipulation that could be used for product promotion and advertising.

### **Limitations of the study**

The thesis have several limitations that should be taken under consideration for possible further analysis. Starting with the main limitation of the thesis – the thesis research was based on the results provided by the online survey suggesting limitations on knowledge of possible distractions affecting the participants in a way that it could have had an effect on the overall results of the study. At the same time, the online survey provides limitations on actual consumption evaluation. Second limitation of the survey – the number of participants. Even though the number of participants of this research is considered to be enough – close to 200 - for the further research purposes the analysis of the topic should include higher number of participants for ensure greater validation of the results.

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**Suggestions for future research**

The thesis findings could be further analyzed by carrying real life experiment to test out whether the results of consumption of luxury foods as well as the intention to try can be replicated in reality. At the same time another luxury food product could be tested out to ensure the further validity of findings of the research as well as its contribution for the portion size literature.

**Conclusions**

The overall findings of the thesis emphasized the significance of portion size changes on the perception of scarcity and quality of the product especially then considering large portions. Furthermore, the portion size manipulation led to the conclusions, that portion size indicate the perception of luxury and therefore have an effect on the willingness to buy as well as consume luxury goods.

The hypotheses of the thesis have been supported by the analysis results - the portion size changes did decrease the perception of scarcity and quality for the luxury products in such way that small portions were perceived as more scarce compared to large portions.

Yet, the findings suggest that larger portion size lead to the assimilation of the luxury and regular food, therefore the quality perception of the product seems to be similarly perceived and therefore diminishing luxury products attribute – perception of quality.

At the same time the thesis findings have supported the main research hypothesis contributing to the overall knowledge of portion size literature as well as suggesting that portion size manipulations have a significant effect on the luxury product perception, consumption and overall willingness to buy.

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**Appendix. 1**

**Questionnaire: Portion size effect on willingness to buy luxury foods affected by scarcity**

**STUDY**

**Aim:** to document the initial effect

**Hypothesis:** portion size effect should attenuate such that people tend to eat less from large portions if they are framed as exclusive (though scarcity) and to eat more from small portions if they are framed as exclusive.

The study will employ a 2 (portion size: small vs. large) x 2 (food type: regular vs. luxury) between subjects design and will be run online.

Randomized participants sample. Required min number of participants (for online study with 2x2 design with at least 30-50 per cell for online studies) – 200.

**SCENARIO:**

**INTRODUCTION – consent for participation**

I am a master's degree student at the ISM University of Marketing and management. I would like to sincerely ask you to fill this master's thesis questionnaire, designed to gain knowledge on preferences influencing product choices. This might take less than 15 minutes of your time.

Your IP address will be known to the researching student, their supervisor(s) and the authorised university representatives such as programme director, defence committee, and committee on ethics. The IP address data will be stored in password-protected computers. We do not actively collect other personal data, such as your physical location. If you have any questions on data protection prior to or after the participation, please contact research conducting student Vita Škikūnaite, e-mail adress: 019794@stud.ism.lt or dpo@ism.lt.

Thank you for your time!

- I have read the information above and I consent my data to be collected for the purposes stated above.

*After the introduction the option for consent is provided.*

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**FIRST PART OF THE QUESTIONNAIRE**

Four randomly assigned and equality distributed scenarios:

		Food type	
		Luxury	Regular
Portion size	Small (15 pieces)	15 pieces + luxury chocolate description	15 pieces + regular chocolate description
	Large (24 pieces)	24 pieces + luxury chocolate description	24 pieces + regular chocolate description

**1. Scarcity condition [Luxury chocolate, small portion – 15 pieces]**

**Q1. Portion size (Petit et al. 2017, Versluis and Papies 2016)**

**Imagine that you feel like eating something tasty. You decide to try the chocolate bar described and shown below. The total number of squares in this chocolate is 15.**

**Description:**

Created by the Chocolatier Roco this chocolate is luxurious and delicious dark chocolate with a smooth creamy texture. Handcrafted from the world's finest and rarest cocoa beans that are directly bought from the plantations in South America, Pacific Ocean and the Caribbean this chocolate bar offers unique and exciting flavor.

Exclusively crafted by Chocolatier Roco internationally recognized expert chocolatiers to ensure the exquisite melt-in-your mouth chocolate.

Chocolatier Roco will impress you with unique approach to chocolate making, as its products are sometimes infused with unexpected flavors such as Armand de Brignac champagne or spices.

Chocolate Roco comes in ver small packages and is often purchased as lavish gift on special occasions. It has exquisite packaging and expensive ingredients.

Just 15 pieces of exclusive and luxurious chocolate!

**Visual:**



**Q2. Consumption intentions (Petit et al. 2017)**

How many squares of chocolate do you think you will eat?

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A square of chocolate:



*Participants see the input box where they can type the number of chocolate squares. For clarification, a single square of chocolate is presented.*

**2. Luxury chocolate, large portion – 36 pieces**

**Q1. Portion size (Petit et al. 2017, Versluis and Papies 2016)**

**Imagine that you feel like eating something tasty. You decide to try the chocolate bar described and shown below. The total number of squares in this chocolate is 36.**

**Description:**

Created by the Chocolatier Roco this chocolate is luxurious and delicious dark chocolate with a smooth creamy texture. Handcrafted from the world's finest and rarest cocoa beans that are directly bought from the plantations in South America, Pacific Ocean and the Caribbean this chocolate bar offers unique and exciting flavor.

Exclusively crafted by Chocolatier Roco internationally recognized expert chocolatiers to ensure the exquisite melt-in-your mouth chocolate.

Chocolatier Roco will impress you with unique approach to chocolate making, as its products are sometimes infused with unexpected flavors such as Armand de Brignac champagne or spices.

Chocolate Roco comes in quite large packages and is often purchased as lavish gift on special occasions. It has exquisite packaging and expensive ingredients.

Even 36 pieces of exclusive and luxurious chocolate!

**Visual:**



**Q2. Consumption intentions (Petit et al. 2017)**

**How many squares of chocolate do you think you will eat?**

A square of chocolate:



*Participants see the input box where they can type the number of chocolate squares. For clarification, a single square of chocolate is presented.*

**3. Regular chocolate, small portion – 15 pieces**

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**Q1. Portion size (Petit et al. 2017, Versluis and Papies 2016)**

**Imagine that you feel like eating something tasty. You decide to try the chocolate bar described and shown below. The total number of squares in this chocolate is 15.**

**Description:**

Created by the chocolate manufacturer Roco this chocolate is simply delicious dark chocolate with a smooth creamy texture. Handcrafted from the cocoa beans originating from South America, Pacific Ocean and the Caribbean this chocolate bar offers indulgent flavor.

