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Doctoral Programme in Business and Territorial Competitiveness, Innovation and Sustainability

PhD DISSERTATION

REFLECTIVE AND IMPULSIVE PREDICTORS OF IMPULSE BUYING: A MULTIDISCIPLINARY APPROACH

By

Meysam Moayery

Academic Directors

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San Sebastián, Spain, February 2019

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Dedicated to my beloved parents and brothers

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REFLECTIVE AND IMPULSIVE PREDICTORS

OF IMPULSE BUYING: A MULTIDISCIPLINARY APPROACH

By Meysam Moayery

Abstract

While previous literature indicates that impulse buying is a product of impulses, this study proposes that both reflective and impulsive components contribute to the act of impulsive purchase. In addition, this controversy appears more prominent when we pursue mixed findings regarding habitual and cultural components of impulse buying. Moreover, some aspects of impulse buying, including heuristic nature and social influences, beg more empirical evidence or precise definitions. Following a dual-system model that distinguishes between a reflective and an impulsive system, this research mainly hypothesizes that unhealthy snack impulse buying can be differentially influenced by either impulsive system or reflective system as a function of self-regulatory resources. In this respect, drawing from different areas of research, this study provides a comprehensive model of impulse buying.

Several pre-tests were administrated to (1) justify the selected products; (2) provide appropriate tools for the main study. Two laboratory experiments were conducted to validate the proposed framework. In experiment 1, participants were randomly assigned to one of the conditions of the 2-group design (self-regulatory resource depletion vs. control condition). Furthermore, the design of experiment 2 was a 2 (self-regulatory resource depletion vs. control condition) by 2 (descriptive norm vs. no heuristic) between-subjects design.

The findings of experiment 1 yielded the first empirical foundation for reflective and impulsive aspects of impulse buying behavior. The results supported the fact that self-regulatory resources moderate the impact of both reflective and impulsive determinants on unhealthy snack

impulse buying. The second experiment showed that the descriptive norm is associated with the unhealthy snacks impulse buying only when enough self-regulatory resources are available. This experiment also demonstrated that the influence of descriptive norm on unhealthy snack impulse buying is significant only for those with interdependent self-construals.

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List of Abbreviations

IB	Impulse Buying
IBT	Impulse Buying Tendency
CI	Consumption Impulse
RIM	The Reflective-Impulse Model
SRHI	The Self-Report Habit Index
TFEQ-R18	The Three-Factor Eating Questionnaire-R18
NUSP	The Number of Unhealthy Snacks Purchased
PUSP	The Percentage of Unhealthy Snacks Purchased
TNPS	The Total Number of Purchased Snacks
PANAS	The Positive and Negative Affect Schedule
BMI	Body Mass Index
SCS	The Self-Construal Scale

1. General introduction

1.1. Purpose of study

1.2. Specific objectives of research

1.3. Theoretical implications

1.4. Practical and managerial implications

1.5. Structure of dissertation

1.1. Purpose of study

Imagine a student going to the mall to buy stationery for her homework. When she walks in the mall, a fantastic smell of fresh bakery products persuades her to enter the bakery where she is exposed to a wide range of unhealthy products (e.g., chocolate cakes) as well as healthy products (e.g., whole grain, sugar-free cookies). We might encounter situations like this in our daily life, in which we have to decide between choosing for a short-term pleasure versus our longer-term goals. Which underlying process in this unplanned situation leads people to end up buying many unhealthy snacks? Why are some people more vulnerable to purchase many unhealthy snacks impulsively? Do situational factors matter[1]?

Researchers have been much interested in impulse buying behavior since the 1950s (see Clover, 1950; Kollat & Willett, 1969; Rook & Hoch, 1985). The increasing number of studies in this field can be attributed to the need stemmed from the market, which has witnessed a growing number of people who are willing to buy on impulse. For instance, it has been estimated that 90% of people purchase on impulse at least occasionally (Hausman, 2000). In this regard, past research has shown that impulse purchases generate a substantial proportion of retail industry sales (Kacen, Hess, & Walker, 2012) and even airport purchases (Geuens, Vantomme, & Brengman, 2004). Recent industry research also supported the fact that impulse buying accounts for a sizable percentage of all purchases (Amos, Holmes, & Keneson, 2014). Interestingly, recently some studies reported the presence of impulse buying in services (Sharma, Sivakumaran, & Marshall, 2014a), the tourism industry (Laesser & Dolnicar, 2012), social commerce environments (Chung,

[1] Part of this section (pages 2 and 3) has been used in manuscripts previously accepted for publication (see Moayery, Narvaiza, & Martíns, in press-a; Moayery, Narvaiza, & Martíns, in press-b).

Song, & Lee, 2017), group shopping websites (Zhang, Xu, Zhao, & Yu, 2018), and mobile auctions (Chen & Yao, 2018).

Notwithstanding the high prevalence of impulse buying, many aspects of impulse buying remain an enigma and unexplored (Amos et al., 2014; Ek Styven, Foster, & Wallstrom, 2017; Hausman, 2000). Mainly, this research argues that the definition of impulse buying is still vague. On the one hand, impulse buying has been conceptualized as an impulsive behavior which is a product of impulses, the so-called impulsive system (see Beatty & Ferrell, 1998; Roberts & Manolis, 2012; Vohs, 2006). Based on this idea, impulse buying can be conceptualized as either "heart vs. mind" or "desire vs. willpower" conflict (i.e., affective state overcomes cognition), in which the influence of cognitive deliberation on impulse buying is small (Bahrainizad & Rajabi, 2018; Baumeister, 2002; Coley & Burgess, 2003; Herabadi, Verplanken, & Knippenberg, 2009). On the other hand, it has been discussed that all human behavior is a product of both conscious (thoughtful) and unconscious processes, and hence this view that impulse buying is solely a product of impulsive system can be questioned (Baumeister, Masicampo, & Vohs, 2011; Strack, Werth, & Deutsch, 2006). In this vein, this research argues that while a few studies have taken into account the cognitive aspect of impulse buying (Dholakia, 2000; Herabadi et al., 2009; McGoldrick, Betts, & Keeling, 1999), its reflective element is still unexplored (i.e., goal-directed and involves broader resources). Therefore, the primary purpose of this research is to provide new insight into the nature of impulse buying.

Main research question: *Is impulse buying just a product of impulses? Can we observe the influence of reflective processes?*

1.2. Specific objectives of the research

The controversies mentioned above appear more prominent when we pursue mixed findings regarding habitual and cultural components of impulse buying. In this respect, while impulse buying has been distinguished from habitual behavior (e.g., Rook, 1987; Verplanken & Sato, 2011), it has been discussed by some scholars that daily life is characterized by repetition because we do thing rarely for the first time (Verplanken & Orbell, 2003; Wood, Tam, & Witt, 2005). Therefore, it is plausible to assume that impulse buying also includes habitual components. In addition, this research asserts that the available literature in the field of impulse buying does not account for the mixed results founded by prior cross-cultural studies.

Moreover, some aspects of impulse buying beg more empirical evidence or precise definitions. For instance, while impulse buying has been conceptualized as a product of heuristics (Verplanken & Sato, 2011; Xiao & Nicholson, 2013), to our knowledge only one study empirically tested this notion (Chen, Su, & Widjaja, 2016). Also, while social influences have been discussed by prior studies (e.g., Rook & Fisher, 1995; Kacen & Lee, 2002), the present research argues that the definition offered by this body of knowledge is not clear enough. Therefore, this research concurs with the recent literature discussing that it seems difficult to frame impulse buying with the prevalent models of behavior (Amos et al., 2014; Verplanken & Sato, 2011). To address these issues, this research follows the stream of research emphasizing the need to develop a comprehensive model of impulse buying by a multidisciplinary approach (Xiao & Nicholson, 2011; Xiao & Nicholson, 2013).

Therefore, specific objectives of this research are as follow:

- To shed light on the habitual component of impulse buying.
- To provide insight into the cultural component of impulse buying.
- To offer some empirical evidence about heuristic nature of impulse buying.
- To redefine social influences of impulse buying.
- To develop a comprehensive model of impulse buying by a multidisciplinary approach.

1.3. Theoretical implications

The findings extend literature in several ways. First and foremost, this is the first empirical foundation for reflective and impulsive aspects of impulse buying behavior. While impulse buying has been considered as a product of impulsive system (see Baumeister, 2002; Prestwich, Hurling, & Baker, 2011; Vohs, 2006; Vohs & Faber, 2007), the present research shows that impulse buying of unhealthy snacks can be differentially influenced by either impulsive system or reflective system as a function of the availability of self-regulatory resources. Based upon this discussion, we define impulse buying as a function of both reflective (i.e., goals and standards) and impulsive (i.e., impulse buying tendency and habit) systems depending on the availability of self-regulatory resources. Second, applying habit as a predictor of impulse buying is a novel idea of this research. Third, using habit in this dual-system model can also be regarded as an answer to Gardner, Corbridge, and McGowan's (2015) call for further theorizing around the precise role of habit in predicting health behavior. Fourth, this study provides further empirical evidence regarding heuristic nature of impulse buying. Applying heuristic component in the proposed model, itself, has some theoretical contributions. For instance, it provides insight into the effect of social influences on impulse buying behavior. Fifth, integrating the focus theory of normative conduct

with a social-psychological perspective is also a novel idea of this research. This notion provides new insight into the cultural components of impulse buying.

1.4. Practical and managerial implications

This study attempts to offer practical implications from consumer welfare perspective supporting the development of public health policies. Firstly, building upon Hofmann, Friese, and Wiers's (2008a) suggestion, this research offers a comprehensive intervention strategy to improve people's health. This intervention strategy is mostly based on (a) dietary education, (b) using new methods in order to stop impulses and (c) increasing self-control strength. This study also suggests using descriptive norm as a sustainable way of promoting a healthy lifestyle. This study mostly emphasizes descriptive norm education as well as the practical approach that should be taken into account when applying this norm.

1.5. Structure of dissertation

The dissertation includes six sequential chapters (see Table 1.1). The first chapter aims to introduce and explain the phenomenon under study. In this regard, the current chapter firstly justifies the relevance of the central research question. This chapter also presents some specific objectives of the research. Finally, a list of theoretical, practical and managerial contributions is provided.

The second chapter, the so-called "*Review of impulse buying literature*", aims to provide a general view of the literature. The second chapter, firstly, provides a review of current knowledge pertaining to the definitions of impulse buying. This is followed by a discussion of factors influencing impulse buying, including internal stimuli, situational factors and demographic-cultural factors. Finally, a review of conceptual models of impulse buying is provided.

The third chapter, *Conceptual model and hypotheses*, begins with the problem statement. Moreover, drawing from different areas of research (including psychology, social psychology, and cultural psychology), the third chapter provides a comprehensive model of impulse buying. To narrow our focus, this study focuses on unhealthy snack impulse buying because unhealthy snacks are available everywhere promoting more impulsive purchases (Verplanken, Herabadi, Perry, & Silvera, 2005). To study this, this chapter firstly accepts the logic of the Reflective-Impulsive Model (RIM; Strack & Deutsch, 2004) as a strong foundation for developing a comprehensive model. In this respect, the chapter introduces impulse buying tendency and habit as impulsive predictors of impulse buying, while dietary restraint represents the reflective component. This model assumes that while these two systems operate in parallel, availability of self-regulatory resources (self-control capacity) can determine which of the two systems will gain control over the final behavior. Moreover, the focus theory of normative conduct (Cialdini, Kallgren, & Reno, 1991; Cialdini, Reno, & Kallgren, 1990) and the theory of independent and interdependent self-construals (Markus & Kitayama, 1991) have been integrated into the basic model to obtain the objectives of this study. This is followed by proposing a set of hypotheses.

Chapter 4, *Research design and methodology*, provides justification for the selected research design. This is followed by product selection which is accompanied by a description of the related pilot study. This chapter also includes coverage of methodology, tools and procedures applied to the two experimental studies. In experiment 1, participants were randomly assigned to one of the conditions of the 2- group design (self-regulatory resource depletion vs. control condition), with 20 males and 30 females per condition. Moreover, the second experiment was a between-subjects, 2 (self-regulatory resource depletion vs. control condition) by 2 (descriptive norm vs. no heuristic) experiment. Finally, ethical considerations are discussed in this chapter.

Chapter 5, *Analyses and results*, contains detailed descriptions of data analysis techniques applied to test the related hypotheses. In this respect, for each experiment, preliminary analyses, as well as testing the main effects, are discussed. Regarding the experiment 1, in line with our prediction, unhealthy snacks impulse buying was related to the impulsive system only in the low self-regulatory resource condition. In contrast, when self-regulatory resources were high, unhealthy snack impulse buying was uniquely associated with the reflective system as expected. Pertaining to the experiment 2, the results supported the idea that the current perception of descriptive norms can decrease unhealthy snacks impulse buying only in the high self-regulatory resource condition. Moreover, the results supported the fact the descriptive norm manipulation is associated with the behavior only under condition of high self-regulatory resources. However, in contrast with our prediction, the descriptive norm manipulation had an opposite effect. Finally, the results supported the idea that self-regulatory resource availability promotes adherence to the descriptive norm, but only for those people with an interdependent self-construal.

Chapter 6, *Discussion and implications*, presents and discusses first, the findings obtained from this study. Then, the theoretical, practical and managerial implications are discussed. This is followed by limitations and suggestions for future research.

The final section, *Appendices*, provides different tools applied in the two experiments. Appendices 1 and 2 include all the materials employed for the "product selection pilot study" and the "self-construal priming" respectively. Other appendices include all the materials utilized in the two experiments.

Table 1.1. Structure of dissertation.

Chapter	Title
Chapter 1	*General introduction*
Chapter 2	*Review of impulse buying literature*
Chapter 3	*Conceptual model and hypotheses*
Chapter 4	*Research design and methodology*
Chapter 5	*Analyses and results*
Chapter 6	*Discussion and implications*

2. Review of impulse buying literature

2.1. Introduction

2.2. Definitions of impulse buying

2.3. Factors influencing impulse buying

2.4. Conceptual models

2.5. Summary

2.1. Introduction

Impulse buying (IB) has been studied from different theoretical perspectives (Verpelanken & Sato, 2011), but many aspects of impulse buying are still unexplored (Amos et al., 2014; Ek Styvén et al., 2017; Hausman, 2000). In addition, although it is easy to mention some examples of engaging people in impulsive behavior (e.g., stopping in the street and chatting with one friend), there is a great deal of disagreement to define it precisely and to distinguish between socially acceptable and unacceptable impulsive behavior (Evenden, 1999). In this vein, previous research has addressed the "what", "why", "how" and "when" of impulse buying (see Badgaiyan & Verma, 2014; Vohs & Faber, 2007). Therefore, a review of the literature in the field of impulse buying is essential to identify research gaps, inconsistencies in this body of knowledge and justify further research (see Cronin, Ryan, and Coughlan, 2008). To address this issue, this chapter provides a review of definitions of impulse buying, its influencing factors, and conceptual models. This review not only gives insight into the current knowledge of impulse buying, but also provides us with clues to develop our model comprising different schools of thought[2].

2.2. Definitions of impulse buying

Most prior research addressing impulse buying (see Table 2.1) has been based upon two premises: (a) unplanned buying was considered as a synonym of impulse buying (e.g., Kollat & Willett, 1967). For instance, Applebaum (1951) defined impulse buying as a "buying which presumably was not planned by the customer before entering a store, but which resulted from a stimulus created by a sales promotional device in the store" (p. 176); (b) product type was regarded as the most

[2] We use the term "impulse buying", "impulse buying behavior" and "impulsive buying" interchangeably in this dissertation (see Verplanken & Sato, 2011).

influential factor in determining impulse buying. In this respect, Kollat and Willett (1969) argued that referring to specific products, as impulse items, is a typical way of reporting unplanned purchases rates. Similarly, Stern (1962) identified nine product-related factors (e.g., price, size) influencing impulse buying.

On the other hand, some authors tried to make a distinction between impulse buying and unplanned buying. For example, Engel and Blackwell (1982) conceptualized impulse buying as an action undertaken without a problem previously having been consciously recognized or a buying intention formed before entering the store. Later, scholars began to highlight the underlying process of impulse buying instead of overemphasizing the role of products in impulse buying. In this sense, the seminal works by Rook and Hoch (1985) and Rook (1987)[3] can be unequivocally considered to be the most influential articles in this field of study. To address this problem, these authors introduced the psychological perspective of impulse buying in which the consumer is the central variable. This idea is based on the premise that it is people, not the product, who experience the impulse to buy. In this vein, Rook and Hoch (1985) identified five vital elements to distinguish "impulsive from non-impulsive consumer behavior".

1. *It encompasses a sudden and spontaneous desire to act:* It is based on the notion that while for example both chocolate and milk can be unplanned purchases in a shopping trip, there are differences between them on how they elicit behavior. While milk provides a cognitive reminder, the chocolate triggers a more complex response, such as feeling a sudden urge to buy. Therefore, while being unplanned is a crucial feature

[3] Rook's (1987) paper is the most cited paper in this field of study, which can show the importance of this seminal work.

of impulse buying, it is not accurate to assume that all unplanned buys are impulse buys.

2. *Psychological disequilibrium*: This state can cause an individual to feel temporarily out of control.
3. *Psychological conflict and struggle that may ensue*: Usually consumers weight the benefits and the costs of immediate gratification.
4. *Consumers reduce cognitive evaluation towards product attributes:* This idea refers to the fact that the behavior is mostly automatic and low in intellectual control.
5. *People ignore consequences of impulsive consuming*: This concept refers to the pathological aspect of impulse buying.

Drawing on this concept, Rook (1987, p. 191) argued that:

> Impulse buying occurs when a consumer experiences a sudden, often powerful and persistent urge to buy something immediately. The impulse to buy is hedonically complex and may simulate emotional conflict. Also, impulse buying is prone to occur with diminished regard for its consequence. … Buying impulses are often forceful and urgent; … Also, impulse buying is a fast experience, not a slow one. It is more likely to involve grabbing a product than choosing one. Impulse buying is more spontaneous than cautious.

More especially, Rook (1987) also distinguished impulse buying from habitual behavior because impulse buying tends to disturb the consumer's behavior stream. In fact, while impulsive purchases are more emotional than rational and consumers feel out of control when buying impulsively, a thoughtful shopping is a part of one's routine. Therefore, impulse buying can be perceived as more

"bad" than "good" by consumers (Rook, 1987). Interestingly, there is a general consensus among scholars regarding the psychological definition of impulse buying offered by Rook (1987) (e.g., Amos et al., 2014; Atulkar & Kesari, 2018; Bayley & Nancarrow, 1998; Herabadi et al., 2009; Kacen & Lee, 2002; Roberts & Manolis, 2012; Silvera, Lavack, & Kropp, 2008; Verplanken & Sato, 2011; Vohs & Faber, 2007; Weun, Jones, & Beatty, 1998; Youn & Faber, 2000). Put simply, based on this stream of research impulse buying can be characterized as having three core elements, including lack of planning, short decision-making time and emotional responses (i.e., excitement and pleasure) (Kang, 2013; Verplanken & Herabadi, 2001). Also, while other scholars have generally accepted this psychological definition of impulse buying, there have been some attempts to improve it. Beatty and Ferrell (1998), for instance, extended impulse buying definition as follow:

> Impulse buying is a sudden and immediate purchase with no pre-shopping intentions either *to buy the specific product category or to fulfil a specific buying task*. The behavior occurs after experiencing an urge to buy, and it tends to be spontaneous and without a lot of reflection. *It does not include the purchase of a simple reminder item, which is an item that is simply out of stock at home* (p. 170).