Made by chocolate manufacturer Roco internationally recognized expert chocolatiers to ensure the sweet melt-in-your mouth chocolate.

Chocolate manufacturer Roco will impress you with a sweet and simple taste.

Chocolate Roco comes in very small packages and is often purchased as common gift on a daily basis. It has attractive packaging and agreeable price ingredients.

Just 15 pieces of sweet and simple chocolate!

**Visual:**



**Q2. Consumption intentions (Petit et al. 2017)**

**How many squares of chocolate do you think you will eat?**

A square of chocolate:



*Participants see the input box where they can type the number of chocolate squares. For clarification, a single square of chocolate is presented.*

**4. Regular chocolate, large portion – 36 pieces**

**Q1. Portion size (Petit et al. 2017, Versluis and Papies 2016)**

**Imagine that you feel like eating something tasty. You decide to try the chocolate bar described and shown below. The total number of squares in this chocolate is 36.**

**Description:**

Created by the chocolate manufacturer Roco this chocolate is simply delicious dark chocolate with a smooth creamy texture. Handcrafted from the cocoa beans originating from South America, Pacific Ocean and the Caribbean this chocolate bar offers indulgent flavor.

Made by chocolate manufacturer Roco internationally recognized expert chocolatiers to ensure the sweet melt-in-your mouth chocolate.

Chocolate manufacturer Roco will impress you with a sweet and simple taste.

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Chocolate Roco comes in quite large packages and is often purchased as common gift on a daily basis. It has attractive packaging and agreeable price ingredients. Even 36 pieces of sweet and simple chocolate!

**Visual:**



**Q2. Consumption intentions (Petit et al. 2017)**

How many squares of chocolate do you think you will eat?

A square of chocolate:



*Participants see the input box where they can type the number of chocolate squares. For clarification, a single square of chocolate is presented.*

**SECOND PART OF THE QUESTIONNAIRE**

**MEDIATOR**

**Q3. Purchase intention (Putrevu and Lord 1994) [Adapted]**

<b>Please indicate the extent of agreement with following statements, where 1 means „totally disagree“ and 7 means „totally agree“.</b>		
	It is very likely that I will buy luxury food products (r)	1 2 3 4 5 6 7
	I will purchase luxury food the next time I need products	1 2 3 4 5 6 7
	I will definitely try luxury food products	1 2 3 4 5 6 7

**Q4. Intention to try (Aqueveque 2016)**

	Nothing will make me try this food	1 2 3 4 5 6 7
	If somebody gives me this food, I will try it	1 2 3 4 5 6 7
	Considering the food in the photo, I will be very interested in try it	1 2 3 4 5 6 7

**Q5. Perceived scarcity (Vigneron and Johnson 2004)**

	This chocolate is exclusive	1 2 3 4 5 6 7
	This chocolate is rare	1 2 3 4 5 6 7
	This chocolate is unique	1 2 3 4 5 6 7

**Q6. Vividness scale**

	I can feel how this chocolate melts in a mouth	1 2 3 4 5 6 7
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	I can easily picture the taste of this chocolate	1 2 3 4 5 6 7
	I can imagine, I could enjoy this chocolate	1 2 3 4 5 6 7

**Q7. BIS scale**

	Once I would start eating this chocolate, I would be hard for me to stop eating it	1 2 3 4 5 6 7
	Then I would start to enjoy this chocolate I would only think about its taste	1 2 3 4 5 6 7
	I wouldn't care what others would think if I enjoyed this chocolate	1 2 3 4 5 6 7

**Q8. Additional questions - scarcity**

	It is hard to get this chocolate	1 2 3 4 5 6 7
	This chocolate is not easily accessible	1 2 3 4 5 6 7
	Not everyone can try this chocolate	1 2 3 4 5 6 7

**Q9. Perceived quality (Alavi, Sascha, Torsten Bornemann, and Jan Wieseke 2015)**

[Adapted]

	The chocolate appears to be of good quality.	1 2 3 4 5 6 7
	The chocolate seems to be a premium product.	1 2 3 4 5 6 7
	The chocolate seems to contain high-quality ingredients.	1 2 3 4 5 6 7

**Q10. The appeal of food (Petit et al. 2017)**

	How appetizing do you find this chocolate? Please indicate in the scale.	1 2 3 4 5 6 7
--	--	---------------

**Q11. Susceptibility to Peer Influence (Bearden, W. O., Netemeyer, G., Teel, J. E. 1998)**

<b>Please indicate the extent of agreement with following statements, where 1 means „totally disagree“ and 7 means „totally agree“.</b>	
If other people can see me using a product, I often purchase the brand they expect me to buy.	1 2 3 4 5 6 7
I often identify with other people by purchasing the same products and brands they purchase.	1 2 3 4 5 6 7
I rarely purchase the latest fashion styles until I am sure my friends approve of them.	1 2 3 4 5 6 7
If I want to be like someone, I often try to buy the same brands that they buy.	1 2 3 4 5 6 7
It is important that others like the products and brands I buy.	1 2 3 4 5 6 7
To make sure I buy the right product or brand, I often observe what others are buying and using.	1 2 3 4 5 6 7
When buying products, I generally purchase those brands that I think others will approve of.	1 2 3 4 5 6 7
I like to know what brands and products make good impressions on others.	1 2 3 4 5 6 7
I achieve a sense of belonging by purchasing the same products and brands that others purchase.	1 2 3 4 5 6 7

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**MANIPULATION CHECK**

**Q12. Portion size manipulation check**

	Please evaluate the size of chocolate that you previously have seen:	1 2 3 4 5 6 7
--	--	---------------

**Q13. Luxury manipulation check**

	Please evaluate how luxurious was the chocolate that you previously seen:	1 2 3 4 5 6 7
--	---	---------------

**Q14. Chocolate manipulation check**

	Please describe how this chocolate looks to you? (no more than 5-7 sentences).
--	--

**MODERATORS**

**Q15. Power (Anderson and Galinsky, 2006 and Anderson et al 2012b):**

Please indicate the extent of agreement with following statements, where 1 means „totally disagree“ and 7 means „totally agree“.	
In my relationships with others:	
I can get people to listen to what I say.	1 2 3 4 5 6 7
My wishes do not carry much weight. (r)	1 2 3 4 5 6 7
I can get others to do what I want.	1 2 3 4 5 6 7
Even if I voice them, my views have little sway. (r)	1 2 3 4 5 6 7
I think I have a great deal of power.	1 2 3 4 5 6 7
My ideas and opinions are often ignored. (r)	1 2 3 4 5 6 7
Even when I try, I am not able to get my way. (r)	1 2 3 4 5 6 7
If I want to, I get to make the decisions.	1 2 3 4 5 6 7


**Q16. Status (Anderson et al, 2012a):**

Please indicate the extent of agreement with following statements, where 1 means „strongly disagree“ and 7 means „strongly agree“.	
1. I have a high level of respect in others' eyes.	1 2 3 4 5 6 7
2. Others admire me.	1 2 3 4 5 6 7
3. Others look up to me.	1 2 3 4 5 6 7
4. I have high social standing.	1 2 3 4 5 6 7
5. Please mark number four.	1 2 3 4 5 6 7
6. I am held in high regard by others.	1 2 3 4 5 6 7

**Q17. Social Ladder SES scale (Adler et al, 2000)**

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Think of this ladder (below) as representing where people stand in our society. At the top of the ladder are the people who are the best off, those who have the most money, most education, and best jobs. At the bottom are the people who are the worst off, those who have the least money, least education, and worst jobs or no job. Please indicate the rung that best represents where you think you stand in society.  
[Scale 1-10, representing the rungs of the ladder, 1 representing the lowest and 10 the highest rung]



**Q18. Desire for exclusivity (Rosenspan 2001; Tian et al. 2001)**

	I like unique and scarce products	1 2 3 4 5 6 7
	I enjoy products more when only a few people possess them	1 2 3 4 5 6 7
	I like to be in good company with access to things beyond the average person's access	1 2 3 4 5 6 7
	Products do not seem to hold much value for me when they are purchased regularly by everyone	1 2 3 4 5 6 7
	I enjoy having things that others do not	1 2 3 4 5 6 7
	I am more likely to buy a product if it is scarce due to limited supply	1 2 3 4 5 6 7
	I often try to avoid products or brands that can be easily duplicated	1 2 3 4 5 6 7

**Q19. BIS/BAS scale**

<b>Please indicate the extent of agreement with following statements, where 1 means „totally disagree“ and 7 means „totally agree“</b>		
<b>BIS</b>		
	Even if something bad is about to happen to me, I rarely experience fear or nervousness	1 2 3 4 5 6 7
	Criticism or scolding hurts me quite a bit	1 2 3 4 5 6 7
	I feel pretty worried or upset when I think or know somebody is angry at me	1 2 3 4 5 6 7
	If I think something unpleasant is going to happen I usually get pretty "worked up."	1 2 3 4 5 6 7
	I have very few fears compared to my friends	1 2 3 4 5 6 7
	I feel worried when I think I have done poorly at something important	1 2 3 4 5 6 7
	I worry about making mistakes	1 2 3 4 5 6 7
<b>BAS Drive</b>		
	I go out of my way to get things I want.	1 2 3 4 5 6 7
	When I want something I usually go all-out to get it	1 2 3 4 5 6 7
	If I see a chance to get something I want I move on it right away	1 2 3 4 5 6 7
	When I go after something I use a "no holds barred" approach	1 2 3 4 5 6 7
<b>BAS Fun Seeking</b>		

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	I'm always willing to try something new if I think it will be fun.	1 2 3 4 5 6 7
	I will often do things for no other reason than that they might be fun	1 2 3 4 5 6 7
	I often act on the spur of the moment.	1 2 3 4 5 6 7
	I crave excitement and new sensations	1 2 3 4 5 6 7
	<b>BAS Reward Responsiveness</b>	
	When I'm doing well at something I love to keep at it.	1 2 3 4 5 6 7
	When I get something I want, I feel excited and energized.	1 2 3 4 5 6 7
	When I see an opportunity for something I like I get excited right away.	1 2 3 4 5 6 7
	When good things happen to me, it affects me strongly.	1 2 3 4 5 6 7
	It would excite me to win a contest	1 2 3 4 5 6 7
	My photo was published on title page in recent issue of Donaldas journal	1 2 3 4 5 6 7

**CONTROL QUESTIONS/ COVARIATES**

**Q20. Food liking (Marchiori et al. 2014)**

	<b>Do you like consuming chocolate?</b>	1 2 3 4 5 6 7
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**Q21. Frequency of consumption (Brunstrom et al. 2008)**

	<b>How often do you consume chocolate?</b>	1. Never 2. Less than once per year 3. Once per year 4. Several times a year 5. Once per month 6. Once per week 7. Several times per week 8. Everyday
--	--	--

**Q22. Hunger level (Marchiori et al. 2014; Brunstrom et al. 2008)**

	<b>How hungry are you right now?</b>	1 2 3 4 5 6 7
--	--------------------------------------	---------------

**Q23. Last time eating**

	<b>How many hours ago you last had something to eat?</b>
--	--

**Q24. Last time drinking**

	<b>How many hours ago you last had something to drink?</b>
--	--

**Q25 Additional questions – preference for luxury goods**

	How often do you have a desire to buy luxury goods?	1 2 3 4 5 6 7
	How do you rate luxury goods?	1 2 3 4 5 6 7