Moreover, while Rook (1987) is fond of the concept of irresistible impulses among shoppers (see also Thompson, Locander, & Pollio, 1990), some authors have criticized this view (see Baumeister, 2002; Hoch & Loewnesten, 1991). In this regard, Baumeister (2002) proposed that impulse purchases are resistible, but people fail to resist them based on their differences in self-control capacity. Similarly, Hoch and Loewnesten (1991) framed impulse buying as a struggle between desire and willpower. In essence, even the most impulsive buyers also may experience a need to resist making an impulsive purchase (Rook & Fisher, 1995). For this reason, Coley and

Burgess (2003) discussed that impulse buying emerges when affective state overcomes cognition. This idea has been conceptualized as "heart vs. mind" conflict (Herabadi et al., 2009). Drawing on this stream of research, Dittmar and Bond (2010) defined impulse buying as an "acting without thinking, where people are more motivated by immediate reward than by long-term consequence of their behavior" (p.751). Based on this idea, the influence of cognitive deliberation on impulse buying is small. In the same way, Gardner and Rook (1988) also defined impulse buying as a non-deliberate action.

Contrary to this view, later scholars have highlighted the role of cognitive evaluation in impulse buying behavior (Dholakia, 2000; Herabadi et al., 2009; McGoldrick et al., 1999). According to Dholakia (2000), the experienced psychological conflict (i.e., heart vs. mind) will result in a more thought-based evaluation of the consequences of impulsive consumption (i.e., weighing pros and cons). Interestingly, even the result of this thoughtful evaluation might lead to impulsive consumption (Dholakia, 2000). In the same vein, Kang (2013) also argued that most consumers would still perform information search when they want to buy on impulsive. However, cognitive aspects of impulse buying have rarely been investigated, and hence it is crucial to examine the influence of cognitive aspects on impulse buying (Harmancioglu, Zachary Finney, & Joseph, 2009; Herabadi et al., 2009).

Furthermore, contrary to Rook's (1987) point of view, some authors have criticized the traditional belief in which impulse buying was regarded as an irrational or inappropriate purchase (Hausman, 2000; Herabadi et al., 2009; Shiv & Fedorikhin, 1999). In this respect, Shiv and Fedorikhin (1999) suggested that this view belongs to researchers since consumers do not view impulse buying as normatively inappropriate (at least immediately after the behavior occurs). To address this issue, Hausman (2000) postulated that people engage in impulsive buying behavior

because of a variety of non-economic reasons, such as fun, fantasy, and social or emotional gratification. In essence, although impulse buying seems wasteful in terms of information processing (i.e., poor decision making), some reasons are attributing this negative evaluation to general impulsive behavior and not to impulse buying.

First, the definition of accuracy (i.e., appropriateness of impulse buying) per se is unclear. For example, some criteria such as low price cannot be used as a definite measure of accuracy. Therefore, impulse buying would be fundamentally accurate if consumers judge the accuracy of their buying decision subjectively, through satisfaction with the purchase. As a result, the non-economic reasons (e.g., fun and social gratification) can account for the perceived accuracy by consumers (Hausman, 2000). Otherwise stated, while negative views towards impulse buying derive from the interest in exceptional cases (i.e., violating social norms), much of impulse buying involves only minor violation of norms, and the relevant consequences are less problematic (Rook & Fisher, 1995). This can be attributed to the fact that even norms are supporting milder impulse buying as a consumer style among large segments of the population (Herabadi et al., 2009; Wood, 1998). Similarly, other authors have endorsed the role of social images, social ties, self-discrepancies and materialism (Dittmar, Beatties, & Friese, 1996; Dittmar & Bond, 2010; Park & Choi, 2013). Simply stated, many impulse purchases arise from a shopper's need to satisfy emotional well-being needs and continue social ties through shopping (Park & Choi, 2013). Secondly, there is "increasing evidence that rational decision making is not inherently any more accurate than other decision-making alternatives, such as heuristics" (Hausman, 2000, p. 409). For instance, in an experimental study, Salmon, De Vet, Adriaanse, Fennis, Veltkamp, and De Ridder (2015) showed that people were more likely to buy healthy food in the supermarket when the product was accompanied with a heuristic cue (i.e., an external cue available in the situation). This

uncertainty is based on the premise that it is nearly impossible to make direct comparison across products due to their ambiguous features, and hence people buy on impulse to reduce this complex decision making (Hausman, 2000).

Table 2.1. Definitions of impulse buying.

Author(s)	**Definitions of Impulsive Buying**
Applebaum (1951)	"Buying which presumably was not planned by the customer before entering a store, but which resulted from a stimulus created by a sales promotional device in the sore." (p. 176)
Engel and Blackwell (1982)	An action undertaken without a problem previously having been consciously recognized or a buying intention formed before entering the store.
Rook (1987)	"Impulse buying occurs when a consumer experiences a sudden, often powerful and persistent urge to buy something immediately. The impulse to buy is hedonically complex and may simulate emotional conflict." (p. 193)
Beatty and Ferrell (1998)	"Impulse buying is a sudden and immediate purchase with no pre-shopping intentions either to buy the specific product category or to fulfil a specific buying task." (p. 170).
Hausman (2000)	People engage in impulsive buying behavior because of a variety of non-economic reasons, such as fun, fantasy, and social or emotional gratification.
Dittmar and Bond (2010)	An "acting without thinking, where people are more motivated by immediate reward than by long-term consequence of their behavior." (p. 751).

Source: Compiled by author

2.3. Factors influencing impulse buying

Studies have shifted from defining and measuring the concept of impulse buying to determine the factors causing or underlying the impulsive purchases (e.g., Youn & Faber, 2000). This paradigm shift can be attributed to the lack of knowledge about antecedents of impulse buying (see Amos et al., 2014; Badgaiyan & Verma, 2014; Beatty & Ferrell, 1998). Impulse buying can be influenced by several factors, including *internal stimuli, situational factors, and demographic-cultural factors* (see Amos et al., 2014; Muruganantham & Bhakat, 2013). Moreover, while most of the studies have focused on retailing (Laesser & Dolnicar, 2012), few studies have examined factor influencing impulse buying in the online context (Chen et al., 2016; Ek Styvén et al., 2017). Therefore, in this study, we will focus on traditional brick and mortar businesses rather than online buying context.

2.3.1. Internal stimuli

Internal stimuli (dispositional characteristics) refer to individuals' chronic personalities and tend to apply generally to different situations (Ek Styvén et al., 2017; Schiffman & Kanuk, 2007). Therefore, studies on internal stimuli have focused on characteristics of individuals that might cause them to engage in impulse buying behavior (Dawdon & Kim, 2009). Two recent reviews of the literature have shown that internal stimuli examined in the impulse buying studies are psychological constructs, including impulse buying tendency (IBT), self-control, and so on (Amos et al., 2014; Muruganantham & Bhakat, 2013).

In this regard, according to Hoch and Loewnstein (1991), the desire to make purchase and self-control are determinants of purchase decision making at any given time. Therefore, "an important goal for consumer psychology is to understand when and why consumer behavior is

driven by impulses versus rational decisions" (Hofmann, Strack, & Deutsch, 2008b, p. 22). Based on Amos et al. (2014), while impulse buying tendency (IBT) is the most effective factor promoting impulse buying, factors such as self-control can inhibit impulse buying. As a consequence, it is crucial to know the importance of IBT and self-control regarding impulse buying. In this study, we consider these two factors as the most important internal factors of impulse buying. Therefore, we first study these two factors and then other internal stimuli will be discussed. Other internal stimuli are shopping enjoyment, variety seeking, openness to experience, self-identity, materialism, susceptibility to interpersonal influence, self-esteem and need for touch (see Amos et al., 2014; Muruganantham & Bhakat, 2013).

2.3.1.1. Impulse buying tendency (IBT)

Some people are more susceptible to impulse buying, and hence they do it whenever an opportunity arises (Ek Styvén et al., 2017; Verplanken & Sato, 2011). Several scholars have emphasized the importance of impulse buying tendency in impulse buying studies (e.g., Atulkar & Kesari, 2018; Chen et al., 2016; Ek Styvén et al., 2017; Rook & Fisher, 1995). In this respect, there are several papers devoted to considering impulse buying tendency as a psychological antecedent of impulse buying (e.g., Badgaiyan & Verma, 2014; Beatty & Ferrell, 1998; Dholakia, 2000; Ek Styvén et al., 2017; Herabadi et al., 2009; Saad & Metawie, 2015). This idea is based on the premise that impulse buying tendency is rooted in personality and might thus be a stable individual difference variable (Verplanken & Herabadi, 2001). For instance, it has been discussed that while impulse buying tendency refers to an individual's chronic characteristic (i.e., personality trait), the act of impulse buying refers to spontaneous buying decision during shopping (Ek Styvén et al., 2017; Herabadi et al., 2009).

More specially, it has been found that chronic impulse buyers are more likely to experience increased urges to buy almost in all shopping contexts, including traditional shopping context (Beatty & Ferrell, 1998), online buying context (Wells, Parboteeah, & Valacich, 2011; Zhang et al., 2018), TV shopping (Park & Lennon, 2006), mobile commerce (Wu & Ye, 2013), and services context (Sharma et al, 2014a). Interestingly, some recent studies have shown that IBT is the most influential factor in determining impulse buying (Amos et al., 2014; Xiao & Nicholson, 2013). This can be partially attributed to the fact that consumers with high impulse buying tendency are less likely to experience post-purchase regret after an impulsive purchase than less impulsive individuals (George & Yaoyuneyong, 2010). In another study, it has been found that "impulsive buyers are less successful in keeping their attention focused on a focal product in a shopping task" (Büttner et al., 2014, p. 6). To study different aspects of IBT, in the following we will discuss the existing self-reports of impulse buying tendency. It is based on the premise that one way to operationally define a variable is to describe the existing self-reports and their indicators (Rubin & Babbie, 2011).

Rook and Fisher (1995) can be considered as the first authors who tried to define and offer a valid scale of IBT[4]. They conceptualized IBT as a "consumer tendency to buy spontaneously, unreflectively, immediately and kinetically" (p. 306). In this vein, based on two very different samples, they developed a nine-item measure of IBT (e.g., "I often buy things spontaneously"; on a five-point scale; 1 = *strongly disagree*, 5 = *strongly agree*).

[4] Impulse buying tendency has been called by scholars differently, such as buying impulsiveness (Rook & Fisher, 1995) or consumer impulsiveness (Puri, 1996). Therefore, to obtain a consistent terminology, we follow a recent meta-analysis by Amos et al. (2014), who labelled this construct as impulse buying tendency (IBT).

Later, Puri (1996) postulated that the existing differential accessibility of pleasure-seeking versus self-regulation explains individual differences in impulsivity trait. Therefore, Puri's scale measures people's chronic value of impulsiveness which includes two subscales, the so-called "prudent" (i.e., self-control and responsible) and "hedonic" (i.e., impulsive and careless) in a seven-point scale ranging from 1 (*usually would describe me*) to 7 (*seldom would describe me*). Similarly, Weun et al. (1998) defined IBT as "the extent to which an individual is likely to make unintended, immediate, and reflective purchase" (p. 1124). In fact, contrary to Rook and Fisher (1995), who took into account only the spontaneous dimension of IBT, the new scale by Weun et al. (1998) emphasized both hedonic and spontaneous aspects of IBT. Through four separate studies, they elaborated and validated a five-item scale of IBT (e.g., "When I go shopping, I buy things that I had not intended to purchase"; on a seven-point scale; 1= *very rarely*, 7= *very often*). In this respect, Weun et al. (1998) claimed that their scale represented a more fully validated scale in comparison with Rook and Fisher's (1995) scale. Interestingly, later Sun et al. (2004) confirmed that adding the hedonic dimension of IBT can enhance the reliability of Rook and Fisher's (1995) scale.

Moreover, Verplanken and Herabadi (2001) argued that IBT is a stable individual difference variable, and hence is rooted in personality. For instance, while individuals who usually plan their communication with others might as well adopt such a style while shopping, individuals who never deliberate their daily activities (e.g., work) are more likely to be impulse buyers. Based on this idea, these authors developed a 20-item scale of IBT (e.g., "I usually think carefully before I buy something"; on a seven-point scale; 1= *strongly disagree*, 7= *strongly agree*). The scale includes cognitive aspects (i.e., lack of planning and deliberation) and affective aspects (i.e., feelings of pleasure, excitement, compulsion, lack of control and regret). Further analysis

confirmed that IBT has a strong basis in personality. In this respect, the results showed that the affective facet of IBT was associated with lack of autonomy (e.g., easily influenced by others) and action orientation (e.g., act immediately). On the other hand, the cognitive aspect was related to a low personal need for structure, low need to evaluate and lack of conscientiousness. Some studies later replicated the idea that IBT is correlated with personality factors (e.g., Silvera et al., 2008).

Sharma, Sivakumaran, and Marshall (2011) criticized the scales developed with one dimension (e.g., Rook & Fisher, 1995) or two dimensions (e.g., Verplanken & Herabadi, 2001). Therefore, they proposed a need to develop a three-dimensional scale to reduce the complexity of consumer impulsiveness, which is meaningful across different cultures. They empirically developed a three-factor structure for consumer impulsiveness trait, including prudence (similar to Puri, 1996), self-indulgence and self-control. More specially, the scale contains 12 items (e.g., "I am a careful thinker"; on a seven-point scale; 1= *strongly disagree*, 7= *strongly agree*). Following this idea, they demonstrated that while all the three factors are meaningful for collectivists (Asians, interdependent), only two of these factors can be meaningful for individualists (Western cultures, independents) (see the distribution of collectivism-individualism by Hofstede, 1980). This is based on the premises that collectivists are more likely to accept their responsibility for losing their self-control only on those situations in which they indulged themselves deliberately compared to those situations in which they simply could not control themselves. Therefore, all three components of impulse buying tendency are applicable for collectivists (prudence, self-indulgence, and self-control) because they can distinguish between deliberate self-indulgence and involuntary loss of self-control. On the other hand, a two-dimension scale (prudence and hedonism) can conceptualize consumer impulsiveness in individualists (Western cultures, independents) because it does not matter for them to distinguish between

deliberate self-indulgence and involuntary loss of self-control. Put simply, "the cultural orientation of individuals influences the psychological structure underlying their impulsive trait" (Sharma et al., 2011, p. 241). In the same line, Mittal, Chawla, and Sondhi (2016) also concerned the scale developed in Western countries and attempted to establish a scale of IBT based on Indian consumers. However, similar to those reported by Verplanken and Herabadi (2001), the results showed that affective and cognitive dimensions conceptualized impulse buying tendency. Interestingly, Sharma and colleagues (2014b) later confirmed that impulse buying tendency is a global trait having the same dimensions for both independent and interdependent self-construals (see Table 2.2).

Table 2.2. Operational definitions of impulse buying tendency.

Source	Description	Reliability	Number of items in scale
Rook and Fisher (1995, p. 306)	"Consumer tendency to buy spontaneously, unreflectively, immediately and kinetically."	α = .88 α = .82	9
Puri (1996)	The existing differential accessibility of pleasure-seeking versus self-regulation can explain individual differences in impulsivity trait.	α = .82	12
Weun et al. (1998, p. 1124)	"The extent to which an individual is likely to make unintended, immediate, and reflective purchase."	Not reported	5
Verplanken and Herabadi (2001)	The scale includes cognitive aspects (lack of planning and deliberation) and affective aspects (feelings of pleasure, excitement, compulsion, lack of control and regret).	α = .86	20
Sharma et al. (2011)	The scale is a three-dimensional construct with distinct cognitive (imprudence), affective (self-indulgence) and behavioral (lack of self-control) elements.	α = .85	12

Source: Compiled by author

2.3.1.2. Self- control

Studies in everyday life show that people resist against impulses that tempt them to go back to sleep, eat delicious snack foods, engage in inappropriate sexual behavior and impulse buying (Baumeister, Vohs, & Tice, 2007; Hagger, Wood, Stiff & Chatzisarantis, 2010; Vohs & Faber, 2007). Self-control is an important key to success in life referring to the self's capacity to alter its own states and responses (Baumeister, 2002; Baumeister et al., 2007). In other words, self-control is a capacity or personality process seeking to override one's thoughts, emotions, impulses, appetites and automatic or habitual behavior (Baumeister, Gailliot, DeWall, & Oaten, 2006; John, Pervin, & Robins, 2008). Simply stated, "from a self-control researcher's perspective, one challenge is to make sure that the research does indeed address how people deal with temptation, successfully or unsuccessfully" (Hofmann & Kotabe, 2012, p. 711). As we discussed earlier, Baumeister (2002) conceptualized impulse buying as a battle between desire and self-control[5]. Therefore, it is essential to identify which factors systematically diminish the strength of self-control. In spite of existing significant role of self-control in all the areas of life, we know little about the influence of self-control on spending behavior, such as impulse buying behavior (Roberts & Manolis, 2012).

More specially, self-control has three major ingredients, including standards, monitoring process and self-regulatory resources[6] (Baumeister, 2002). In this regard, standards (e.g., exiting particular purchasing goal in the consumer's mind) have been conceived as rational influences on behavior, and hence consumers without clear goals are more likely to have laps in self-control

[5] The terms "self-control", "self-regulation" and "willpower" have been used interchangeably by scholars (e.g., Buameister, 2002; Hagger et al., 2010; Muraven et al., 2005).
[6] The terms "self-regulatory resources", "self-control strength" and "the capacity to change" have been used interchangeably by scholars (Baumeister, 2002; Muraven et al., 2005; Vohs & Faber, 2007).

(Roberts & Manolis, 2012). On the other hand, self-monitoring refers to the fact that consumers can track their behavior by monitoring their behavior, including how much they spent (Baumeister, 2002). In few words, individuals must monitor themselves to compare the actual state of self to the standards (Baumeister & Heatherton, 1996). For instance, it has been demonstrated that people with high self-monitoring are less likely to do impulse buying (Sharma, Sivakumaran, & Marshall, 2010). However, people often fail to detect a conflict between their actual behavior and their standards, and hence behave in a manner that is inconsistent with their long-term goals (Hofmann & Kotabe, 2012; Roberts & Manolis, 2012)[7].

However, having clear goals and close monitoring is not enough to perform necessary actions (Baumeister, 2002). Therefore, people need self-regulatory resources (i.e., an inner pool of resources) that enable them to progress from their current state to a desirable state (Hedgcock, Vohs, & Rao, 2012; Vohs & Faber, 2007). According to the strength model, self-control operates like a muscle that needs some strength or energy resource to control one's behavior (see Baumeister et al., 2006; Baumeister et al., 2007; Muraven & Baumeister, 2000; Muraven, Collins, Shiffman, & Paty, 2005; Muraven, Tice, & Baumeister, 1998). However, self-regulatory resources are finite (i.e., consumable resources), so that they become temporarily depleted or fatigue (like a muscle) by situational self-control demands, such as thought suppression, emotion suppression and attention control tasks (Muraven & Baumeister, 2000; Vohs & Faber, 2007). In other words, this limited resource becomes depleted when people engage in an initial self-control task (Hedgcock et al., 2012; Vohs & Faber, 2007). Therefore, immediately after this depletion, they are less capable of regulating their behavior, such as following their long-term goals (at least for a

[7] Part of this section (pages 25 to 28) has been used in manuscript previously accepted for publication (see Moayery et al., in press-a).

short time). A review by Vohs (2006) also showed that self-regulatory resource depletion[8] effects different domains, including overeating, impulse buying, and logical thinking.

Regarding impulse buying, mainly, the most important question should be whether the person can muster up whatever is needed to resist the temptation to buy (Baumeister, 2002). In this sense, there are two approaches for exploring the influence of self-control on impulse buying: (1) Following the logic of the strength model, one stream of research investigated the impact of self-regulatory resource depletion on impulsive buying behavior. This body of knowledge argued that depleting consumers of their self-regulatory resources by having them engage in an initial self-control task subsequently leaves people less able to resist impulses to buy (Vohs, 2006; Vohs & Faber, 2007). In other words, people are more likely to behave impulsively when the activation of self-regulatory goals is inhibited by situational factors (Zhang & Shrum, 2008). This idea is based upon the premise that self-regulatory resource can be regarded as a limited inner resource vulnerable to depletion, just as muscle become fatigued after a period of exertion (Hagger, Wood, Stiff, & Chatzisarantis, 2010; Muraven et al., 2005). Interestingly, it has been argued that, like strengthening a muscle, self-control can get stronger through exercise (Baumeister et al., 2006; Muraven & Baumeister, 2000). For instance, Sultan, Joireman, and Sprott (2012) demonstrated that repeated physical and cognitive self-control exercises over time reduced impulse buying urges. (2) Another stream of research emphasized that "although all individuals are vulnerable to state depletion of self-control resources, individuals are proposed to differ in their overall self-control capacity" (Hagger et al., 2010, p. 500). In this sense, some authors have tried to develop a trait scale measuring individual differences in self-control (e.g., Tangney, Baumeister, & Boone, 2004).

[8] The terms "self-regulatory resource depletion" and "ego depletion" have been used interchangeably by scholars (Baumeister, 2002; Vohs & Faber, 2007).

In few words, this view acknowledged the role of stable individual differences in trait self-control (Sultan et al., 2012). In this regard, previous studies have shown that trait self-control is negatively associated with impulse buying (Roberts & Manolis, 2012; Youn & Faber, 2000). In the current study, we will focus on the first approach because few studies have investigated the influence of self-regulatory resource depletion on impulse buying (Amos et al., 2014; Vohs & Faber, 2007)[9].

2.3.1.3. Other internal stimuli

Other internal stimuli (see Table 2.3) are shopping enjoyment, variety seeking, openness to experience, self-identity, materialism, susceptibility to interpersonal influence, self-esteem and need for touch (see Amos et al., 2014; Muruganantham & Bhakat, 2013).

Beatty and Ferrell (1998) defined shopping enjoyment as "the pleasure one obtains in shopping process" (p. 174). These authors empirically supported the idea that people who enjoy shopping, are more likely to experience positive affect during the shopping as well as engaging in more shop browsing. This is comparable to Mohan, Sivakumaran, and Sharma (2013), who showed that shopping enjoyment tendency influenced impulse buying through positive affect and urge. On the other hand, Badgaiyan and Verma (2014) showed that shopping enjoyment positively influenced impulse buying behavior. Therefore, it can be concluded that shopping enjoyment either directly or indirectly can affect impulse buying. Similarly, other studies also confirmed that people make impulse purchases to fulfil their hedonic urges or to feel good, and hence much of the pleasure might come from acquiring the item and not owing it (Park & Choi, 2013; Verplanken & Sato, 2011).

[9] Self-control is a complex mechanism, and there are different types of self-control failure (Baumeister & Heatherton, 1996; Hofmann & Kotabe, 2012). In more detail, we will narrow down the concept of self-control in the proposed model.

Interestingly, consumers engage in impulse buying not only to satisfy hedonic urges, but also variety seeking (Hausman, 2000). In fact, both impulse buying and variety seeking (i.e., an internal tendency to seek variety in daily routines) have similar psychological origins (Punj, 2011; Sharma et al., 2010). More especially, even IBT and variety seeking are correlated (Olsen, Tudoran, Honkanen, & Verplaneken, 2016). Therefore, variety seeking resulting from openness to experience (Olsen et al., 2016) or resulting from self-monitoring (Sharma et al., 2010) has a substantial positive influence on impulse buying (Amos et al., 2014).

Moreover, consumers engage in impulse buying to establish identity and fulfil materialistic values (Hausman, 2000; Verplanken & Sato, 2011). In this vein, Dittmar et al. (1996), as well as Dittmar and Bond (2010) highlighted the role of self-identity-related factors (e.g., identity deficits) and materialism (see also Pradhan, Israel, & Jena, 2018). The results showed that the extent to which individuals purchased on impulse to improve their moods, partially, depended on the magnitude and importance of their identity deficits (i.e., a gap between their actual and ideal self) but just for people with high materialism trait (Dittmar et al., 1996). Thus, materialistic individuals are motivated to move closer to their ideal self through making use of material goods with high identity-symbolic potential (Dittmar & Bond, 2010). Simply put, materialism leads to the need for acquiring products that denote prestige (Podoshen & Andrezejewski, 2012). This idea is consistent with the results of a previous study showing that materialistic consumers are more likely to engage in clothing to indicate social standing and success (Joung, 2013).

In addition, susceptibility to interpersonal influence is also positively related to impulse buying (Cheng, Chuang, Wang, & Kuo, 2013; Lin & Chen, 2012). The susceptibility to interpersonal influence can be conceptualized as “the extent to which an individual’s consumer choices are influenced by others” (Silvera et al., 2008). In this respect, it has been discussed that

the effect of "susceptibility to interpersonal influence" and "fear of negative evaluation by peers" are correlated (Lin & Chen, 2012). Interestingly, individualist consumers (Western countries) are less susceptible to interpersonal influence than collectivist consumers (Asian countries) (Lee & Kacen, 2008).

Furthermore, consumers might engage in impulse buying to satisfy esteem (Hausman, 2000). Based on this view, impulse buying has been conceptualized as a self-regulatory mechanism to reduce negative feeling resulting from low self-esteem or low self-worth (Verplanken, Herabadi, Perry, & Silveria, 2005; Verplanken & Sato, 2011). In other words, impulse buying is a reaction to escape from low self-esteem, which can be viewed as a negative psychological state (Silvera et al., 2008).

Finally, individuals are different in their preferences for haptic information (need for touch), which can affect both attitudes and behavior (Peck & Childers, 2003; Peck & Childers, 2006). This idea is based on the premise that individuals' confidence in product judgments might vary by whether they can touch a product during their evaluation. Therefore, it can be assumed that some people are touch-oriented individuals, and hence prefer to gain information through touch during their shopping task. In this regard, Peck and Childers (2006) supported this idea that individuals high in the need for touch are more likely to buy impulsively. Interestingly, not only is there an individual difference in the need for touch, but also the environmental cues of a store (e.g., signs) can induce shoppers to touch (Peck & Childers, 2003). For instance, a point of purchase sign inducing "feel the freshness" increased impulse buying of fruits regardless of individual differences in consumer's need for touch (Peck & Childers, 2006).

Table 2.3. A summary of internal factors of impulse buying.

	1	2	3	4	5	6	7	8
Beatty & Ferrell (1998)	×							
Mohan et al. (2013)	×							
Badgaiyan & Verma (2014)	×							
Park & Choi (2013)	×							
Hausman (2000)	×	×		×			×	
Sharma et al. (2010)		×						
Punj (2011)		×						
Olsen et al. (2016)		×	×					
Amos et al. (2014)	×	×	×			×		
Dittmar et al. (1996)				×	×			
Dittmar & Bond (2010)				×	×			
Podoshen & Andrezejewski (2012)				×	×			
Joung (2013)				×	×			
Pradhan et al. (2018)					×			
Cheng et al. (2013)						×		
Lin & Chen (2012)						×		
Silvera et al. (2008)						×	×	
Lee & Kacen (2008)						×		
Verplanken et al. (2005)							×	
Verplanken & Sato (2011)	×			×	×		×	
Peck & Childers (2003)								×
Peck & Childers (2006)								×

Note: 1 = Shopping enjoyment; 2 = Variety seeking; 3 = Openness to experience; 4 = Self-identity; 5 =Materialism; 6 = Susceptibility to interpersonal influence; 7 = Self-esteem; 8 = Need for touch

Source: Compiled by author

2.3.2. Situational factors

Situational factors refer to those variables that are usually not under the direct control of the consumer, including external events, stimuli and current states surrounding the consumer at the time of impulsive urge (Amos et al., 2014). According to Zhuang, Tsang, Zhou, Li, and Nicholls (2006), situational factors encompass physical surroundings (e.g., location and décor), social surroundings (e.g., the presence of others), temporal perspective (e.g., time availability), task definition (e.g., motivation) and antecedent states (e.g., mood).

Before elaborating on these factors, we would like to highlight the essential differences between situational factors and internal stimuli. For instance, while a consumer's mood is considered as a situational factor (the so-called state), impulse buying tendency (IBT) is regarded as an internal factor (the so-called consumer trait) (see Dawson, Bloch, & Ridgway, 1990; Gardner & Rook, 1988; Hoyer & Maclnnis, 2008). It is based on the premise that factors such as mood might vary as a result of an external factor (e.g., store environment), whereas factors such as IBT and need for touch are stable individual differences (e.g., Hoyer & Maclnnis, 2008; Peck & Childers, 2003; Verplanken & Herabadi, 2001). Put simply, while those general and lasting characteristics on an individual (i.e., personality and gender) can be classified as non-situational factors, situational factors refer to those factors particular to a time and place of observation (Zhuang et al., 2006[10]). According to the impulse buying literature, situational factors include social influences (e.g., the presence of peers), in-store shopping environment (e.g., retail environment and marketing stimuli), affective state (e.g., mood), product-related factors, current

[10] Following this view, self-control can be regarded as both "state level" and "trait level" (Vohs & Faber, 2007).

constraints (e.g., money availability), and purchase motivation (e.g., hedonic vs. utilitarian) (see Amos et al., 2014; Muruganantham & Bhakat, 2013; Tendai & Crispen, 2009).

Social influences, referring to normative social influences, have an enormous situational impact on impulse buying (Amos et al., 2014). In this sense, a large number of studies have emphasized normative social influences (e.g., Kacen & Lee, 2002; Lee & Kacen, 2008; Peck & Childers, 2006; Rook & Fisher, 1995). For instance, the normative evaluation offered by Rook and Fisher (1995) concerned whether consumers judge engaging in impulse buying as appropriate in a particular buying situation. This idea has been replicated by some other researchers afterwards (e.g., Dawson & Kim, 2009; Peck & Childers, 2006). This idea is somehow different from those studies considering the mere presence of others (i.e., family or peers) as normative social influences on impulse buying (e.g., Lee & Kacen, 2008; Lou, 2005; Verplanken & Sato, 2011). Therefore, there is no consensus definition of social influences on impulse buying. Moreover, other social influences (i.e., employee assistance, employee attitude, and store crowding) have rarely been investigated by other literature (Chang, Eckman, & Yan, 2011; Mattila & Wirtz, 2008). Therefore, our research only considers the normative social influences as the dominant stream of work in this field of study.

Moreover, the retail environment can influence purchasing behavior of shoppers in a wide variety of retail stores (Turley & Chebat, 2002). For instance, a significant stream of literature emphasizes that a combination of store characteristics and marketing environment can determine the consumer behavior (see Duarte, Raposo, & Ferraz, 2013; Lin & Chen, 2013; Mattila & Wirtz, 2008; Mohan et al., 2013). Notably, by taking into account the technological development of retail industry, the external stimuli can be viewed as being the most challenging factor in impulse buying studies (Muruganantham & Bhakat, 2013). In this regard, Youn and Faber (2000) argued that

environmental/sensory cues that trigger impulse buying are marketing mix stimuli (e.g., point of purchase displays, promotions, and advertisements) and atmospheric cues (e.g., sound and smell). In this respect, Tendai and Crispen (2009) showed that the promotional and economic effects (e.g., price, coupons, and sales) were more likely to influence impulse buying than atmospheric engagement effect (e.g., background music, in-store display, and scent). On the other hand, Mattila and Wirtz (2008) demonstrated that highly stimulating and pleasant store environment has a positive impact on impulse buying. This idea is based on the premise that the high level of excitement in a store boosts the loss of self-control (Mattila & Wirtz, 2008). For instance, odours have been found to build a favorable perception of the mall environment (Chebat & Michon, 2003). Similarly, some studies have suggested that merchandising tools (i.e., window display and forum display) can help marketers to increase impulse buying (Bhatti & Latif, 2014; Moayery, Zamani, & Vazifehdoost, 2014).

By taking into account the influence of affective states, some scholars have attempted to provide new insight into the impact of situational factors on impulse buying. In this respect, there is evidence showing that mood has positive and direct influence on impulse buying (Bahrainizad & Rajabi, 2018). For example, some scholars have found that the store environment (e.g., music, light, layout, and ambient characteristics) drove impulse buying through positive affect, shopping enjoyment and urge (Chang et al., 2011; Mohan et al., 2013; Saad & Metawie, 2015). However, there are mixing findings regarding the influence of negative affect (mood) on impulse buying. While some studies have shown that negative moods (e.g., frustration) do not influence impulse buying urges (e.g., Beatty & Ferrell, 1998; Mohan et al., 2013), other studies have reported that negative emotions might result in more impulse buying (Verplanken et al., 2005; Youn & Faber, 2000). These mixed findings can be attributed partially to the fact that consumers are not able to

distinguish between the pre-existing negative affect and the negative affect caused by store environment (Mohan et al., 2013).

Furthermore, some authors have emphasized the importance of studying the nature of products. Interestingly, Kacen et al. (2012) have demonstrated that product characteristics (e.g., hedonic) may exert greater influence on impulse buying than do retailing factors (e.g., sales). In fact, some products are low impulse items in a traditional retail store. Therefore, the type of consumer good will be one of the predictors of consumers' impulsivity (Dittmar & Bond, 2010). It is based on the premise that impulse products are distinguishable as low cost and frequently purchased goods with little cognitive effort from consumers (Rook & Hoch, 1985). Therefore, some products naturally (e.g., snack foods and music CDs) hold the premise of pleasure and people who seek to feel better, are more likely to buy these products impulsively (Baumeister, 2002). Based on this product-based approach, products can be categorized as either utilitarian or hedonic products (Alba & Williams, 2012). This view allows us to distinguish between goods according to their relative hedonic or utilitarian nature (Khan, Dhar, & Wertenbroch, 2005). Products like flowers, designer clothes, music, sports cars and chocolate might be considered as hedonic products because they are multisensory (i.e., providing fun, pleasure, and excitement). On the other hand, products like microwaves, detergents and personal computers are primarily instrumental, so that their purchases are motivated by functional products aspects (Khan et al., 2005). In the area of food categories, while hedonic foods refer to unhealthy foods, utilitarian foods refer to healthy foods (Antonides & Cramer, 2013). In this respect, Kacen et al. (2012) showed that the hedonic nature of the product is the most influential product-related variable of impulse buying. In another study, Xu and Huang (2014) showed that when the product was hedonic, the price discount resulted in greater impulse buying intention than did bonus packs. On the other hand, when the product

was utilitarian, the bonus packs were more effective sales promotions than price discount. Moreover, some authors argued that impulse products not only help people to regulate their mood, but also help them to present their identity. For example, Dittmar et al. (1995) argued that some products (e.g., music items, clothing, and magazines) are more likely to be purchased on impulse because these items help consumers in self-presentation and mood adjustment (see also Dittmar et al., 1996). In a similar vein, Dittmar and Bond (2010) applied the "type of consumer good" as one of three predictors of consumers' impulsivity (see Table 2.4). The results showed that discount rates (i.e., the desire to have a product right now) are higher for products that are seen as highly expressive identity (e.g., clothes) than products not expressive of identity (e.g., basic body care product).

Table 2.4. Type of consumer goods and related discount rate attributes by Dittmar and Bond (2010, p. 770-771).

Type of consumer good	Discount rates
Clothes	People are less willing to delay immediate consumption of goods that offer high identity-expressive potentials, including clothes which are a typical good used for the expression and improvement of identity across different age and social groups.
Sports Gear	"More identity-expressive on average among younger respondents, such as students."
Basic body care products	"Do not offer much by way of entity expression or repair for any social group, whereas the one expressiveness of tools could be gender-related, being more characteristic of women than men."
Music items	Are low identity expressiveness and more likely to be age-related, given that music items appear to play a much stronger role for identity among young people.

Also, some authors emphasized constraint factors, such as money and time availability (e.g., Bahrainizad & Rajabi, 2018; Beatty & Ferrell, 1998; Dholakia, 2000). Based on this idea, lack of time and money produce negative affect (e.g., frustration). In fact, a higher level of available time will provide an opportunity for consumers to have a higher level of in-store browsing and lower level of negative feeling. Moreover, available money produces more positive feelings (i.e., excitement), and hence both directly and indirectly, increases impulse buying (Beatty & Ferrell, 1998). Interestingly, contrary to Beatty and Ferrell (1998), Lin and Chen (2013) argued that the time pressure at airports can increase impulse buying. Furthermore, Thomas, Desai, and Seenivasan (2010) proposed that mode of payment (i.e., paying by cash or using the credit-debit card) is one of the factors influencing the pain of paying. These authors found that spending by cash can boost the pain of payment, whereby impulse buying would be decreased. On the other hand, "credit card payments are … relatively painless and weaken impulse control" (Thomas et al., 2010, p. 126). Similarly, Pradhan et al. (2018) concluded that reduction in credit card use can decrease impulse buying.

Moreover, temporary motives (i.e., wanting to reward oneself) encourage impulse buying (Yoon, 2013; Verplanken & Herabadi, 2001). For example, hedonic shopping motivations (e.g., store visits made for the pleasure) have been found to be reliable predictors of consumer behavior (Dawson et al., 1990). In this respect, Chang et al. (2011) showed that hedonic motivations could moderate the relationship between environmental stimuli and consumers' emotional responses, and thus indirectly increases impulse buying. More specially, it has been discussed that the time pressure can moderate the relationship between buying motivations and impulse buying (Lin & Chen, 2013).

Table 2.5. A summary of situational factors of impulse buying.

	1	2	3	4	5	6
Amos et al. (2014)	×					
Kacen & Lee (2002)	×					
Lee & Kacen (2008)	×					
Rook & Fisher (1995)	×					
Peck & Childres (2006)	×					
Lou (2005)	×					
Dawson & Kim (2009)	×					
Verplanken & Sato (2011)	×					
Chang et al. (2011)	×	×	×			×
Muruganantham & Bhakat (2013)		×				
Mattila & Wirtz (2008)	×	×				
Mohan et al. (2013)		×	×			
Youn & Faber (2000)		×	×			
Tendai & Crispen (2009)		×				
Bhatti & Latif (2014)		×				
Chebat & Michon (2003)		×				
Moayery et al. (2014)		×				
Duarte et al. (2013)		×				
Saad & Metawie (2015)		×	×			
Beatty & Ferrell (1998)			×		×	
Verplanken et al. (2005)			×			
Xu & Huang (2014)				×		
Kacen et al. (2012)				×		

Note: 1= Social influences; 2= In-store shopping environment; 3= Affective state; 4= Product-related factors; 5= Current constraints; 6= Purchase motivation

Table 2.5. Continued

	1	2	3	4	5	6
Rook & Hoch (1985)				×		
Baumeister (2002)				×		
Dittmar et al. (1995)				×		
Dittmar et al. (1996)				×		
Dittmar & Bond (2010)				×		
Dholakia (2000)					×	
Thomas et al. (2010)					×	
Lin & Chen (2013)		×			×	×
Bahrainizad & Rajabi (2018)			×		×	
Pradhan et al. (2018)					×	
Dawson et al. (1990)						×
Verplanken & Herabadi (2001)						×
Yoon (2013)						×

Note: 1 = Social influences; 2 = In-store shopping environment; 3 = Affective state; 4 = Product-related factors; 5 = Current constraints; 6 = Purchase motivation

Source: Compiled by author

2.3.3. Demographic-cultural factors

Factors such as age, gender and culture can influence consumer behavior (Hoyer & Maclnnis, 2008). In the field of impulse buying studies, demographic-cultural factors, including age, income, gender, education, and cultures have been investigated by previous research (see Amos et al., 2014; Muruganantham & Bhakat, 2013).