**ADDITIONAL MODERATORS FOR EXPLORATORY REASONS**

**Q26. The Mini-K Short Form (Figueredo et al. 2006)**

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<b>Please indicate how strongly you agree or disagree with the following statements. Use the scale below and write your answers in the spaces provided. For any item that does not apply to you, please enter "0". 3 – strongly disagree, 2 – somewhat disagree, 1 – slightly disagree, 0 – Don't know/ not applicable, 1 – slightly agree, 2 – somewhat agree, 3 – strongly agree.</b>		
	1. I can often tell how things will turn out.	-3 -2 -1 0 1 2 3
	2. I try to understand how I got into a situation to figure out how to handle it.	-3 -2 -1 0 1 2 3
	3. I often find the bright side to a bad situation.	-3 -2 -1 0 1 2 3
	4. I don't give up until I solve my problems.	-3 -2 -1 0 1 2 3
	5. I often make plans in advance.	-3 -2 -1 0 1 2 3
	6. I avoid taking risks.	-3 -2 -1 0 1 2 3
	7. While growing up, I had a close and warm relationship with my biological mother.	-3 -2 -1 0 1 2 3
	8. While growing up, I had a close and warm relationship with my biological father.	-3 -2 -1 0 1 2 3
	9. I have a close and warm relationship with my own children.	-3 -2 -1 0 1 2 3
	10. I have a close and warm romantic relationship with my sexual partner.	-3 -2 -1 0 1 2 3
	11. I would rather have one than several sexual relationships at a time.	-3 -2 -1 0 1 2 3
	12. I have to be closely attached to someone before I am comfortable having sex with them.	-3 -2 -1 0 1 2 3
	13. I am often in social contact with my blood relatives.	-3 -2 -1 0 1 2 3
	14. I often get emotional support and practical help from my blood relatives.	-3 -2 -1 0 1 2 3
	15. I often give emotional support and practical help from my blood relatives.	-3 -2 -1 0 1 2 3
	16. I am often in social contact with my friends.	-3 -2 -1 0 1 2 3
	17. I often get emotional support and practical help from my friends.	-3 -2 -1 0 1 2 3
	18. I often give emotional support and practical help to my friends.	-3 -2 -1 0 1 2 3
	19. I am closely connected to and involved in my community.	-3 -2 -1 0 1 2 3
	20. I am closely connected to and involved in my religion.	-3 -2 -1 0 1 2 3
	21. I visited Bosforus island last year	-3 -2 -1 0 1 2 3

**Q27. Perceived childhood SES and current SES (Griskevicius et al., 2011)**

<b>Please indicate the extent of agreement with following statements, where 1 means „totally disagree“ and 9 means „totally agree“</b>	
My family usually had enough money for things when I was growing up	1 2 3 4 5 6 7 8 9
I grew up in a relatively wealthy neighborhood	1 2 3 4 5 6 7 8 9
I felt relatively wealthy compared to the other kids in my school	1 2 3 4 5 6 7 8 9
I have enough money to buy things I want	1 2 3 4 5 6 7 8 9
I don't need to worry too much about paying my bills	1 2 3 4 5 6 7 8 9
I don't think I'll have to worry about money too much in the future	1 2 3 4 5 6 7 8 9

PORTION SIZE EFFECT MEDIATED BY SCARCITY AND QUALITY PERCEPTION AND  
MODERATED BY FOOD TYPE PRODUCT

**Q28. Perceived stress scale (Cohen et al. 1988)**

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate by circling how often you felt or thought a certain way. 0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often		
	In the last month, how often have you felt that you were unable to control the important things in your life?	1 2 3 4
	In the last month, how often have you felt confident about your ability to handle your personal problems?	1 2 3 4
	In the last month, how often have you felt that things were going your way?	1 2 3 4
	In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	1 2 3 4

**Q29. Self-control (Tangney, Baumeister, Boone, 2004)**

<b>Using the scale provided, please indicate how much each of the following statements reflects how you typically are, where 1 means “not at all like me” and 5 – “very much like me”</b>		
	I am good at resisting temptation	1 2 3 4 5
	I have a hard time breaking bad habits. (R)	1 2 3 4 5
	I am lazy. (R)	1 2 3 4 5
	I say inappropriate things. (R)	1 2 3 4 5
	I do certain things that are bad for me, if they are fun. (R)	1 2 3 4 5
	I refuse things that are bad for me	1 2 3 4 5
	I wish I had more self-discipline. (R)	1 2 3 4 5
	People would say that I have iron self- discipline.	1 2 3 4 5
	Pleasure and fun sometimes keep me from getting work done. (R)	1 2 3 4 5
	I have trouble concentrating. (R)	1 2 3 4 5
	I am able to work effectively toward long-term goals.	1 2 3 4 5
	Sometimes I can’t stop myself from doing something, even if I know it is wrong. (R)	1 2 3 4 5
	I often act without thinking through all the alternatives. (R)	1 2 3 4 5

**Q30. Attitude to luxury (Dubois, Czellar & Laurent 2005)**

	I almost never buy luxury products (r)	1 2 3 4 5
	One buys luxury goods primarily for one’s pleasure	1 2 3 4 5
	For the most part, luxury goods are to be offered as gifts	1 2 3 4 5
	One needs to be a bit of a snob to buy luxury products	1 2 3 4 5
	The luxury products we buy reveal a little bit of who we are	1 2 3 4 5
	Today, everyone should have access to luxury goods	1 2 3 4 5
	People who buy those products seek to imitate the rich	1 2 3 4 5
	People who buy those products try to differentiate themselves from others	1 2 3 4 5
	Those who buy luxury brands are refined people	1 2 3 4 5

PORTION SIZE EFFECT MEDIATED BY SCARCITY AND QUALITY PERCEPTION AND  
MODERATED BY FOOD TYPE PRODUCT

## DEMOGRAPHIC QUESTIONS

**Q31. What is your height?**

**Q32. What is your weight?**

**Q33. Please indicate your age:**

**Q34. Please indicate your gender:**

- Male
- Female

**Q35. Please indicate your average disposable income per household (after taxes) [on Mturk – dollars]:**

- < 5000
- 5001-10,000
- 10,001-15,000
- 15,001-20,000
- 20,001-25,000
- 25,001-30,000
- 30,001

**Q36. Education:**

- Primary
- Secondary
- College
- Higher education

**Q37. Please indicate your marital status:**

Single

Married or living with a partner

Divorced

Widowed

**Q38. Please evaluate your knowledge of English. 1 means "basic", 9 means "fluent".**

**Q39. What is the aim of current study? If you have no ideas, leave it blank.**

## THANKING AND DEBRIEFING

Thank you for your participation.

This survey was designed to gain knowledge on customer preferences of portion sizes and the aspects that influence the decision making process than choosing them.

If you have any questions about the survey or its results, please write to 019794@stud.ism.lt or call +37069857557.

# PORTION SIZE EFFECT MEDIATED BY SCARCITY AND QUALITY PERCEPTION AND MODERATED BY FOOD TYPE PRODUCT

## Appendix. 2

Condition 1: Luxury attribute / small portion size



Created by the *Chocolatier Roco* this chocolate is luxurious and delicious dark chocolate with a smooth creamy texture. Handcrafted from the world's finest and rarest cocoa beans that are directly bought from the plantations in South America, Pacific Ocean and the Caribbean this chocolate bar offers unique and exciting flavor.