A recent meta-analysis of impulse buying showed that although in general sociodemographic factors are not strong factors regarding impulse buying, the findings relative to age were less confusing (Amos et al., 2014). In the same way, previous research indicated that there is a negative relationship between age and impulse buying (Bashar, Ahmad, & Wasiq, 2013; Kacen & Lee, 2002; Wood, 1998). This can be attributed to the fact that young people have more impulse buying tendency (Ek Styvén et al., 2017).

Interestingly, although many studies have argued that income can influence impulse buying, only a few of them have supported this idea (Amos et al., 2014). This is comparable to Wood (1998), who showed that there is no association between family income and impulse buying. Therefore, it can be concluded that the results regarding the relationship between income and impulse buying are mixed. While it has been discussed that there is a positive association between income and impulse buying (Bashar et al., 2013; Dittmar et al., 1996; Tifferet & Herstein, 2012), it has also been discussed that self-control will result in a higher percentage of personal income saved and less impulse buying (Vohs & Faber, 2007).

In addition, the results are contradictory concerning the influence of gender on impulse buying (Amos et al., 2014). Wood (1998) reported that women significantly do more "once a while" impulse buying. Other authors reported the same result (see Coley & Burgess, 2003; Tifferet & Herstein, 2012). This can be attributed to the fact that women have more impulse buying

tendency (Ek Styvén et al., 2017; Verplanken & Herabadi, 2001). On the other hand, other authors demonstrated that gender only produces a marginal association (and even no significant association) with impulse buying (Badgaiyan & Verma, 2014; Bashar et al., 2013; Dittmar et al., 1996). Also, regardless of gender differences in the amount of impulse buying, women and men are significantly different concerning affective-cognitive process components, the types of products and buying considerations (Dittmar et al., 1995; Coley & Burgess, 2003). This stream of research suggests that while women engage in impulse buying with emotion and image-guided buying orientations (e.g., health and beauty items with more appearance/body related concerns), men do impulse buying with instrumental and physical buying orientations (e.g., technology and entertainment items with more functional and leisure-oriented perspective).

Regarding education, the results are not subtle. In this respect, Wood (1998) showed that higher education was positively related to impulse buying (see also Coley & Burgess, 2003). On the other hand, it has been discussed that education only produces a marginal effect on impulse buying (Bashar et al., 2013), and even there is a negative association between parental education and younger female's impulse buying (Tifferet & Herstein, 2012).

Finally, regarding culture, it has generally been accepted that consumers' cultural background can influence behavior, everyday choices, judgments, and the nature of information processing (Nayeem, 2012; Shavitt, Lalwani, Zhang, & Torelli, 2006). In this regard, the individualism-collectivism construct and the independent-interdependent dimensions of self-construals[11] have frequently been applied to conceptualize cultural differences (Fischer et al., 2009; Hofstede, 1980; Levine et al., 2003; Singelis, Triandis, Bhawuk, & Gelfand, 1995). Indeed, while the collectivism-individualism construct has been outlined to characterize societies (i.e., it

[11] "Self-construal refers to how people think about themselves in relation to others" (Walker et al., 2008, p. 91).

is a cultural level), independent-interdependent dimensions of self-construals (i.e., self-image) refer to an individual level cultural orientation (Triandis, 1989; Levine et al., 2003). The collectivist culture emphasizes more interdependent and group membership, whereas the individualist culture puts more emphasize on independent and personal uniqueness (Oyserman et al., 2002; Zhang, Mandl, & Wang, 2011). Put simply, the central assumption of this stream of research is that in individualist cultures (e.g., the United States and Australia) a greater number of people might show a stronger independent self-construal, while in collectivist cultures (e.g., Malaysia) a higher number of people might show a stronger interdependent self-construal (Lee & Kacen, 2000). Research has also indicated the importance of these constructs concerning the issue of impulse buying and impulsive consumption (Kacen & Lee, 2002; Sharma et al., 2011; Sharma et al., 2014b; Zhang & Shrum, 2008). However, the results are mixed and ambiguous to reach any conclusion regarding impulse buying studies. At this point, it is crucial to note that very few studies have examined the influence of other cultural components (e.g., power distance and uncertainty avoidance) on impulse buying (see Dameyasani & Abraham, 2013; Zhang, Winterich, & Mittal, 2010). Therefore, our research only considers the individualism-collectivism construct and the independent-interdependent dimensions of self-construals as the dominant stream of work in this field of study.

In this vein, Kacen and Lee (2002) demonstrated that in comparison with Caucasian individualist consumers (Western countries), collectivist consumers (Asian countries) engage in less impulse buying. They empirically showed that while both collectivist and individualist consumers own impulse buying tendency in equal measure, there is a weaker correlation between impulse buying tendency and impulse buying for collectivist consumers, but not for individualist consumers. This can be attributed to the fact that ‘‘individuals who are more independent engage

themselves in greater impulse purchase behavior than those who are interdependent in self-concept" (Muruganantham & Bhakat, 2013, p. 155). In this respect, Xiao and Nicholson (2011) argued that in interdependent societies, impulsive consumption is associated with immaturity, and hence they are more likely to suppress their urge to act impulsively. On the other hand, recently some studies reported that collectivism is a predictor of impulse buying in collectivist countries, such as Pakistan (Jalees, 2009) and India (Badgaiyan & Verma, 2014). Several other studies have also confirmed the existence of impulse buying in other collectivist countries including Singapore, Malaysia and Vietnam (Lee & Kacen, 2008; Tuyet Mai, Jung, Lantz, & Loeb, 2003). A recent meta-analysis by Amos et al. (2014) also admitted that impulse buying in Asia is a substantial phenomenon. Therefore, it can be concluded that impulse buying is also prevalent in collectivist societies. So, why have some studies failed to support this fact? To provide an account for this discrepancy, this body of knowledge refers to the study done by Lee and Kacen (2008) indicating that collectivist consumers are more susceptible to impulse buying in the presence of their family or friends (see Badgaiyan & Verma, 2014; Dameyasani & Abraham, 2013). This idea is based on the premise that there is an increasing trend for group shopping in collectivist countries, and hence the chances are that collectivists are being affected by the presence of others (Badgaiyan & Verma, 2014). In the same way, in China, a previous study showed that compliments and words of praise from others could increase impulse buying (Yu & Bastin, 2010). On the other hand, there is also evidence showing that the presence of others diminishes impulsive consumption for those with interdependent self-construals (Zhang & Shrum, 2008). Therefore, we agree with Amos et al. (2014), who proposed that impulse buying studies beg more research regarding cultural explanation.

Table 2.6. A summary of demographic-cultural factors of impulse buying.

	1	2	3	4	5
Amos et al. (2014)	×	×	×		×
Wood (1998)	×	×	×	×	
Badgaiyan & Verma (2014)			×		×
Bashar et al. (2013)	×	×	×	×	
Dittmar et al. (1996)		×	×		
Tifferet & Herstein (2012)		×	×	×	
Vohs & Faber (2007)		×			
Coley & Burgess (2003)			×	×	
Ek Styvén et al. (2017)	×		×		
Verplanken & Herabadi (2001)			×		
Dittmar et al. (1995)			×		
Muruganantham & Bhakat (2013)	×				×
Kacen & Lee (2002)	×				×
Jalees (2009)					×
Yu & Bastin (2010)					×
Lee & Kacen (2008)					×
Dameyasani & Abraham (2013)					×
Zhang & Shrum (2008)					×
Sharma et al. (2011)					×
Sharma et al. (2014b)					×
Xiao & Nicholson (2011)					×
Tuyet Mai et al. (2003)					×
Note: 1 = Age; 2 = Income; 3 = Gender; 4 = Education; 5 = Cultures					

Source: Compiled by author

2.4. Conceptual models

As discussed previously, while early research was interested in defining impulse buying to distinguish it from non-impulse buying, the focus gradually shifted towards asking the questions of "why", "how" and "when" it occurs (Badgaiyan & Verma, 2014; Vohs & Faber, 2007; Youn & Faber, 2000). In this sense, impulse buying has been studied from different conceptual perspectives in economic-psychology, psychology, consumer behavior and social psychology (see Dittmar et al., 1995; Verplanken & Sato, 2011).

2.4.1. The desire-willpower framework

The desire-willpower framework was proposed by Hoch and Loewenstein (1991). This framework is based on the premise that consumer decision making is influenced by both long-term rational concerns and more short-term emotional factors. In this respect, this economic-psychological model integrates the rational and emotional factors affecting consumer self-control. That is to say, a struggle between two psychological forces of desire and willpower can outline consumer self-control. This framework can be divided into two main sections, including reference-point model and self-control strategies. The reference-point model attempts to provide an explicit mechanism for sudden increases in desire. The second part of the framework describes two general classes of self-control strategies.

Why do people engage in behavior against their own better judgment? The reference-point model is mainly concerned about those people who inconsistently engage in behavior that would have been rejected if planned in advance. According to this model, various factors (including physical proximity, temporal proximity, and social comparison) accelerate the reference-point shift. More especially, the reference-point shift can induce time-inconsistent preferences through

a sudden increase in desire. Interestingly, after a reference point shift, consumers might attach positively to the object itself (i.e., feeling of owning the product). In other words, reference-point shifts cause the consumer to adopt the notion of possessing or consuming the product. They also might experience a feeling of deprivation as a result of failing to consume or purchase the objects. Put simply, the reference-point shift can increase consumer's desire for non-purchased objects. Consequently, people are interested in buying or consuming the objects as quickly as possible to eliminate the stream of deprivation. This model discusses some environmental factors causing reference-point shifts. In this vein, the authors argued that the proximity (including physical and temporal proximity) can induce impatience.

However, people who have experienced time-inconsistency and are familiar with its consequences might develop self-control strategies to regulate consistency on their behavior. Based on this framework, the self-control problem can be conceptualized as a psychological conflict between desire (i.e., the initiating hedonic force) and willpower (i.e., strategies used to overcome desire). A person who has already decided to maintain a healthy weight, for instance, promises not to buy or eat desserts. However, when this person is in direct contact with a dessert, desire induced by physical proximity can dominate willpower. Therefore, the consumer breaks the promise and consumes or buys the dessert. On the other hand, the person might feel a need for cognitive deliberation alternatively. Cognitive factors are likely to emerge into two distinct forms: desire based (i.e., the deliberation strategies) and willpower based (i.e., the self-control strategies). (a) The desire reduction strategies are based on physically or psychologically reducing proximity to the item. For instance, consumers may avoid situations in which they are likely to experience increases in desire for an object (e.g., leaving the area immediately). Moreover, consumers might postpone buying or consuming for the future. (b) On the other hand, willpower-based strategies

are based on overriding desires, rather than on reducing the impatience (i.e., it is an internal dialogue). These tactics include pre-commitment (i.e., imposing limitation for future), economic cost assessment (i.e., cost-benefit considerations), religious principles and anticipating possible regrets.

2.4.2. Situational-psychological determinants of impulse buying

To study this, Puri (1996) proposed a two-factor, cost-benefit accessibility framework of impulse buying. This framework suggested that consumer impulsiveness hinges on the natural accessibility of the costs versus the benefits of impulsive behavior. The author hypothesized that the accessibility of the costs versus the benefits might be determined by two factors, including aspects of situation and individual's chronic value regarding impulsiveness.

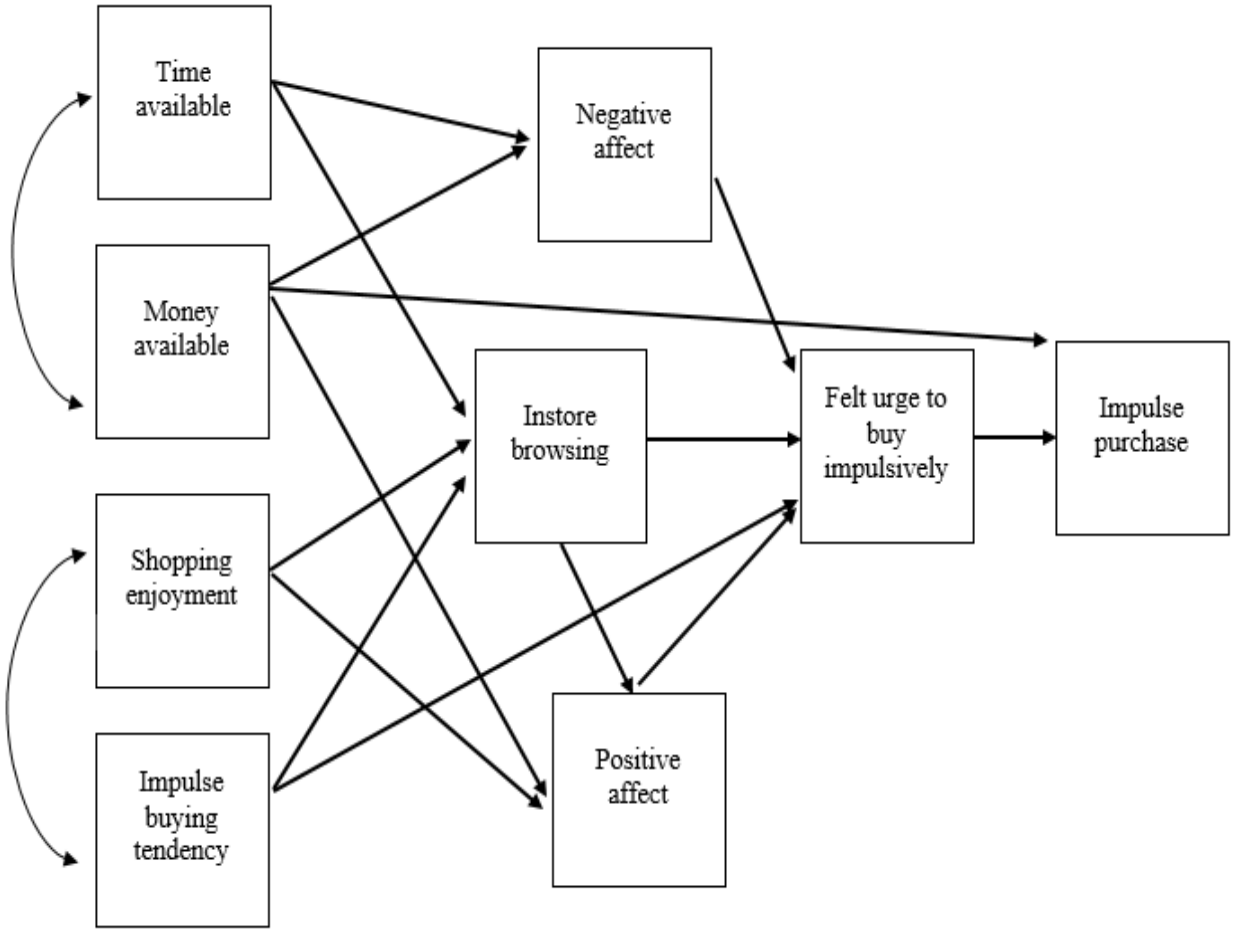
Puri (1996) described that there are two kinds of benefits in yielding to an impulsive behavior, including hedonic benefits and image-oriented benefits. As a consequence, in those situations in which the benefits are more salient than the costs, the reasons to succumb to temptation are highly accessible. The author argued that the hedonic benefits can be yielding to an irresistible urge resulting from temporal proximity to a vivid temptation (e.g., a dessert). Also, the image-oriented benefits refer to social benefits resulting from yielding to temptations (e.g., going to a party instead of studying for an exam). On the other hand, in situations in which the costs of impulsive behavior are more salient than the benefits, the reasons to resist temptations are more likely to be accessible. The author introduced two kinds of costs, including certain costs and probable costs. While the certain costs refer to immediate costs (e.g., bad results in exams as a consequence of going to a concert), the probable costs refer to uncertain costs (e.g., the possibility of a car accident as a result of drinking in party).

In addition, the second factor in this model is consumer's chronic value regarding impulsiveness. The author developed and tested a Consumer Impulsiveness Scale (CIS) to measure the consumer's chronic value regarding impulsiveness[12]. According to CIS scores, subjects were classified to either hedonic or prudent individuals. In this regard, Puri (1996) argued that, while hedonic individuals are more likely to focus on the benefits of impulsive behavior and consider certain costs, prudent individuals are more likely to access to both types of costs, including certain and probable costs. Hence, hedonic individuals are more likely to behave impulsively because the inputs to judgment favor the benefits of impulsiveness.

In the same vein, Beatty and Ferrell (1998) also designed a model to understand the role of both situational and individual antecedents of impulse buying comprehensively. The model firstly focuses on a set of exogenous precursors, including two situational factors (time available and money available) and two internal traits (shopping enjoyment and impulse buying tendency). Moreover, a set of endogenous variables are also likely to be influenced by these exogenous antecedents, and ultimately whether impulse buying occurs (see Figure 2.1). In an empirical study, they showed that the exogenous precursors (situational factors and internal traits) influence a set of endogenous variables (positive and negative affect, browsing effect, felt the urge to buy impulsively and actual impulse buying), and eventually whether or not an impulse purchase occurs.

[12] Consumer impulsiveness or the so-called impulse buying tendency has been discussed in the previous section.

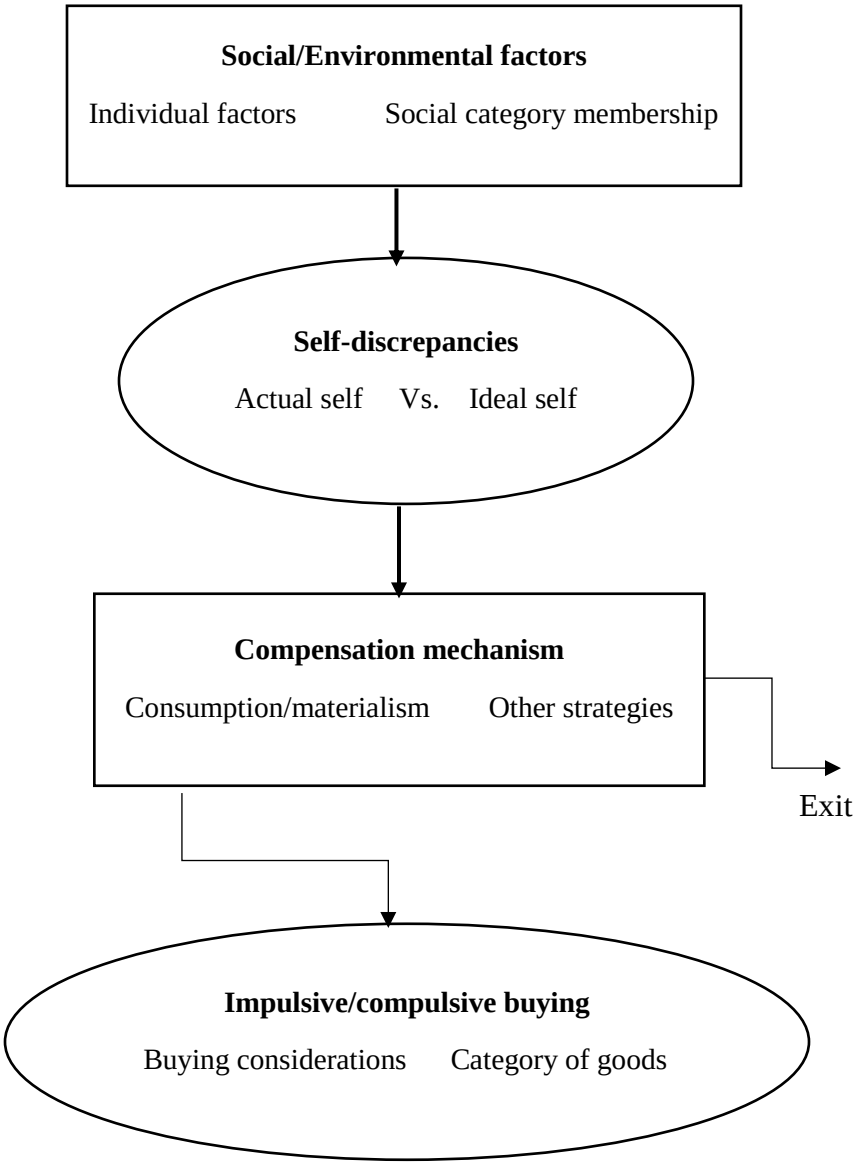
Figure 2.1. Situational and individual antecedents of impulse buying by Beatty and Ferrell (1998).