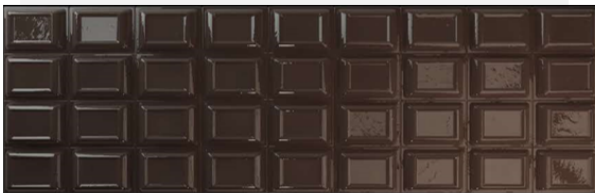
Exclusively crafted by *Chocolatier Roco* internationally recognized expert chocolatiers to ensure the exquisite melt-in-your mouth chocolate.

*Chocolatier Roco* will impress you with unique approach to chocolate making, as its products are sometimes infused with unexpected flavors such as Armand de Brignac champagne or spices.

Chocolate *Roco* comes in ver small packages and is often purchased as lavish gift on special occasions. It has exquisite packaging and expensive ingredients.

Just 15 pieces of exclusive and luxurious chocolate!

Condition 2: Luxury attribute / large portion size



Created by the *Chocolatier Roco* this chocolate is luxurious and delicious dark chocolate with a smooth creamy texture. Handcrafted from the world's finest and rarest cocoa beans that are directly bought from the plantations in South America, Pacific Ocean and the Caribbean this chocolate bar offers unique and exciting flavor.

Exclusively crafted by *Chocolatier Roco* internationally recognized expert chocolatiers to ensure the exquisite melt-in-your mouth chocolate.

*Chocolatier Roco* will impress you with unique approach to chocolate making, as its products are sometimes infused with unexpected flavors such as Armand de Brignac champagne or spices.

Chocolate *Roco* comes in quite large packages and is often purchased as lavish gift on special occasions. It has exquisite packaging and expensive ingredients.

Even 36 pieces of exclusive and luxurious chocolate!

PORTION SIZE EFFECT MEDIATED BY SCARCITY AND QUALITY PERCEPTION AND  
MODERATED BY FOOD TYPE PRODUCT

Condition 3: Regular attribute / small portion size



Created by the chocolate manufacturer Roco this chocolate is simply delicious dark chocolate with a smooth creamy texture. Handcrafted from the cocoa beans originating from South America, Pacific Ocean and the Caribbean this chocolate bar offers indulgent flavor.

Made by chocolate manufacturer Roco internationally recognized expert chocolatiers to ensure the sweet melt-in-your mouth chocolate.

Chocolate manufacturer Roco will impress you with a sweet and simple taste.

Chocolate Roco comes in very small packages and is often purchased as common gift on a daily basis. It has attractive packaging and agreeable price ingredients.

Just 15 pieces of sweet and simple chocolate!

Condition 4: Regular attribute / large portion size



Created by the chocolate manufacturer Roco this chocolate is simply delicious dark chocolate with a smooth creamy texture. Handcrafted from the cocoa beans originating from South America, Pacific Ocean and the Caribbean this chocolate bar offers indulgent flavor.

Made by chocolate manufacturer Roco internationally recognized expert chocolatiers to ensure the sweet melt-in-your mouth chocolate.

Chocolate manufacturer Roco will impress you with a sweet and simple taste.

Chocolate Roco comes in quite large packages and is often purchased as common gift on a daily basis. It has attractive packaging and agreeable price ingredients.

Even 36 pieces of sweet and simple chocolate!

PORTION SIZE EFFECT MEDIATED BY SCARCITY AND QUALITY PERCEPTION AND  
MODERATED BY FOOD TYPE PRODUCT

**Appendix. 3**

The results of the Cronbach's Alpha test for reliability

Purchase intention (Q.3)

**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,869	,870	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
Q3.1 It is very likely that I will buy luxury food products	10,50	8,464	,748	,575	,818
Q3.2 I will purchase luxury food the next time I need products	10,70	7,631	,788	,625	,779
Q3.3 I will definitely try luxury food products	10,53	7,931	,716	,517	,847

Intention to try (Q.4)

**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,605	,642	3

**Item-Total Statistics**

PORTION SIZE EFFECT MEDIATED BY SCARCITY AND QUALITY PERCEPTION AND  
MODERATED BY FOOD TYPE PRODUCT

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Q3.1 It is very likely that I will buy luxury food products	10,50	8,464	,748	,675	,518
Q3.2 I will purchase luxury food the next time I need products	10,70	7,631	,788	,625	,479
Q3.3 I will definitely try luxury food products	10,53	7,931	,716	,617	,547

Perceived scarcity (Q.5)

**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,905	,908	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
Q5.1 This chocolate is exclusive	9,33	10,878	,831	,711	,854
Q5.2 This chocolate is rare	9,85	9,857	,771	,594	,902
Q5.3 This chocolate is unique	9,62	9,595	,843	,729	,836

PORTION SIZE EFFECT MEDIATED BY SCARCITY AND QUALITY PERCEPTION AND  
MODERATED BY FOOD TYPE PRODUCT

Perception of quality (Q.9)

**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,883	,885	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
Q9.1 The chocolate appears to be of good quality.	11,25	5,655	,791	,625	,824
Q9.2 The chocolate seems to be a premium product.	11,46	5,059	,766	,589	,844
Q9.3 The chocolate seems to contain high-quality ingredients.	11,40	5,300	,770	,597	,837

PORTION SIZE EFFECT MEDIATED BY SCARCITY AND QUALITY PERCEPTION AND  
MODERATED BY FOOD TYPE PRODUCT

**Figure 1.** Perceived scarcity (Q.5) as a mediator, purchase intention (Q.3) as D.V.

```

Model   : 7
  Y     : q3intent
  X     : size
  M     : q5scarci
  W     : lux

Sample
Size:   167

*****
OUTCOME VARIABLE:
q5scarci

Model Summary
      R          R-sq      MSE          F      df1      df2          p
      ,3527      ,1244      2,1696      7,7188      3,0000      163,0000      ,0001

Model
      coeff      se      t      p      LLCI      ULCI
constant  3,8374  ,2300  16,6816  ,0000  3,3832  4,2916
size      1,1709  ,3273   3,5770  ,0005  ,5245  1,8173
lux       1,2358  ,3253   3,7986  ,0002  ,5934  1,8782
Int_1     -1,0367  ,4564  -2,2715  ,0244 -1,9379 - ,1355

Product terms key:
Int_1      :      size      x      lux

Test(s) of highest order unconditional interaction(s):
      R2-chng      F      df1      df2      p
X*W      ,0277      5,1599      1,0000      163,0000      ,0244
-----
      Focal predict: size      (X)
      Mod var: lux      (W)

Conditional effects of the focal predictor at values of the moderator(s):

      lux      Effect      se      t      p      LLCI      ULCI
      ,0000      1,1709      ,3273      3,5770      ,0005      ,5245      1,8173
      1,0000      ,1342      ,3180      ,4221      ,6735      -,4937      ,7622

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
  size      lux      q5scarci      .
BEGIN DATA.
  ,0000      ,0000      3,8374
  1,0000      ,0000      5,0083
  ,0000      1,0000      5,0732
  1,0000      1,0000      5,2074
END DATA.
GRAPH/SCATTERPLOT=
  size      WITH      q5scarci BY      lux      .

```

PORTION SIZE EFFECT MEDIATED BY SCARCITY AND QUALITY PERCEPTION AND  
MODERATED BY FOOD TYPE PRODUCT

\*\*\*\*\*

OUTCOME VARIABLE:

q3intent

Model Summary

R	R-sq	MSE	F	df1	df2	p
,3898	,1520	1,6324	14,6948	2,0000	164,0000	,0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	3,6390	,3223	11,2894	,0000	3,0025	4,2754
size	,0694	,2024	,3427	,7322	-,3302	,4689
q5scarci	,3392	,0650	5,2152	,0000	,2108	,4677

\*\*\*\*\* DIRECT AND INDIRECT EFFECTS OF X ON Y \*\*\*\*\*

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI
,0694	,2024	,3427	,7322	-,3302	,4689

Conditional indirect effects of X on Y:

INDIRECT EFFECT:

size -> q5scarci -> q3intent

lux	Effect	BootSE	BootLLCI	BootULCI
,0000	,3972	,1381	,1586	,6971
1,0000	,0455	,1135	-,1962	,2632

Index of moderated mediation (difference between conditional indirect effects):

	Index	BootSE	BootLLCI	BootULCI
lux	-,3517	,1797	-,7660	-,0533

---

PORTION SIZE EFFECT MEDIATED BY SCARCITY AND QUALITY PERCEPTION AND  
MODERATED BY FOOD TYPE PRODUCT

**Figure 2.** Perceived scarcity (Q.5) as a mediator, intention to try (Q.4) as D.V.

```

Model   : 7
  Y     : q4inttry
  X     : size
  M     : q5scarci
  W     : lux

Sample
Size: 167

*****
OUTCOME VARIABLE:
q5scarci

Model Summary
      R      R-sq      MSE      F      df1      df2      p
      ,3527    ,1244    2,1696    7,7188    3,0000    163,0000    ,0001

Model
      coeff      se      t      p      LLCI      ULCI
constant  3,8374    ,2300    16,6816    ,0000    3,3832    4,2916
size      1,1709    ,3273     3,5770    ,0005     ,5245    1,8173
lux       1,2358    ,3253     3,7986    ,0002     ,5934    1,8782
Int_1    -1,0367    ,4564    -2,2715    ,0244   -1,9379   -,1355

Product terms key:
Int_1      :      size      x      lux

Test(s) of highest order unconditional interaction(s):
      R2-chng      F      df1      df2      p
X*W      ,0277     5,1599     1,0000    163,0000    ,0244
-----
      Focal predict: size      (X)
      Mod var: lux      (W)

Conditional effects of the focal predictor at values of the moderator(s):

      lux      Effect      se      t      p      LLCI      ULCI
      ,0000     1,1709     ,3273     3,5770     ,0005     ,5245     1,8173
      1,0000     ,1342     ,3180     ,4221     ,6735     -,4937     ,7622

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
  size      lux      q5scarci      .
BEGIN DATA.
  ,0000     ,0000     3,8374
  1,0000     ,0000     5,0083
  ,0000     1,0000     5,0732
  1,0000     1,0000     5,2074
END DATA.
GRAPH/SCATTERPLOT=
  size      WITH      q5scarci BY      lux      .

```

PORTION SIZE EFFECT MEDIATED BY SCARCITY AND QUALITY PERCEPTION AND  
MODERATED BY FOOD TYPE PRODUCT

\*\*\*\*\*

OUTCOME VARIABLE:

q4inttry

Model Summary

R	R-sq	MSE	F	df1	df2	p
,2732	,0746	1,1636	6,6127	2,0000	164,0000	,0017

Model

	coeff	se	t	p	LLCI	ULCI
constant	4,8377	,2721	17,7766	,0000	4,3003	5,3750
size	,2886	,1708	1,6892	,0931	-,0487	,6259
q5scarci	,1532	,0549	2,7900	,0059	,0448	,2617

\*\*\*\*\* DIRECT AND INDIRECT EFFECTS OF X ON Y \*\*\*\*\*

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI
,2886	,1708	1,6892	,0931	-,0487	,6259

Conditional indirect effects of X on Y:

INDIRECT EFFECT:

size -> q5scarci -> q4inttry

lux	Effect	BootSE	BootLLCI	BootULCI
,0000	,1794	,0993	,0259	,4036
1,0000	,0206	,0550	-,0853	,1429

Index of moderated mediation (difference between conditional indirect effects):

	Index	BootSE	BootLLCI	BootULCI
lux	-,1588	,1043	-,4065	-,0068

---

PORTION SIZE EFFECT MEDIATED BY SCARCITY AND QUALITY PERCEPTION AND  
MODERATED BY FOOD TYPE PRODUCT

**Figure 3.** Perceived quality (Q.9) as a mediator, purchase intention (Q.3) as D.V.

```

Model   : 7
  Y     : q3intent
  X     : size
  M     : q9qualit
  W     : lux

Sample
Size: 167

*****
OUTCOME VARIABLE:
  q9qualit

Model Summary
      R      R-sq      MSE      F      df1      df2      p
,3125  ,0977  1,1429  5,8799  3,0000  163,0000  ,0008

Model
      coeff      se      t      p      LLCI      ULCI
constant  5,0976  ,1670  30,5318  ,0000  4,7679  5,4272
size      ,8108  ,2376  3,4125  ,0008  ,3416  1,2799
lux      ,7398  ,2361  3,1334  ,0020  ,2736  1,2061
Int_1    -,7000  ,3312 -2,1133  ,0361 -1,3541 -,0459

Product terms key:
  Int_1      :      size      x      lux

Test(s) of highest order unconditional interaction(s):
      R2-chng      F      df1      df2      p
X*W      ,0247      4,4662      1,0000      163,0000      ,0361
-----
      Focal predict: size      (X)
      Mod var: lux      (W)

Conditional effects of the focal predictor at values of the moderator(s):

      lux      Effect      se      t      p      LLCI      ULCI
,0000      ,8108      ,2376      3,4125      ,0008      ,3416      1,2799
1,0000      ,1107      ,2308      ,4798      ,6320      -,3450      ,5665

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
  size      lux      q9qualit      .
BEGIN DATA.
  ,0000      ,0000      5,0976
  1,0000      ,0000      5,9083
  ,0000      1,0000      5,8374
  1,0000      1,0000      5,9481
END DATA.
GRAPH/SCATTERPLOT=