2.4.3. Social psychological model of impulse buying

Dittmar et al. (1996) proposed a social psychological model of impulse buying to study the role of different variables, including an individual's materialism, the degree of self-discrepancies, gender, and compulsive shopping tendencies. In this sense, the model postulated that these factors determine the types of goods that can be purchased on impulse and the reasons for the purchase (see Figure 2.2). Therefore, this model seeks to understand the underlying causes for impulse buying and, why particular goods are bought impulsively more than others.

Figure 2.2. Social psychological model of impulse buying by Dittmar et al. (1996).



Firstly, the authors proposed that people buy some categories of consumer goods on impulse (e.g., clothes) more than others (e.g., body care items and footwear) and this might vary based on gender differences. The results supported this idea partially. In this respect, they provided evidence that some goods are more likely to be impulse-buys than others. However, although women buy jewellery proportionally more than men on impulse, gender differences were subtle. In this regard, it is important to mention that the results showed that all nine product categories (i.e., jewellery, sport equip, clothes, music, books, electronics, foot ware and body care items) are less likely to be bought on impulse than planned buying.

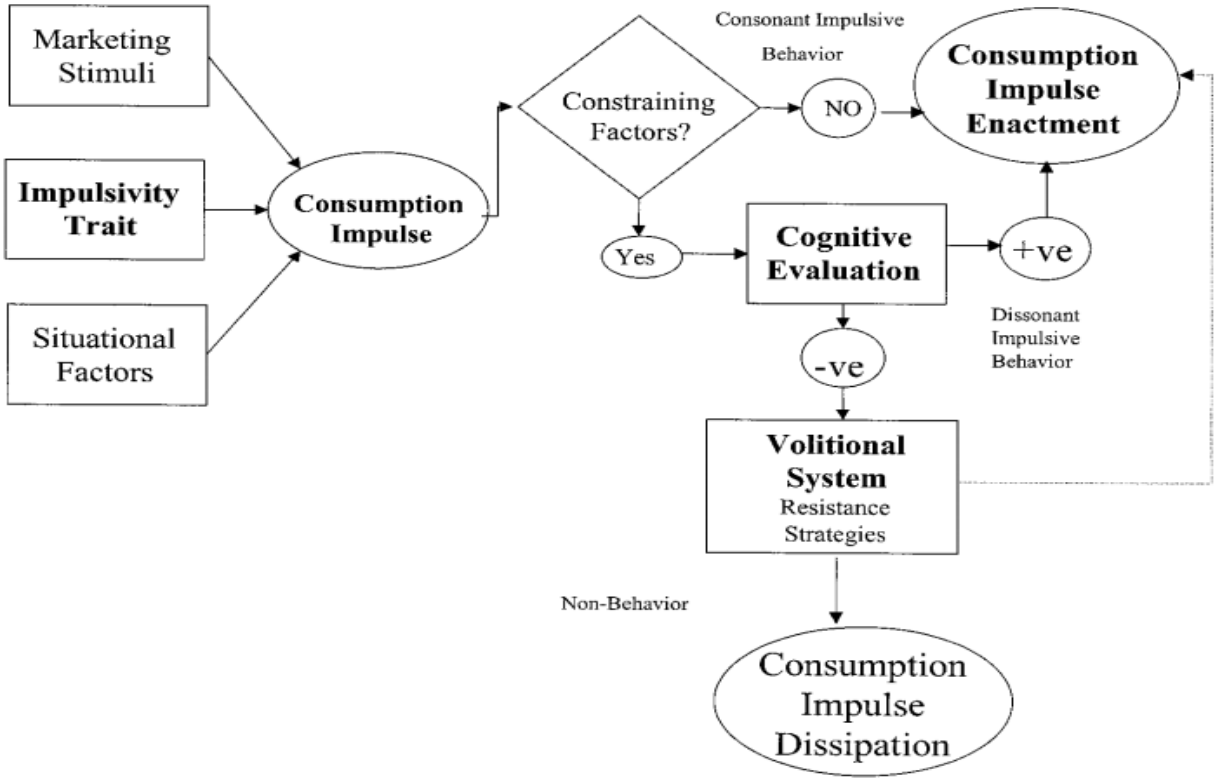
Secondly, they postulated that people buy products impulsively for different reasons and these reasons might be different based on gender differences. The authors showed that psychological considerations (e.g., mood, ideal self, and self-expression) exerted more significant influence on impulse buying than functional considerations (e.g., price and usefulness). In addition, the results demonstrated that gender partially determines this pattern. While women emphasize more personal self-image reasons (e.g., uniqueness), men pay attention to ideal-self more than uniqueness. However, men and women are considering social standing equally when they buy products impulsively. Furthermore, while economic reasons (e.g., usefulness and price) are slightly crucial than psychology for men, it is equally weighted by women. Third, the model proposed that object choice and buying considerations (e.g., usefulness and mood) are associated with identity-related factors (e.g., self-discrepancy[13]). Also, gender might affect these associations by taking into account the moderation role of materialism. The results supported the third assumption.

[13] Individuals with higher self-discrepancy are more likely to experience a discrepancy between their actual and ideal selves.

2.4.4. An integrated model of consumption impulse formation and enactment (CIFE)

The model developed by Dholakia (2000) focuses on the role of cognitive and volitional psychological mechanism during the impulse enactment process in great detail. The model is based on the premise that most of the research conducted in the field of impulsive consumption has ignored the role of cognitive and volitional processes. To address this issue, this model applied the term "consumption impulse (CI)" comprising a large class of consumer behaviors, including impulse buying and eating behavior (see Figure 2.3).

Figure 2.3. An integrated model of consumption impulse formation and enactment (CIFE) by Dholakia (2000).



Roughly speaking, this model begins with the impulse-formation process with three antecedents, namely marketing stimuli, impulsivity trait, and situational factors. First, this model considered the physical and temporal proximities as *marketing stimuli*. Second, this model applied environmental and social factors as *situational factors* influencing the consumption impulse. For example, money availability has been introduced as one of the most critical situational factors. Third, the model employed the impulsivity trait as one of the most critical factors influencing the consumption impulse. In fact, the presence of one or more of these three elements is crucial to forming an irresistible urge to consume (i.e., the consumption impulse). Interestingly, this model argues that the urge to consume impulsively occurs automatically because it cannot be stopped from happening. Therefore, it can be assumed that the urge to consume impulsively has an intensity dimension rather that "occurring or not occurring".

This model assumed that the experienced urge to consume impulsively does not necessarily result in behavior. In this respect, this model proposed that automatically-trigged mental responses evaluate the presence of possible constraints (e.g., money availability). The author classified constraining factors into three categories. First, the consumer might realise that there are some obstacles (e.g., unavailability of money) to perform actions consistent with the experienced urge. Second, the consumer may take into account the long-term consequences, such as gaining weight as a result of eating sweets. Third, the consumer can anticipate the negative or positive emotions resulting from acting on impulse.

Moreover, if no constraining factors are identified, the experienced urge might be viewed by the individual as harmonious with his or her goals. The author called this condition as "the congruent consumption impulse", in which the consumer acts according to the experienced urge. On the other hand, if constraining factors are identified, the consumer might feel conflicted. This

model labelled this psychological conflict as the *dissonant* consumption impulse condition. This condition leads the consumer to think and evaluate the possible consequences of yielding to the impulse. Interestingly, the evaluation of the pros and cons of behaving in accordance with the experienced urge can determinate the final behavior. The person might follow according to the experienced urge if the evaluation is positive. On the other hand, if the assessment of the impulsive behavior is negative, the consumer's *volitional* system takes part in the process. This volitional system refers to resistance strategies applied by the consumer to effortfully fight back the consumer impulsiveness. For example, leaving the tempting situation is one of the powerful strategies used by consumers.

2.4.5. Low-Effort Decision-Making Processes

These processes were described by Hoyer and Maclnnis (2008). Contrary to high-effort decisions in which people are engaged in critical decisions (e.g., marriage), people are not interested in spending too much time on low-effort decisions (e.g., buying toothpaste). The authors discussed that low effort strategies (e.g., impulse buying) are more based on feeling than a cognitive effort. Therefore, this model attempts to elucidate how people make decisions in low-effort situations. Based on this idea, an impulse buying is sometimes done unconsciously, and sometimes consciously, but with little effort.

In the unconscious process, consumers are not aware of why or how they have made a decision. This unconscious process is highly sensitive to environmental stimuli, such as social situations and the presence of others. On the other hand, in the conscious low-effort decision making, consumers follow a process of "thinking-behaving-feeling sequence". This thinking is based on consumers' belief resulting from prior usage. This idea is based on the premise that

consumers do not put much effort to make a decision about products that they frequently buy. Therefore, they rely on previous information and judgments of satisfaction (dissatisfaction) from past consumption. In other words, people simplify the cognitive process by using heuristics (i.e., rules of thumb). These heuristics can be based on price concerns (e.g., it is the cheapest) or based on habit tactics (e.g., buy like always). In the same way, other researchers have also conceptualized impulse buying as a product of heuristic processes (Verplanken & Sato, 2011; Xiao & Nicholson, 2013). For instance, Verplanken and Sato (2011) argued that an impulse purchase may merely be based on the most uncomplicated heuristic whether or not a product evokes a certain level of excitement. Similarly, Hausman (2000) argued that impulse buying occurs to reduce cognitive effort based on past experience of the consumer. However, while this stream of research emphasizes the heuristic nature of impulse buying, to our knowledge only one study empirically tested this concept (Chen et al., 2016).

2.4.6. Self-regulation perspective

Following the strength model (e.g., Baumeister et al., 2006; Baumeister et al., 2007), Vohs and Faber (2007) argued that self-regulatory resource availability predicts whether people can resist impulse buying temptation. Focusing on the role of self-control in impulsive spending, this model aimed to test the causal role of self-control in impulse buying at the state level directly. Therefore, based on the body of literature assuming that self-regulation operates like a muscle and depends on limited energy (see Baumeister et al., 2006; Baumeister et al., 2007; Muraven & Baumeister, 2000; Muraven et al., 2005), this model hypothesized that using self-regulatory resources in one task subsequently leaves people less able to resist the impulse to buy. They experimentally showed that self-regulatory resource depletion left doors open for more impulse buying.

Later, Verplanken et al. (2005) tried to offer a new self-regulatory explanation for impulse buying. They empirically showed that impulse buying can be framed as a self-regulatory mechanism to cope with emotional distress associated with low self-esteem. Following this approach, Verplanken and Sato (2011) also framed impulse buying as a psychological functioning, in particular as a form of self-regulation. In fact, the existing contradictory evidence led these authors to conclude that there is no simple model of antecedents of impulse buying. "Why is impulse buying associated with positive and negative emotions? Why is it linked to low self-esteem, but also with hedonistic values, extrovertedness and symbol of identity?" (Verplanken & Sato, 2011, p. 204). However, they defined this self-regulatory approach with a broader spectrum of factors containing the seemingly contradictory finding (e.g., the association of impulse buying with both positive and negative feelings). Following a regulatory focus theory, this approach distinguishes between promotion focus and prevention focus. While the promotion strategies make a person focus on accomplishment (i.e., growth, hopes, and wishes), the prevention strategies make a person concentrate on duties (i.e., obligations and responsibilities). For instance, feeling anxious can elicit a prevention strategy (e.g., looking for opportunities to avoid fear), whereas activating hedonic values may cause the person to adopt a promotion strategy (e.g., looking for opportunities to fulfil such desires) (see Table 2.7).

Table 2.7. An integrative self-regulation approach by Verplanken and Sato (2011, p. 205).

Promotion-focused strategies	**Prevention-focused strategies**
Proximity bias	Limited information processing
Seeking pleasure, hedonic values	Alleviating negative affect and mood repair
Fulfilling materialistic values	Dealing with low self-esteem
Purchasing symbol of identity	Personality trait: emotional instability
Personal traits: extravertedness, autonomy	Exerting conscious self-control
	Compulsive buying

2.5. Summary

This chapter provided a review of relevant literature drawn from an extensive body of knowledge from consumer behavior, psychology, and social psychology. This chapter primarily offered a summary of definitions of impulse buying, followed by its influencing factors, and conceptual models. Regarding definitions, while we discussed that there have been a consensus regarding the psychological interpretation of impulse buying offered by Rook (1987), we highlighted some attempts trying to improve this definition. Moreover, factors influencing impulse buying were classified into three main categories, including internal stimuli, situational factors, and demographic-cultural factors. Finally, we gained insight into the conceptual frameworks of impulse buying (e.g., psychological perspective). This review of the literature provides new insight into impulse buying studies. In this respect, the following chapter will highlight the contradictory findings discussed in the current chapter. This insight would be fundamental to outline a comprehensive model of impulse buying behavior.

3. Conceptual model and hypotheses

3.1. Overview

3.2. Problem formulation

3.3. Proposed model

3.4. Research hypotheses

3.5. Summary

3.1. Overview

The following chapter aims to outline a comprehensive model of impulse buying building upon the body of literature discussed so far. The first section covers the problem statement. In addition, drawing from different areas of research (including psychology, social psychology, and cultural psychology), this chapter provides a comprehensive model of impulse buying. To study this, the current chapter firstly accepts the logic of the Reflective-Impulsive Model (RIM; Strack & Deutsch, 2004) as a strong foundation for developing a comprehensive model. In this respect, this chapter introduces impulse buying tendency and habit as impulsive predictors of impulse buying, while dietary restraint represents the reflective component. This model assumes that while these two systems operate in parallel, availability of self-regulatory resources can determine which of the two systems will gain control over the final behavior. Moreover, the focus theory of normative conduct (Cialdini et al., 1990) and the theory of independent and interdependent self-construals (Markus & Kitayama, 1991) have been integrated into the basic model to obtain the objectives of this study. This is followed by proposing a set of hypotheses[14].

3.2. Problem formulation

Impulse buying has been defined as a "sudden and immediate purchase with no pre-shopping intentions. … The behavior occurs after experiencing an urge to buy, and it tends to be spontaneous and without a lot of reflection (i.e., it is "impulsive")" (Beatty & Ferrell, 1998, p 170; see also Rook, 1987). According to this stream of research, impulse buying is inconsistent with one's long-range goals (Baumeister, 2002) and occurs regardless of its consequences (Hoch & Loewenstein,

[14] Part of this section (pages 59 to 75) has been used in manuscripts previously accepted for publication (see Moayery et al., in press-a; Moayery et al., in press-b).

1991; Rook, 1987; Rook & Hoch, 1985). In this view, impulse buying is a product of spontaneous impulses, the so-called impulsive system (Roberts & Manolis, 2012; Vohs, 2006). Therefore, as stated by this stream of research, impulse buying can be conceptualized as either "heart vs. mind" or "desire vs. willpower" conflict (i.e., affective state overcomes cognition), in which the influence of cognitive deliberation on impulse buying is small (Baumeister, 2002; Coley & Burgess, 2003; Herabadi et al., 2009). This is congruent with those studies discussing that impulse buying cannot be consistent with the theories of reasoned action because impulse buying appears to bypass reasoning (e.g., Ajzen, 2008). In this regard, Vohs and Faber (2007) experimentally showed that people were less able to resist the impulse to buy as resulting from depletion of resources that govern self-control (self-regulatory resources).

On the other hand, this view that impulse buying is solely a product of the impulsive system was doubted theoretically by Strack, Werth, and Deutsch (2006). Based on this view, most behaviors are determined by both reflective (thoughtful evaluation) and impulsive systems (see a review by Vohs, 2006). This notion is in line with Baumeister et al. (2011), who argued that a mixture of conscious and unconscious processing can account for all human behavior. In other words, "even highly impulsive buyers do not give in to every spontaneous buying demands, as a variety of factors may alert consumers to need for immediate deliberation" (Rook & Fisher, 1995, p. 306). This view is also comparable with the body of knowledge highlighting the role of cognitive evaluation in impulse buying behavior (Dholakia, 2000; Herabadi et al., 2009). According to Dholakia (2000), although the experienced psychological conflict (e.g., heart vs. mind) will result in a more thought-based evaluation of the consequence of impulsive consumption, the result of this thoughtful evaluation even might lead to impulsive consumption (see CIFE in chapter 2). In this regard, since the cognitive aspect of impulse buying has rarely been investigated, it is essential

to know the legitimacy of the cognitive aspects of impulse buying (Herabadi et al., 2009). Importantly, Dholakia (2000) explicitly made a distinction between impulsive consumption behaviors (i.e., general impulsive behaviors) and a reflective behavior (i.e., goal-directed). Therefore, in the present research we argue that while a few studies have taken into account the cognitive aspect of impulse buying, the reflective aspect (i.e., serves regulatory and representational goals) of impulse buying is still unexplored and needs more empirical research.

Although it seems straightforward to predict whether a person enacts the desired behavior according to the classic accounts of self-control, the complexity of everyday life opens doors to question regarding the size and prevalence of such effects (Hofmann, Baumeister, Förster, & Vohs, 2012). Interestingly, the reflective and impulsive aspects of behavior have been studied across different spheres or domains. For instance, Friese, Hofmann, and Wanke (2008) experimentally demonstrated that when processing resources were limited, choosing chocolates between a variety of chocolates and fruits was determined by the impulsive system. On the other hand, the same behavior was predicted by the reflective system when participants had ample processing resources. In another study, Hofmann, Rauch, and Gawronski (2007) assessed both impulsive and reflective precursors of candy consumption. Moreover, the same logic has been investigated regarding healthcare professional behavior (Presseau et al., 2014) and self-protective behavior (Murray et al., 2011). However, in spite of existing significant role of self-control in many aspects of life (e.g., smoking, criminal behavior, and dieting) (see Baumeister et al., 2007; Muraven et al., 1998), we know little about the influence of self-control on spending behavior, such as impulse buying behavior (Roberts & Manolis, 2012).

Furtheremore, Rook (1987) also distinguished impulse buying from habitual behavior because impulse buying tends to disturb the consumer's behavior stream. This idea is in line with

other studies separating impulse buying from other forms of mindless purchases (i.e., habitual purchases) that unexpectedly solve an existing problem (Herabadi et al., 2009; Verplanken & Sato, 2011). On the other hand, it has been discussed by some scholars that repetition characterizes daily life because we do things rarely for the first time (Verplanken & Orbell, 2003; Wood et al., 2005). Therefore, it is plausible to assume that impulse buying also includes habitual components.