```

PORTION SIZE EFFECT MEDIATED BY SCARCITY AND QUALITY PERCEPTION AND  
 MODERATED BY FOOD TYPE PRODUCT

```

size      WITH      q9qualit BY      lux      .
*****
OUTCOME VARIABLE:
q3intent

Model Summary
      R      R-sq      MSE      F      df1      df2      p
,5031    ,2531    1,4378    27,7813    2,0000    164,0000    ,0000

Model
      coeff      se      t      p      LLCI      ULCI
constant    1,7522    ,4849    3,6135    ,0004    ,7947    2,7096
size         ,0056    ,1897    ,0296    ,9764    -,3690    ,3803
q9qualit     ,6215    ,0853    7,2853    ,0000    ,4531    ,7900

***** DIRECT AND INDIRECT EFFECTS OF X ON Y *****

Direct effect of X on Y
      Effect      se      t      p      LLCI      ULCI
,0056    ,1897    ,0296    ,9764    -,3690    ,3803

Conditional indirect effects of X on Y:

INDIRECT EFFECT:
size      ->      q9qualit      ->      q3intent

      lux      Effect      BootSE      BootLLCI      BootULCI
,0000    ,5039    ,1566    ,1851    ,8100
1,0000    ,0688    ,1363    -,1954    ,3440

Index of moderated mediation (difference between conditional indirect
effects):
      Index      BootSE      BootLLCI      BootULCI
lux    -,4351    ,2054    -,8299    -,0128
---
```

PORTION SIZE EFFECT MEDIATED BY SCARCITY AND QUALITY PERCEPTION AND  
MODERATED BY FOOD TYPE PRODUCT

**Figure 4.** Perceived quality (Q.9) as a mediator, intention to try (Q.4) as D.V.

```

Model   : 7
  Y     : q4inttry
  X     : size
  M     : q9qualit
  W     : lux

Sample
Size:   167

*****
OUTCOME VARIABLE:
  q9qualit

Model Summary
      R      R-sq      MSE      F      df1      df2      p
      ,3125    ,0977    1,1429    5,8799    3,0000    163,0000    ,0008

Model
      coeff      se      t      p      LLCI      ULCI
constant  5,0976    ,1670    30,5318    ,0000    4,7679    5,4272
size      ,8108    ,2376     3,4125    ,0008     ,3416    1,2799
lux       ,7398    ,2361     3,1334    ,0020     ,2736    1,2061
Int_1    -,7000    ,3312    -2,1133    ,0361    -1,3541    -,0459

Product terms key:
  Int_1      :      size      x      lux

Test(s) of highest order unconditional interaction(s):
      R2-chng      F      df1      df2      p
X*W      ,0247      4,4662      1,0000      163,0000      ,0361
-----
      Focal predict: size      (X)
      Mod var: lux      (W)

Conditional effects of the focal predictor at values of the moderator(s):

      lux      Effect      se      t      p      LLCI      ULCI
      ,0000      ,8108      ,2376      3,4125      ,0008      ,3416      1,2799
      1,0000      ,1107      ,2308      ,4798      ,6320      -,3450      ,5665

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
  size      lux      q9qualit      .
BEGIN DATA.
  ,0000      ,0000      5,0976
  1,0000      ,0000      5,9083
  ,0000      1,0000      5,8374
  1,0000      1,0000      5,9481
END DATA.
GRAPH/SCATTERPLOT=

```

PORTION SIZE EFFECT MEDIATED BY SCARCITY AND QUALITY PERCEPTION AND  
 MODERATED BY FOOD TYPE PRODUCT

```

size      WITH      q9qualit BY      lux      .
*****
OUTCOME VARIABLE:
q4intry

Model Summary
      R      R-sq      MSE      F      df1      df2      p
,4534      ,2056      ,9989      21,2188      2,0000      164,0000      ,0000

Model
      coeff      se      t      p      LLCI      ULCI
constant      3,1843      ,4042      7,8789      ,0000      2,3863      3,9824
size            ,1921      ,1582      1,2147      ,2262      -,1202      ,5044
q9qualit       ,4273      ,0711      6,0083      ,0000      ,2868      ,5677

***** DIRECT AND INDIRECT EFFECTS OF X ON Y *****

Direct effect of X on Y
      Effect      se      t      p      LLCI      ULCI
,1921      ,1582      1,2147      ,2262      -,1202      ,5044

Conditional indirect effects of X on Y:

INDIRECT EFFECT:
size      ->      q9qualit      ->      q4intry

      lux      Effect      BootSE      BootLLCI      BootULCI
,0000      ,3464      ,1491      ,0988      ,6788
1,0000      ,0473      ,0953      -,1299      ,2493

Index of moderated mediation (difference between conditional indirect
effects):
      Index      BootSE      BootLLCI      BootULCI
lux      -,2991      ,1709      -,6828      -,0112
---
```

PORTION SIZE EFFECT MEDIATED BY SCARCITY AND QUALITY PERCEPTION AND  
MODERATED BY FOOD TYPE PRODUCT

**Figure 5.** Perceived scarcity (Q.5) as a mediator, chocolate consumption (Q.2) as D.V.

Run MATRIX procedure:

\*\*\*\*\* PROCESS Procedure for SPSS Version 3.3 \*\*\*\*\*

Written by Andrew F. Hayes, Ph.D.                      www.afhayes.com  
Documentation available in Hayes (2018). www.guilford.com/p/hayes3