Moreover, in this research, we argue that there are some controversies about the influence of culture on impulse buying. In this regard, Kacen and Lee (2002) demonstrated that in comparison with Caucasian individualist consumers (Western countries), collectivist consumers (Asian countries) engage in less impulse buying. They empirically showed that while both collectivist and individualist consumers own impulse buying tendency in equal measure, there is a weaker correlation between impulse buying tendency and impulse buying for collectivist consumers but not individualist consumers. In this sense, Xiao and Nicholson (2011) argued that in interdependent societies, impulsive consumption is associated with immaturity, and hence they are more likely to suppress their urge to act impulsively. On the other hand, recently some studies reported that collectivism is a predictor of impulse buying in collectivist countries, such as Pakistan (Jalees, 2009) and India (Badgaiyan & Verma, 2014). Interestingly, even there is evidence showing the relationship between individualism in Asian countries (e.g., Vietnam) and impulse buying (Tuyet Mai et al., 2003). A recent meta-analysis by Amos et al. (2014) also admitted that impulse buying in Asia is a substantial phenomenon. Therefore, it can be concluded that impulse buying is also prevalent in collectivist societies. So, why have some studies failed to support this fact? To provide an account for this discrepancy, this body of knowledge refers to the study done by Lee and Kacen (2008), indicating that collectivist consumers are more susceptible to impulse buying in the presence of their family or friends (see Badgaiyan & Verma, 2014; Dameyasani & Abraham,

2013). This idea is based on the premise that there is an increasing trend for group shopping in collectivist countries, and hence the chances are that collectivists are being affected by the presence of others (Badgaiyan & Verma, 2014). On the other hand, there is also evidence showing that the presence of others diminishes impulsive consumption for those with interdependent self-construals (Zhang & Shrum, 2008). Therefore, we agree with Amos et al. (2014), who proposed that impulse buying studies beg more research regarding cultural explanation. In this regard, recently Sharma et al. (2014b) tried to address this research gap by providing a new insight into the cultural component of impulse buying. The authors argued that while there is no correlation between self-control and self-indulgence for those consumers with interdependent self-construals, there is a definite correlation for those with independent self-construals. In this research, on the other hand, we agree with Kim and Markuz (1999), who argued that culture can be best conceptualized as continually changing, open system of attitude and norms. Based on this approach, the psychological experience of simple behavior (e.g., ordering a café) depends on cultural context and the nature of people's relationship (Kim & Markuz, 1999).

In short, this research agrees with the stream of research claiming that impulse buying is still without a clear framework and it seems challenging to frame impulse buying with the prevalent models of behavior (Amos et al., 2014; Verplanken & Sato, 2011). This can be partially attributed to the fact that impulse buying is a complex phenomenon, and hence it is virtually impossible to address all factors influencing impulse buying (Duarte et al., 2013; Hausman, 2000; Verplanken & Sato, 2011). In this respect, the current research concurs with the recent literature seeking a multidisciplinary framework of impulse buying (Xiao & Nicholson, 2011; Xiao & Nicholson, 2013). To address this gap, we follow Xiao and Nicholson (2011), who argued that all current perspectives studying impulse buying (i.e., economic, psychology, behavioral economy

and sociology) can be classified into three dominant explanatory models. Put simply, based on this idea, impulse buying can be framed as an integrative platform of three board disciplines:

(1) *Individual approaches*: This paradigm refers to the notion that personality trait constructs and cognitive perceptions result in a given action (Xiao & Nicholson, 2011). As we discussed earlier, impulse buying tendency and self-control are the most critical internal stimuli (individual traits) of impulse buying. Thus, we argue that any new model of impulse buying should contain these two constructs as internal stimuli.

(2) *Consumption impulsivity theory*: "Research following this line of research concentrates on the moments of obvious matching between the consumer's immediate gratification and willpower to resist it and seeks to determine which one is prevailing during decision making" (Xiao & Nicholson, 2011, p. 2519). Consistent with the principles discussed so far (e.g., desire-power model) in which impulse buying has been outlined as either "desire vs. willpower" or "cost vs. benefits", any new model should also include this psychological conflict. Moreover, those studies investigating the barriers to self-control also can be classified into this paradigm. In this respect, the self-regulatory approach also should be taken into account as a determinant of self-control capacity.

(3) *Social and cultural factors*: "These types of study in turn historically been preoccupied with social structure, norms, (and) self-identity" (Xiao & Nicholson, 2011, p. 2517). In this research, we have also raised several questions pertaining to the cultural components of impulse buying. Thus, any new model should also take into account the cultural elements of impulse buying. Additionally, we have also mentioned that while social influences have the enormous situational influence on impulse buying (Amos et

al., 2014), there is no consensus about the definition of social impacts on impulse buying. Thus, the new model should also consider this research gap.

To summarize, we propose that there exists a need for a comprehensive model of impulse buying. This new model is supposed to emphasize the reflective and impulsive aspects of impulse buying mainly. To study this, we discussed that a new model should integrate three board disciplines, including individual approaches, consumption impulsivity theory, and social-cultural factors. We also mentioned that this field lacks enough research about the habitual and heuristic nature (see low-effort decision-making process) of impulse buying. Thus, the new model should also address this research gap.

To study this, it seems crucial to select a particular product category. This is based on the premise that a previous study showed that "a product-specific conceptualization of impulse buying was a better predictor of actual impulse purchasing behavior" (Jones, Reynolds, Weun, & Beatty, 2003, p. 505). Based on the product-based approach, products can be categorized as either utilitarian or hedonic products (Alba & Williams, 2012). In the area of food categories, while hedonic foods refer to unhealthy foods, utilitarian foods refer to healthy foods (Antonides & Cramer, 2013). This view allows us to distinguish between goods according to their relative hedonic or utilitarian nature (Khan et al., 2005). This is based on the fact that the hedonic nature of a product is one of the most important product-related factors influencing impulse buying (Kacen et al., 2012).

To narrow our focus, this study focuses on unhealthy snack impulse buying because unhealthy snacks are available everywhere promoting more impulsive purchases (Verplanken et al., 2005). In this regard, one study at the Medical University of Silesia in Poland showed that while 45.6% of students had unhealthy snacks between their meals, only 29% ate fruit and

vegetable daily (Likus, Milka, Bajor, Jachacz-Lopata, & Dorzak, 2013). Similarly, Wansink, Cao, Shimizu, and Just (2013) reported an increase in unhealthy snack purchases and a decrease in healthy snack purchases at the Cornell University's cafeteria during the very end of semester particularly. In some European countries like Spain, there has been a remarkable increase in the confectionery product consumption (Gracia & Albisu, 2001). In the same way, one study in Turkey reported that nearly 76 % of young adult attended to the oral Diagnosis department had regular sweet consumption (Akarslan, Sadik, Sadik, & Erten, 2008). In addition, from a theoretical point of view, while unhealthy consumption (i.e., mostly related to eating or choices) is a classic area of self-regulatory studies (e.g., Friese et al., 2008; Hofmann et al., 2007; Honkanen, Olsen, Verplanken, & Tuu, 2012), there is a lack of knowledge regarding purchases of food which might be elicited in a different way (Prestwich, Hurling, & Baker, 2011). It is based on the premise that those studies concerning food choice (or food consumption), for instance, may not have been replicated if the participants were asked to pay for the product (Prestwich et al., 2011). Stated differently, "although important work has been done on food choice from physiological, bio-psychological and social psychological perspective, a distinct input from consumer research domain is largely absent" (Verplanken et al., 2005, p. 439). In this research, we propose that these reflective-impulsive determinants can predict the increase (decrease) in the number of unhealthy snacks purchased. Also, these reflective-impulsive precursors can predict people's preference, young adult especially, for unhealthy snacks relative to healthy snacks.

3.3. Proposed model

Noteworthy, it has been suggested that the dual-process models that share the general idea of making a distinction between deliberate and more automatic process are more appropriate to account for impulse buying (Verplanken & Sato, 2011). Nevertheless, while some theoretical discussions exist (e.g., Strack et al., 2006; Vohs, 2006), there is a lack of empirical support for this argument. Therefore as a new approach, we concur with Hofmann, Friese, and Strack (2009), who argued that the logic of the Reflective-Impulsive Model (RIM [Strack & Deutsch, 2004]) can be extended to impulse buying studies. In this study, we apply the logic of the RIM and similar dual-system theories[15] (see Hofmann et al., 2008a; Strack et al., 2006) aiming to distinguish between a reflective and an impulsive system to determine factors influencing the unhealthy snack impulse buying. We consider this model in the same vein with the model offered by Hoch and Loewnstein (1991), in which the desire to make purchase and self-control are regarded as the determinants of purchase decision making at any given time (see figure 3.1).

Even though RIM is a psychological model (Strack et al., 2006), it can help us to elucidate the psychological dynamics of buying (Hofmann et al., 2008b; Strack et al., 2006). The basic idea in this model is that not all behavior is a product of conscious decisions and intentions because much of human behavior is cued by environment regardless of active reflection and decision making (Presseau et al., 2014). According to this model, both reflective and impulsive systems join to determine the act of purchasing a product in almost all situations (Strack et al., 2006), which means that they operate in parallel as well as interact (Vohs, 2006). More strictly, "when

[15] In the domain of dual-process theories, "system" refers to human reasoning system, two mental systems or the different mode of processing/thinking (see Evans, 2008; Neys, 2006). Although this chapter will try later to make a distinction between the proposed model and other dual-process models, the discussion between dual-model theories is out of the scope of this research.

consumer's behavior is less a result of reflective input, and more a result of impulse, the quality of their lives suffers" (Vohs, 2006, p.220). In addition, in the following, it will be discussed how this model can be completed by the social proof heuristic (i.e., descriptive norm) and cultural components.

This point of view goes beyond the classic accounts of self-control in terms of the underlying mechanism through which rational, as opposed to impulsive behaviors, are caused (see Hofmann et al., 2008b). For example, contrary to the strength model (and similar accounts such as self-regulatory model) which has focused on the control aspect of human life (e.g., Muraven & Baumeister, 2000; Muraven et al., 1998), our model takes into account both impulsive and controlled aspects of behavior (see Friese et al., 2008; Hofmann et al., 2009). Furthermore, this research contributes to the model of free will (Baumeister, Sparks, Stillman, & Vohs, 2008) which is mute regarding how impulsive versus reflective determinants of actions transform into behavior (see Hofmann et al., 2008b).

3.3.1. The impulsive system

The Impulsive system has been conceptualized as a network which is responsible for generating impulsive behavior (Hofmann et al., 2009; Starck et al., 2006). Based on this stream of research, impulses (behavioral tendencies) emerge through the activation of the associative clusters in long-term memory in close interaction with perceptual stimulus input, such as seeing a cake (Hofmann et al., 2009; Hofmann et al., 2008b; Starck et al., 2006). Otherwise stated, this system activates a series of schemata (including urges, desires, and impulses) that rest underneath threshold and stimulation by aspects of the environment (e.g., an interesting snack) will push them toward the threshold (Vohs, 2006).

To conceptualize this system, Hofmann et al. (2009) explained the chocolate eating behavior as an example in which "through repeated experience with chocolate, an associative cluster may be formed that links (a) the concept of chocolate, (b) positive affect generated by the organism, and (c) the behavioral schema that has led to the positive affect" (putting the chocolate into the mouth)" (Hofmann et al, 2009, p. 164-165). As a consequence, when the person faces the chocolate in a future situation (e.g., in a party), the chocolate cluster might be activated, so that a similar impulse will be automatically triggered (see Hofmann et al., 2008a). The current study introduces impulse buying tendency and habit as the main components of the impulsive system, which can generate impulses, urges and desires.

3.3.1.1. Impulse buying tendency

General impulsivity which has been conceptualized as a tendency to act without deliberation (Hofmann et al., 2008a), can be understood as a tendency that creates impulses (Whiteside & Lynam, 2001) and urges. Generally, the tendency to think, control and plan insufficiently are the main characteristics of impulsivity (Guerrieri, Nederkoorn, & Jansen, 2012), and the desirability of others and seeking for short-term rewards (e.g., enjoyment) are the main features of impulsive decision making (Weijzen, Graaf, & Dijksterhuis, 2009). In this research, we argue that the impulse buying tendency shares similar features with the general impulsivity. For this reason, it can be viewed as one of the components of the impulsive system.

Firstly, it has been found that chronic impulse buyers are more likely to experience increased urges to buy almost in all shopping contexts, including traditional shopping context (Beatty & Ferrell, 1998), online buying context (Wells et al, 2011), TV shopping (Park & Lennon, 2006), mobile commerce (Wu & Ye, 2013), and services context (Sharma et al, 2014a). Secondly, impulse buying tendency is correlated with lack of planning and deliberation, feeling of pleasure

and excitement, an urge to buy, the difficulty to leave things and possible regret afterwards (Verplanken & Herabadi, 2001). Also, similar to general impulsivity which is positively associated with unhealthy eating (Jasinska et al., 2012), it can be expected that people with chronic impulse buying tendency are also vulnerable to the unhealthy snack impulse buying (see Verplanken et al., 2005). In this respect, few studies considered the impulse buying tendency as a part of the impulsive system to determine the outcome variable (e.g., Honkanen et al., 2012; Vohs, 2006).

3.3.1.2. Unhealthy snack buying habit

It seems there is a compatibility between the core idea of unhealthy snacking habit and impulse buying style (Verplanken et al., 2005). However, as previously stated, there is a lack of knowledge regarding habit as a central determinant of impulse buying. In this respect, Strack et al. (2006) argued that habit can strengthen the impulsive system, which means that when a motor schema is triggered more often by exposure to a certain stimulus, it is more likely to be elicited in the future. These authors concluded that "this mechanism may impulsively contribute to buying behavior by simply causing people to reach out for certain product" (Strack et al., 2006, p 212). This habitual behavior is highly relevant to eating behavior since people follow a regular eating pattern regarding type and frequency of eating (Rothman, Sheeran, & Wood, 2009).

In the present research, we argue that the unhealthy snack buying habit can also be considered as the second component of the impulsive system. We draw this conclusion based on the fact that one of the main features of habit is automaticity (Verplanken & Orbell, 2003), which means that habits are not dependent on cognitive capacity (Rothman et al., 2009). Indeed, when a person repeats his or her previous response (behavior) in a stable context, an association can be created between the context and the response; when the person reencounters the context, this context-response association will be activated automatically (Ji & Wood, 2007; Verplanken,

2006). Consequently, based on this stimulus-response association, an existing stimulus in the context automatically can generate an impulse towards action (Gardner, 2015a; Gardner, 2015b).

3.3.2. The reflective system

In the reflective system, on the other hand, a consequence of decision process elicits behavior (Strack & Deutsch, 2004). In other words, the individual through a conscious deliberation is aware of behavior (Presseau et al., 2014). Indeed, making deliberate judgments and evaluations and inhibiting impulses are executive functions of this higher order mental operation (Hofmann et al., 2009). Therefore, this system can provide a flexible degree of control over decisions and actions through which immediate stimulus can become overridden (Hofmann et al., 2009; Hofmann et al., 2008a). In addition, the schemata related to the reflective system (e.g., inhibitory schema to refrain from grabbing a chocolate) rest below activation level, which means that they are waiting to be called into action by the plans and goals, such as having special dietary (Vohs, 2006 [see also Hofmann et al., 2008a]). This system emerges in different ways, such as "my diet does not allow chocolate brownies" (Vohs, 2006) or "when I go out to dinner Friday night, I will not have dessert" (Rothman et al., 2009). In fact, it is crucial to investigate the chronic dieting, which is effortful self-regulation, because it represents the process and possible consequences of long terms inhibitions (Vohs & Heatherton, 2000). Therefore, this investigation applies dietary restraint as a reflective system component.

3.3.2.1. Dietary restraint

Dietary restraint (dieting) refers to deliberate and sustained attempts to regulate food intake to control body weight and body shape (Jáuregui-Lobera et al., 2014; Karlsson, Persson, Sjöström, & Sullivan, 2000; Wadden, Brownell, & Foster, 2002). Therefore, people with a higher score on

dietary restraint are supposed to acknowledge high standards about their body weight, accompanied with a motivation to refrain from unhealthy food (Hofmann et al., 2007). Put another way, restraint eaters are those people who are attempting to control their food intake (Wardle, Steptoe, Oliver, & Lipsey, 2000). Finally, although we acknowledge that people might obtain their desired weight by both dieting and exercise (Rotenberg et al., 2005), in this research, we focus only on dieting as a deliberate and sustained attempts to regulate food intake.

3.3.3. The moderating role of self-regulatory resources

The impulsive system and the reflective system operate in parallel (Vohs, 2006) and even they "access a common final mechanism for overt behavioral execution" (Hofmann et al., 2009, p. 165). However, they activate the behavioral schemata that may conflict each other under many circumstances (Hofmann et al., 2008b): while the impulsive system might activate eating schema once the person encounters food, the reflective system might activate decision to stop eating (Strack & Deutsch, 2004). Therefore, this framework will result in a better consumer behavior prediction under conditions in which the reflective and impulsive system are in conflict (Vohs, 2006). For example, while an impulse to drink a glass of water or fruit intake does not represent a self-control conflict, a high-caloric milkshake or an unhealthy snack may do (Adriaanse, Kroese, Gillebaart, & De Ridder, 2014; Hofmann et al., 2008a). According to this point of view, a conflict between an immediate impulse on the one hand and an effortful reflective system, on the other hand, might be experienced in such situations which is a determinant of health-related problems: one forces to a reduction of sweet consumption which is what we believe is reasonable, whereas the impulsive route urges us to do what pleasure forces, including increase in sweet consumption (Friese et al., 2008; Hofmann et al., 2009; Hofmann et al., 2008a). Therefore, in this research, we

define a self-control conflict[16] as a war between the impulsive and the reflective system. The reflective system tries to control unhealthy behavior (e.g., decrease unhealthy snack impulse buying) and the impulsive system encourages more pleasure (e.g., increase unhealthy snack impulse buying).

How the two systems compete to determine the final behavior is one of the concerns of the RIM that makes it distinct from other dual process models (Hofmann et al., 2009). While the reflective system is sensitive to a high amount of cognitive capacity, the impulsive system is a fast system that requires little cognitive capacity (Strak & Deutsch, 2004). Vohs (2006) argued that since the schemata in the reflective system rest below activation level, there is a need for an internal source of energy to reach the threshold for activation. In this regard, self-regulatory resources have been introduced as the underlying energy system for the reflective system by which the schemata are pushed above the threshold when it is needed by self-guides and policies (Vohs, 2006). However, self-regulatory resources are finite and might become temporarily depleted or fatigue by situational self-control demands, including attention suppression, thought suppression and emotion suppression (Vohs, 2006; Vohs & Faber, 2007). Interestingly, recently Hedgcock et al. (2012) empirically showed that self-regulatory resource depletion reduces the activity of the right middle frontal gyrus (located in the dorsolateral prefrontal cortex[17]). The results of this neural approach appear to be consistent with the logic of the RIM. Hedgcock et al. (2012) argued that "successful self-control can only occur if people first identify the conflict and then modify their behavior" (p. 487). For instance, perfect dieting happens if a dieter (1) identifies that there is a conflict between his desire for unhealthy snacks and his desire to lose weight and then, (2)

[16] Conflict refers to the perception that there is some reason not to enact the desire whereby unproblematic desires can be distinguished from problematic desires (i.e., temptations) (Hofmann et al., 2012; Hofmann & Kotabe, 2012).
[17] Since this view is a neural approach, we do not enter into such consideration.