\*\*\*\*\*

Model : 7  
Y : chocolat  
X : size  
M : q5scarci  
W : lux

Sample  
Size: 167

\*\*\*\*\*

OUTCOME VARIABLE:  
q5scarci

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	,3527	,1244	2,1696	7,7188	3,0000	163,0000	,0001

Model

	coeff	se	t	p	LLCI	ULCI
constant	3,8374	,2300	16,6816	,0000	3,3832	4,2916
size	1,1709	,3273	3,5770	,0005	,5245	1,8173
lux	1,2358	,3253	3,7986	,0002	,5934	1,8782
Int_1	-1,0367	,4564	-2,2715	,0244	-1,9379	-,1355

Product terms key:

Int\_1 : size x lux

Test(s) of highest order unconditional interaction(s):

	R2-chng	F	df1	df2	p
X*W	,0277	5,1599	1,0000	163,0000	,0244

-----

Focal predict: size (X)  
Mod var: lux (W)

Conditional effects of the focal predictor at values of the moderator(s):

lux	Effect	se	t	p	LLCI	ULCI
,0000	1,1709	,3273	3,5770	,0005	,5245	1,8173
1,0000	,1342	,3180	,4221	,6735	-,4937	,7622

Data for visualizing the conditional effect of the focal predictor:  
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/  
size lux q5scarci .

PORTION SIZE EFFECT MEDIATED BY SCARCITY AND QUALITY PERCEPTION AND

MODERATED BY FOOD TYPE PRODUCT

BEGIN DATA.

,0000	,0000	3,8374
1,0000	,0000	5,0083
,0000	1,0000	5,0732
1,0000	1,0000	5,2074

END DATA.

GRAPH/SCATTERPLOT=

size WITH q5scarci BY lux .

\*\*\*\*\*

OUTCOME VARIABLE:

chocolat

Model Summary

R	R-sq	MSE	F	df1	df2	p
,2679	,0718	44,9508	6,3402	2,0000	164,0000	,0022

Model

	coeff	se	t	p	LLCI	ULCI
constant	6,2316	1,6914	3,6842	,0003	2,8918	9,5714
size	3,7411	1,0619	3,5232	,0006	1,6445	5,8378
q5scarci	-,0821	,3413	-,2405	,8102	-,7561	,5919

\*\*\*\*\* DIRECT AND INDIRECT EFFECTS OF X ON Y \*\*\*\*\*

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI
3,7411	1,0619	3,5232	,0006	1,6445	5,8378

Conditional indirect effects of X on Y:

INDIRECT EFFECT:

size -> q5scarci -> chocolat

lux	Effect	BootSE	BootLLCI	BootULCI
,0000	-,0961	,4023	-,9135	,7358
1,0000	-,0110	,1244	-,2741	,2590

Index of moderated mediation (difference between conditional indirect effects):

	Index	BootSE	BootLLCI	BootULCI
lux	,0851	,3705	-,6592	,8831

---

PORTION SIZE EFFECT MEDIATED BY SCARCITY AND QUALITY PERCEPTION AND  
MODERATED BY FOOD TYPE PRODUCT

**Figure 6.** Perceived quality (Q.8) as a mediator, chocolate consumption (Q.2) as D.V.

Run MATRIX procedure:

\*\*\*\*\* PROCESS Procedure for SPSS Version 3.3 \*\*\*\*\*

Written by Andrew F. Hayes, Ph.D.                      www.afhayes.com  
Documentation available in Hayes (2018). www.guilford.com/p/hayes3

\*\*\*\*\*

Model : 7  
Y : chocolat  
X : size  
M : q9qualit  
W : lux

Sample  
Size: 167

\*\*\*\*\*

OUTCOME VARIABLE:  
q9qualit

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	,3125	,0977	1,1429	5,8799	3,0000	163,0000	,0008

Model

	coeff	se	t	p	LLCI	ULCI
constant	5,0976	,1670	30,5318	,0000	4,7679	5,4272
size	,8108	,2376	3,4125	,0008	,3416	1,2799
lux	,7398	,2361	3,1334	,0020	,2736	1,2061
Int_1	-,7000	,3312	-2,1133	,0361	-1,3541	-,0459

Product terms key:

Int\_1 : size x lux

Test(s) of highest order unconditional interaction(s):

	R2-chng	F	df1	df2	p
X*W	,0247	4,4662	1,0000	163,0000	,0361

-----

Focal predict: size (X)  
Mod var: lux (W)

Conditional effects of the focal predictor at values of the moderator(s):

lux	Effect	se	t	p	LLCI	ULCI
,0000	,8108	,2376	3,4125	,0008	,3416	1,2799
1,0000	,1107	,2308	,4798	,6320	-,3450	,5665

Data for visualizing the conditional effect of the focal predictor:  
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/  
size lux q9qualit .

PORTION SIZE EFFECT MEDIATED BY SCARCITY AND QUALITY PERCEPTION AND  
 MODERATED BY FOOD TYPE PRODUCT

```

BEGIN DATA.
      ,0000      ,0000      5,0976
    1,0000      ,0000      5,9083
      ,0000      1,0000      5,8374
    1,0000      1,0000      5,9481
END DATA.
GRAPH/SCATTERPLOT=
size WITH q9qualit BY lux .

*****
OUTCOME VARIABLE:
chocolat

Model Summary
      R      R-sq      MSE      F      df1      df2      p
    ,2684    ,0721    44,9368    6,3678    2,0000    164,0000    ,0022

Model
      coeff      se      t      p      LLCI      ULCI
constant    5,0044    2,7107    1,8461    ,0667    -,3481    10,3568
size        3,6143    1,0608    3,4073    ,0008    1,5198    5,7088
q9qualit    ,1576      ,4769      ,3304      ,7415    -,7842    1,0993

***** DIRECT AND INDIRECT EFFECTS OF X ON Y *****

Direct effect of X on Y
      Effect      se      t      p      LLCI      ULCI
    3,6143    1,0608    3,4073    ,0008    1,5198    5,7088

Conditional indirect effects of X on Y:

INDIRECT EFFECT:
size -> q9qualit -> chocolat

      lux      Effect      BootSE      BootLLCI      BootULCI
    ,0000    ,1278      ,3596      -,7389      ,7120
    1,0000    ,0175      ,1051      -,1795      ,2761

Index of moderated mediation (difference between conditional indirect
effects):
      Index      BootSE      BootLLCI      BootULCI
lux    -,1103      ,3318      -,6814      ,7048
----
    
```