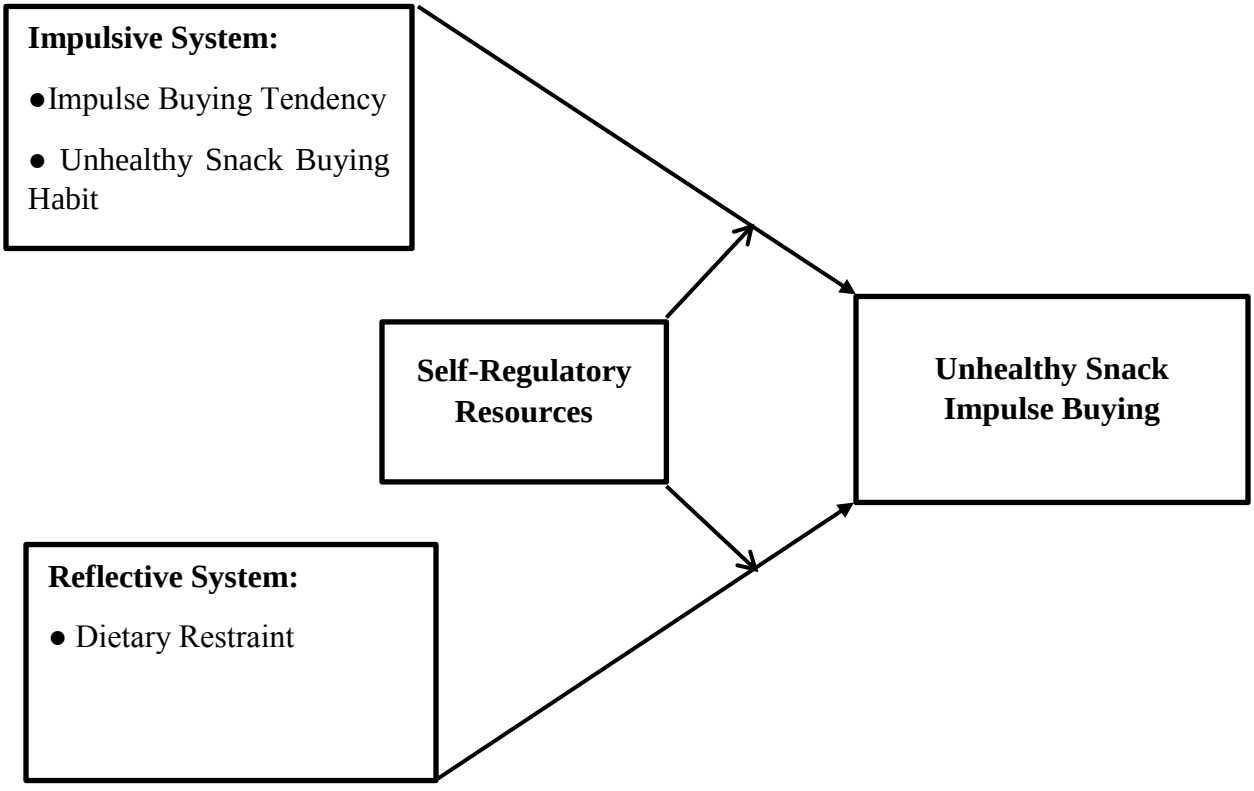
implements a modified behavior (e.g., eating a healthy snack or physically leave the tempting situation). These authors argued that self-regulatory resource depletion does not affect the conflict monitoring, but does affect people's abilities to implement control.

The moderating role of self-regulatory resources (e.g., through an emotion suppression task), with the logic of the RIM, has been investigated in different spheres or domains. For example, Hofmann et al. (2007) applied automatic attitudes and dietary restraint standards as the impulsive and reflective systems respectively to determine the subsequent candy consumption. The result showed that when control resources were temporarily depleted with an emotional suppression task, the candy consumption increased as a function of impulse system. Conversely, when enough resources were available (in control condition), the candy consumption was determined by dietary restraint standards (see also Friese et al., 2008). In another study, Honkanen et al. (2012) applied the impulsive buying tendency toward (unhealthy) snacks as the impulsive path, and an attitude toward unhealthy snack as the reflective precursor to justify snacking behavior. The results showed that when food-related self-control is strong (i.e., a trait of self-control), the snacking behavior will be determined by an attitude toward unhealthy snacking, which means that the final behavior is a deliberate act. On the other hand, when food-related self-control is weak, the final act will be an impulsive behavior. In the same way, Vohs and Faber (2007) demonstrated that when an emotion suppression task depleted self-regulatory resources, people with high impulse buying tendency were more likely to buy more products impulsively.

In the same vein, the strength model also argued that self-control operates like a muscle that needs some strength or energy resource to control one's behavior (see Baumeister et al., 2006; Baumeister et al., 2007; Muraven & Baumeister, 2000; Muraven et al., 2005; Muraven et al., 1998; Vohs & Faber, 2007). However, self-regulatory resources are finite (i.e., consumable resources),

so that they become temporarily depleted, or fatigue (like a muscle) by situational self-control demands, including thought suppression, emotion suppression and attention control tasks (Muraven & Baumeister, 2000; Vohs & Faber, 2007). Therefore, immediately after this depletion, people are less capable of regulating their behavior (at least for a short time). For instance, it has been discussed that mood regulation is a typical exercise to deplete self-regulatory resources. Immediately after this depletion, people behave differently, such as a decrease in physical stamina or an increase in impulse buying behavior.

Figure 3.1. A suggested model for the prediction of unhealthy snack impulse buying by impulsive versus reflective determinants and self-regulatory resources as moderator.



3.3.4. Social proof heuristics as *temporary components of the reflective system*

Impulse buying has been conceptualized as a product of an uncomplicated heuristic process in which consumers through an uncomplicated process make a simple decision (Verplanken & Sato, 2011; Xiao & Nicholson, 2013). This idea is based on the premise that because impulse buying happens less deliberately and simply, people will process the stimuli available from the environment (Chen et al., 2016). Heuristics allow people to process information based on a superficial consideration of easily accessible cues available in the context of judgment or decision making (Maheswaran, Mackie, & Chaiken, 1992; Shah & Oppenheimer, 2008). In the area of marketing, heuristics have been studied in different ways, such as brand name and country of origin (see Chang, 2004; Maheswaran et al., 1992; Shah & Oppenheimer, 2008). Given the heuristic nature of impulse buying (Chen et al., 2016), it is crucial to adopt the heuristic information processing in impulse buying studies and whether this information processing takes place in the reflective system or the impulsive system.

This idea not only helps us to offer a comprehensive view of impulse buying, but also to distinguish our dual-process model from other types of dual-process models. Mainly, we are interested in contrasting our model with other dual-process models, in which the heuristic information processing has been considered as a separate system from the reflective system. For instance, the heuristic-systematic model (HSM) developed by Bohner, Moskowitz, and Chaiken (1995) assumed that our motivations shape our thoughts in a given social situation. When there is not sufficient motivation, the information processing would be based on simple rules like prior knowledge, the so-called heuristic processing. On the other hand, when enough motivation exists, enough resources would be allocated for more effortful and systematic processing (see also Kahneman and Frederick (2003), who have labelled it as system 1 and system 2 respectively).

Similarly, social reaction model (as a dual-process model) also proposed that both analytic and heuristic processing can determine decision making about health-risk behavior, especially for adolescents (Gibbons, Gerrard, Blanton & Russell; 1998; Gibbons, Houlihan & Gerrard, 2009; Gibbons, Kingsbury, Gerrard & Wills, 2011). Based on this stream of research, there are two pathways to health behavior, namely, the reasoned path and the social reaction path. The reasoned path reflects goals and intended risk behavior, which means that adolescents engage in risky behavior deliberately. Interestingly, this system has been assumed as a synonym for the reflective system. On the other hand, the heuristic path (the social reaction path) is much less deliberative which captures the more reactive/socially oriented elements. The authors introduced the behavioral willingness as the main factor in the heuristic path resulting from four factors, including descriptive norm, positive attitude toward the behavior, past behavior and social image. In this regard, some studies empirically supported this idea. For example, Salmon, Fennis, de Ridder, Adriaanse, and De Vet (2014) in an empirical study proved that under a suboptimal condition in which self-regulatory resources were depleted, people were more likely to use heuristics (i.e., descriptive norm), and even this condition promoted more healthy choices. In other words, they demonstrated that in the self-regulatory resource depletion condition, the number of healthy choices was higher in the presence of a heuristic compared with the no heuristic condition (see also Janssen, Fennis, Pruyn, and Vohs (2008) and Fennis, Janssen, and Vohs (2008), who made the same conclusion, but in the case of charitable requests).

On the other hand, Strack and Deutsch (2004) argued that although it seems tempting to compare the reflective-impulsive model with this stream of research, it is not a precise analogy because there are no reflective versus impulsive ways to social judgments that people can choose as alternatives. In this sense, Strack and Deutsch (2004) argued that all judgments are products of

the reflective system while the impulsive system works in parallel. Based on this idea, even the application of heuristic judgments takes place in the reflective system. Therefore, "the social reaction model can still be subsumed under what Strack and Deutsch termed the reflective system" (Hofmann, Friese & Wiers, 2011, p. 163). In this research, while similar to social reaction model (e.g., Gibbons et al., 2010) we accept the social influences as a part of heuristic processing, we argue that this information processing takes place in the reflective system (see figure 3.2). What do we mean by social influences?

3.3.4.1. Descriptive norm

To address this issue, we integrate our model with the "focus theory of normative conduct" (Cialdini et al., 1991). Based on this body of research, the social norm is one of the most important concepts to conceptualize human social behavior (Cialdini et al., 1990). We have adopted the focus theory of normative conduct (i.e., a social-psychological model) in our model because it has been discussed that this model is conceptually in line with the area of social decision heuristics (Kallgren et al., 2000). According to this theory, "norms are only likely to influence behavior directly when they are focal in attention and, thereby, salient in consciousness" (Cialdini et al., 2006, p. 4). The basic idea in this theory is that norm theorists must be specific about whether they are referring to the descriptive or injunctive norm (Cialdini et al., 1991). Roughly speaking, distinguishing between descriptive and injunctive forms of normative information (i.e., the norm of "is" and the norm of "ought" respectively) is the main concern of this theory (Cialdini et al., 1991; Jacobson, Mortensen, & Cialdini, 2011). In this respect, while injunctive norms refer to norms that characterize the perception of "what most people approve or disapprove", "what most people do" describes the descriptive norms (Cialdini et al., 1991). Put another way, while "descriptive norms describe the behavior of a relevant peer group", the injunctive norms "are based on consumer's

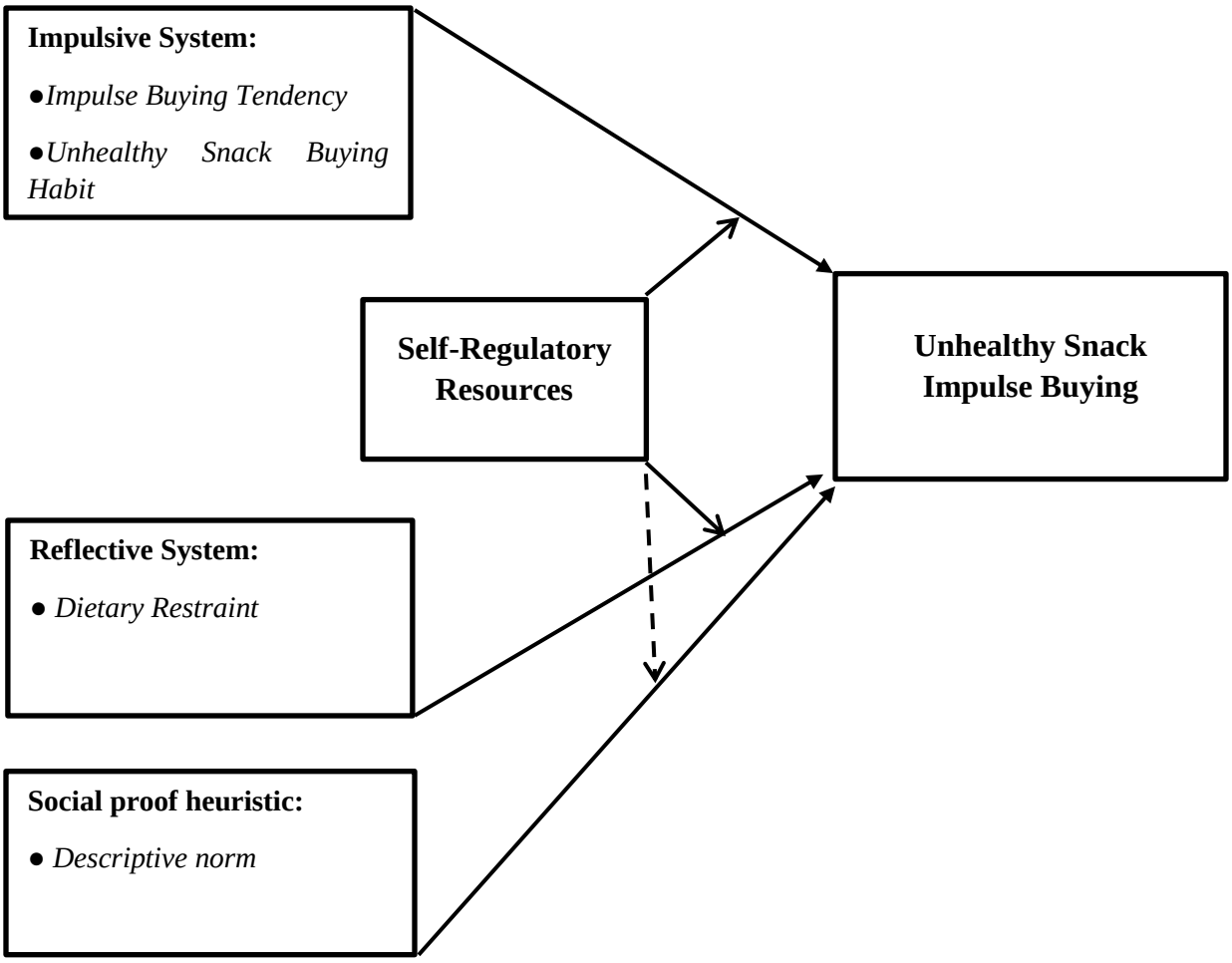
beliefs about what others expect them to do in a given situation" (Melnyk, Herpen, Fischer, & van Trijp, 2011, p. 712-713).

In this research, we apply descriptive norms because they can provide social proof heuristics for behaviors (see Salmon et al., 2014; Stok, 2014). The social proof heuristic is a frequently used heuristic referring to the tendency to adopt the option preferred by others (see Salmon et al., 2015; Salmon et al., 2014). It is based on the premise that although descriptive and injunctive norms are often related, they are conceptually and motivationally distinct (Cialdini, 2007). In addition, in comparison with injunctive norms which involve more analytic process, the descriptive norms include more heuristic factors (e.g., false consensus) (Gibbons, Houlihan & Gerrard, 2009). Moreover, it can be expected that young people are more likely to pay attention to what their peers/friends are doing (i.e., descriptive norm), rather than what their peers/friends accept (i.e., injunctive norm) (Gibbons et al., 2003). In this respect, several studies have applied the descriptive norm as the "social proof heuristic" to predict health-related behaviors, such as healthy food choices and healthy food purchases (e.g., Prinsen, de Ridder, & de Vet, 2013; Salmon et al., 2015; Salmon et al., 2014). In this regard, the results of previous studies have demonstrated that people select their food according to what others choose regardless of whether it is healthy or unhealthy (Burger et al., 2010; Prinsen et al., 2013). Therefore, in this research, we argue that descriptive norms are environmental cues (i.e., what is typical in the context) acting as a social proof heuristic, which means that people look at what others do for behavioral guidance when they are in unfamiliar or ambiguous situations (Prinsen et al., 2013).

However, contrary to the stream of research arguing that self-regulatory resource depletion leads to increased conformity to descriptive norms (e.g., Jacobson et al., 2011; Salmon et al., 2014), the present research argues that self-regulatory resource availability increases the influence

of descriptive norms on behavior. It is based on the premise that cognitive deliberation and enough self-control enforce descriptive norms, thereby stimulating consumer to think favorably about the suggested behavior (DeBono, Shmueli, & Muraven, 2011; Melnyk et al., 2011). Interestingly, DeBono et al. (2011) provided evidence indicating that the depletion of self-regulatory resources will result in less adherence to descriptive norms. Although it seems that our assumption contradicts the concept of impulse buying, there is evidence supporting the idea that descriptive norm can promote unplanned behavior (see Ohtomo & Hirose, 2007). Therefore, we agree that it is pivotal for marketers to study the conditions in which the effect of social norms can increase/decrease desired behavior (Melnyk et al., 2011). In short, drawing from heuristic nature of impulse buying, we applied the descriptive norm as environmental cues acting as a social proof heuristic. We propose that the application of these social proof heuristics takes place in the reflective system based on the existence of enough self-regulatory resources (see figure 3.2).

Figure 3.2. Descriptive norm becomes a temporary part of the reflective system depending on the availability of self-regulatory resources.



3.3.5. Culture

Culture means "the collective programming of the mind which distinguishes the members of one category of people from another" (Hofstede, 1994, p. 1). In this research, for reasons discussed earlier, we argue that there are some controversies about the influence of culture on impulse buying. To address this issue, we apply the logic of the Markus and Kitayama's (1991) theory of independent and interdependent self-construals (i.e., a cultural-psychological perspective). This model is based on the idea that the assessment of self-construction is a powerful theoretical element to avoid a failure to replicate certain findings in different cultural contexts. This idea shares similarity with other research considering the differences in the content of self-concept as a central notion for understanding cultural differences (Fischer et al., 2009; Oyserman & Lee, 2008; Triandis, 1989). Simply stated, this idea takes into account the concept of self-construal as an individual level explanation for culturally-based differences in behavior. More especially, "how the culture evaluates individual deviation from norm determines the individual's view on what it means to be different from other, and in turn, these views shape individual self-perception" (Kim & Markus, 1999, p. 787). In other words, "these construals of the self and others are tied to the implicit, normative tasks that various cultures hold for what people should be doing in their lives" (Markus & Kitayama, 1991, p. 224). Therefore, regardless of the importance of a given behavior, this stream of research assumes that the self-concept can regulate a wide variety of behavior (Kanagawa, Cross, & Markus, 2001; Kim & Markus, 1999). In this research, we argue that the interaction between different aspects of self (i.e., independent and interdependent self-construals) and the social proof heuristic can determine the unhealthy snack impulse buying. In short, we propose that individuals with interdependent self-construals are more likely to follow social norms (i.e., descriptive norm). To conceptualize this idea, we have to take three steps: First, to clarify

different aspects of the self (i.e., self-construals). Second, to identify which aspects of descriptive norms are interesting for people with interdepend self-construals. Finally, to formulate the culture in the proposed model.

(a) Different aspects of self

In this study, we borrow the logic of the Markus and Kitayama's (1991) theory assuming the existence of two construals of self, the so-called independent and interdependent construals. In fact, the role that is allocated to "others" in self-definition, can be viewed as being the most significant difference between these two construals. The essential aspect of the independent self-construal (i.e., mostly in many Western cultures) emphasizes the self as an autonomous and independent person who is essentially separate from others (Cross, Bacon, & Morris, 2000; Markus & Kitayama, 1991). For instance, "for Americans, in many social situations, conformity to group norms is associated with relinquishing one's autonomy" (Kim & Markuz, 1999, p.787). On the other hand, within the interdependent self-construal (i.e., mostly in non-Western cultures), people are motivated to discover a way to fit in with relevant others to become part of various interpersonal relationships (Markus & Kitayama, 1991). As a consequence, for example, people in East Asian cultural contexts are not ashamed because of following norms (Kim & Markuz, 1999). In other words, while the self for those with independent self-construals can be defined as unique and separate from others, the self for those with interdependent self-construals can be seen as interconnected with in-group members (Gudykunst & Lee, 2003). Similarly, Suh, Diener, Oishi, and Triandis (1998) argued that the self in individualistic cultures is "inner-focused", whereas the self is "other-focused" in collectivist cultures. According to this idea, in individualistic cultures, there is a habitual tendency to direct their attention internally to seek information in judgment tasks. On the other hand, in collectivist cultures, the much of attention is aimed externally to see

what others feel and think, and hence there is a social agreement on what is socially appropriate. In the same way, a meta-analysis by Bond and Smith (1996) indicates that the level of conformity in collectivist countries is higher than individualist countries. Indeed, it seems clear that normative mechanisms are more rigorous in collectivist cultures due to being more attentive to norm message and the higher level of activated norm perception (Paek, Lee, & Hove, 2014). In this regard, Van Baaren, Maddux, Chartrand, De Bouter, and van Knippenberg (2003) experimentally showed that interdependent self-construals produced more nonconscious mimicry than independent self-construals.

(b) Which aspects of descriptive norm matter for those with interdependent self-construals?

To address this issue, we first refer to the literature in the field of social norms to conceptualize different aspects of social norms. That is to say, this review explores the reasons why those with interdependent self-construals follow social norm. The literature review leads us to conclude that there are two main reasons and motivations why people follow or unfollow descriptive norms: (1) the need for affiliation and the desire to behave correctly (see Cialdini & Goldstein, 2004; Higgs, 2015; Robinson, Thomas, Aveyard, & Higgs, 2014b); (2) the goal of maintaining a positive self-concept (Cialdini & Goldstein, 2004).

(1) The need for affiliation and the desire to behave correctly (see Cialdini & Goldstein, 2004; Higgs, 2015; Robinson et al., 2014b): Based on this stream of research, people observe and use the information about the eating behavior of others to guide and inform their behavior (e.g., dietary behavior). Although it can be discussed that the need for affiliation and the desire to behave correctly are two distinct motivations, it is not easy to separate them because they are interrelated (see Cialdini & Goldstein, 2004; Higgs, 2015). To describe the interdependency between the need

for affiliation and the goal of accuracy, Higgs (2015) suggested a new model of social eating norms. This model with an evolutionary perspective, rests on three assumptions: (a) norm following might increase evolutionary fitness by ensuring the selection of safe food; (b) norm following promotes a sense of cooperation and food sharing which is an evolutionary benefit; (c) norm following is associated with social judgements, which can be either approval or disapproval. Somehow similar, Cialdini and Goldstein (2004) argued that the perceived consensus or beliefs that are generally accepted and encouraged by the majority can influence behavior through both the goal of accuracy and the need for affiliation with others. Also, it is assumed that "even when not directly, personally, or publicly the target of others' disapproval, individuals may be driven to conform to restore their sense of belonging and their self-esteem" (Cialdini & Goldstein, p. 611). Thus, we think these two concepts are interrelated and might be considered as the main reasons for individuals with interdependent self-construals to follow descriptive norms. This is based on the premise that in Asia (i.e., presumably those with predominantly interdependent selves), approval of others towards the expressed preference will result in good feeling toward the choice (Kim & Markus, 1999). Once it happens, the person will continue to try to be like others (Kim & Markus, 1999). Otherwise stated, for those with interdependent self-construals, while one's internal attributes and its attached value cannot induce good feeling about the self, the tasks associated with being interdependent with others (e.g., maintain harmony, engaging in appropriate action, and belonging) should promote positive feeling about self (Markuz & Kitayama, 1991).

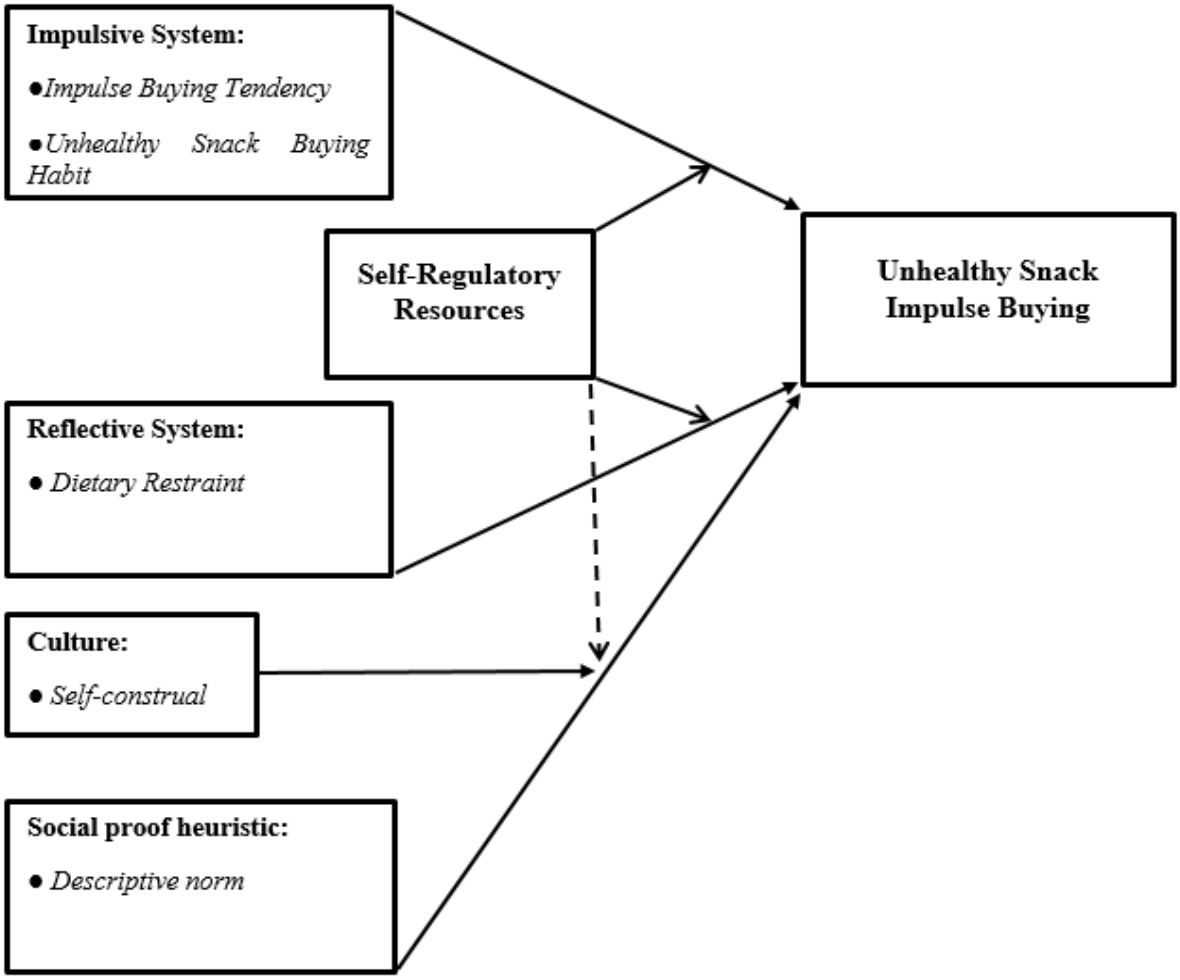
(2) The goal of maintaining a positive self-concept (Cialdini & Goldstein, 2004): Some people are following social norms as an external source to enhance and protect their self-esteem, whereas others are less likely to conform to social norms because they focus on a fundamental foundation of their self-worth (e.g., a self-attribute) (Cialdini & Goldstein, 2004). In this respect,

Markuz and Kitayama (1991) argued that separating oneself from others, being unique, and expressing one's inner attributes are required for those with independent self-construals to feel good about oneself. Therefore, we conclude that those with independent self-construals are less likely to follow the descriptive norm.

(c) How do we formulate the cultural element and its interaction with other factors in our dual-model?

Since we have proposed the existence of impulsive system versus reflective system, all new elements (such as self-construals) should be defined as a function of these two systems. As discussed earlier, self-regulatory resources determine whether descriptive norms become a temporary part of the reflective system. In this respect, we postulated that when enough self-regulatory resources are available, descriptive norms (i.e., what others do) become a temporary part of this system. Moreover, in this section, we have emphasized the importance of self-construals (as a cultural component) suggesting that those with interdependent self-construals are more likely to follow descriptive norms. Therefore, it can be concluded that both self-regulatory resources and self-construals jointly influence the descriptive norm. To make it simple (see figure 3.3), we propose that while self-regulatory resources moderate the effect of descriptive norms, it is essential to take into account the different aspects of the self.

Figure 3.3. Descriptive norm becomes a temporary part of the reflective system as a joint function of self-regulatory resources and self-construals.



3.4. Research hypotheses

Integrating different psychological, social psychological and cultural psychological perspectives was the aim of this chapter to outline a new model of impulse buying behavior. Drawing from the logic of the reflective-impulsive model, we argue that both reflective and impulsive precursors can determine impulse buying. In this regard, we proposed that self-regulatory resources moderate the influence of reflective-impulsive precursors on unhealthy snack impulse buying. We also discussed the importance social norms (descriptive norms) as a temporary component of the reflective system depending on the availability of self-regulatory resources. Finally, we showed how the effect of descriptive norms varies as a function of cultural components (i.e., self-construals). In short, following a dual-system model that distinguishes between a reflective and an impulsive system, we define impulse buying as:

> *A function of both reflective (i.e., goals and standards) and impulsive (i.e., impulse buying tendency and habit) systems depending on the availability of self-regulatory resources. In addition, the social proof heuristic (i.e., descriptive norms) might be applied to help the reflective system. However, this effect also varies as a function of the availability of self-regulatory resources and independent-interdependent dimensions of self-construals.*

For the sake of clarity, we would divide the model into two sections. We term the first section as the permanent impulsive-reflective components. The descriptive norm and its interaction with the reflective system, the so-called temporary components of the reflective system, have also been considered as the second part of the model. Therefore, in the following, the main idea of each section and related hypotheses will be discussed.

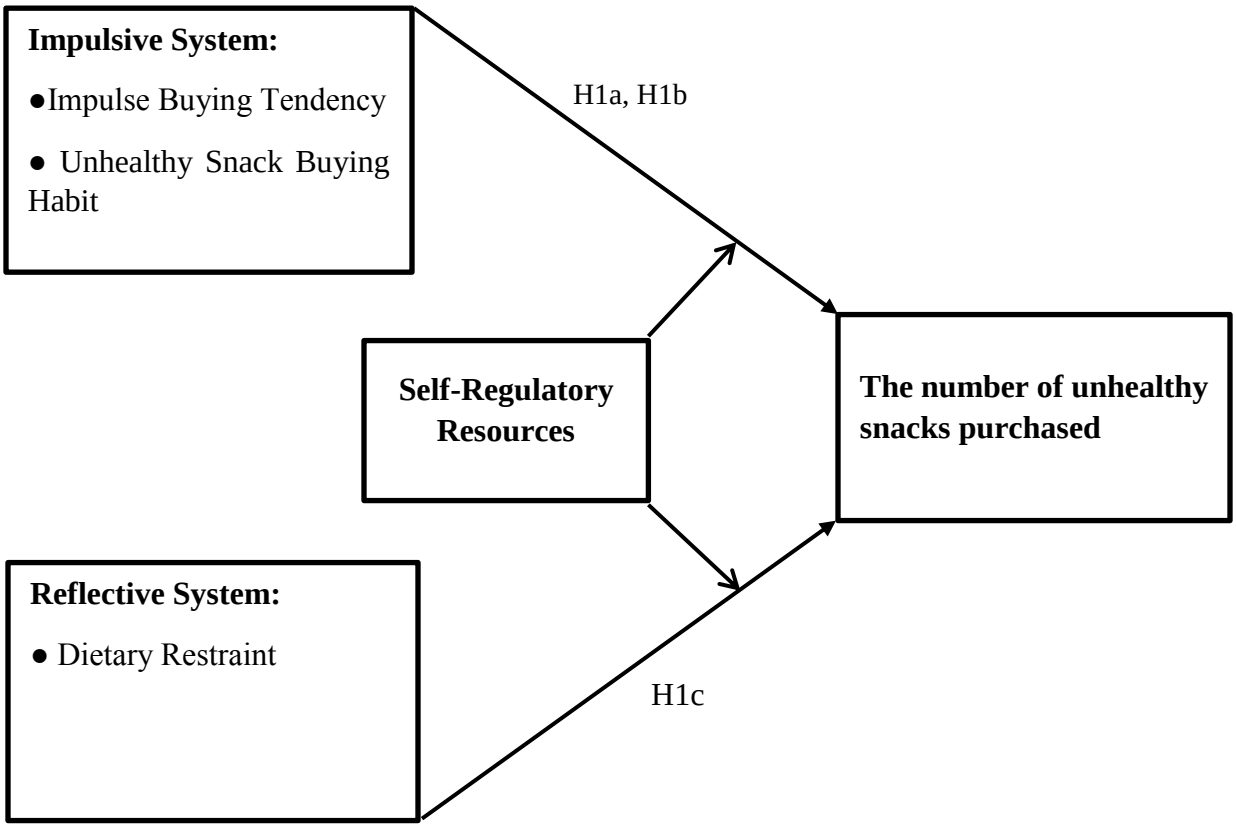
3.4.1. The permanent impulsive-reflective components

Pertaining to the first part of our model, we proposed that while the impulsive system (impulse buying tendency and unhealthy snack buying habit) can predict buying behavior when self-regulatory resources are low, it can be predicted by the reflective system (dietary restraint) when self-regulatory resources are high. Otherwise stated, we postulate that self-regulatory resources moderate the influence of reflective-impulsive determinants on unhealthy snack impulse buying. First, this study considers the number of unhealthy snacks purchased to account for the increased unhealthy snack purchases reported by prior studies (e.g., Gracia & Albisu, 2001; Wansink et al., 2013). With particular regard to this concern (see figure 3.4), we propose[18]:

H1. The number of unhealthy snacks purchased (e.g., chocolate) should be predicted by (a) impulse buying tendency and (b) unhealthy snack buying habit when self-regulatory resources are low. (c) However, when self-regulation resources are high, dietary restraint should determine the number of unhealthy snacks purchased.

[18] Part of this section (pages 89 to 91) has been used in manuscript previously accepted for publication (Moayery et al., in press-b).

Figure 3.4. A suggested model for the prediction of the number of unhealthy snacks purchased by impulsive versus reflective determinants and self-regulatory resources as moderator.



Furthermore, this investigation takes into account the percentage of unhealthy snacks purchased (see figure 3.5) to account for people's preference for unhealthy snack buying relative to healthy snack buying (e.g., Likus et al., 2013; Wansink et al., 2013). First, the proportion of vice products (e.g., unhealthy food items) relative to virtue products (e.g., healthy food items) in the buying basket is a traditional measure used in this field of study (e.g., Thomas et al., 2010; see also Conner, Perugini, O'Gorman, Ayres, & Prestwich, 2007). Second, it can give more insight into the underlying reasons for those studies showing that consumers' shopping baskets contained a larger proportion of food rated as impulsive and unhealthy (e.g., Thomas et al., 2010). This is important because there is evidence showing that consumption of unhealthy snacks can cause changes in

healthy food consumption (Honkanen et al., 2012). Therefore, in this research, we investigate the possibility that the reflective-impulsive determinants can predict the proportion of unhealthy snacks purchased in a buying basket. In this regard, we anticipate:

H2. The percentage of unhealthy snacks purchased should be predicted by (a) impulse buying tendency and (b) unhealthy snack buying habit when self-regulatory resources are low. (c) However, when self-regulation resources are high, dietary restraint should determine the proportion of unhealthy snacks purchased.

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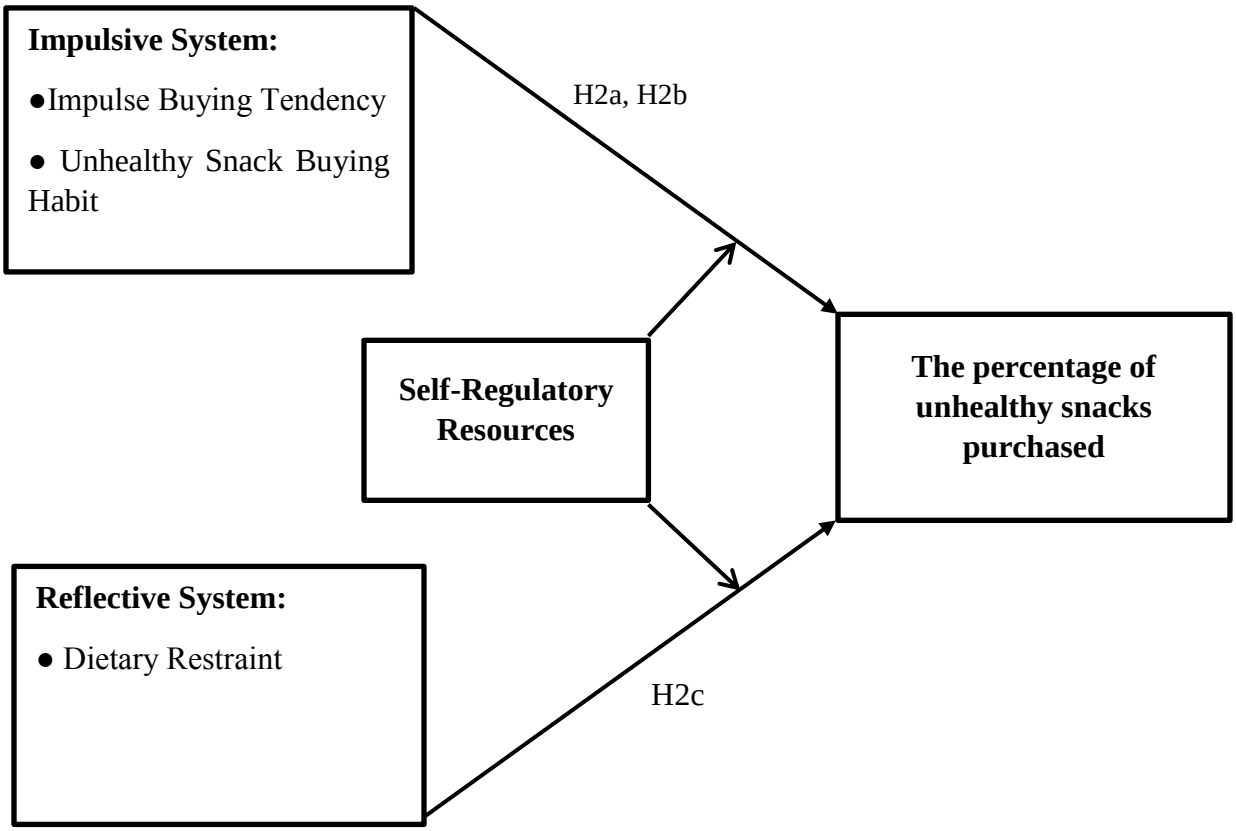
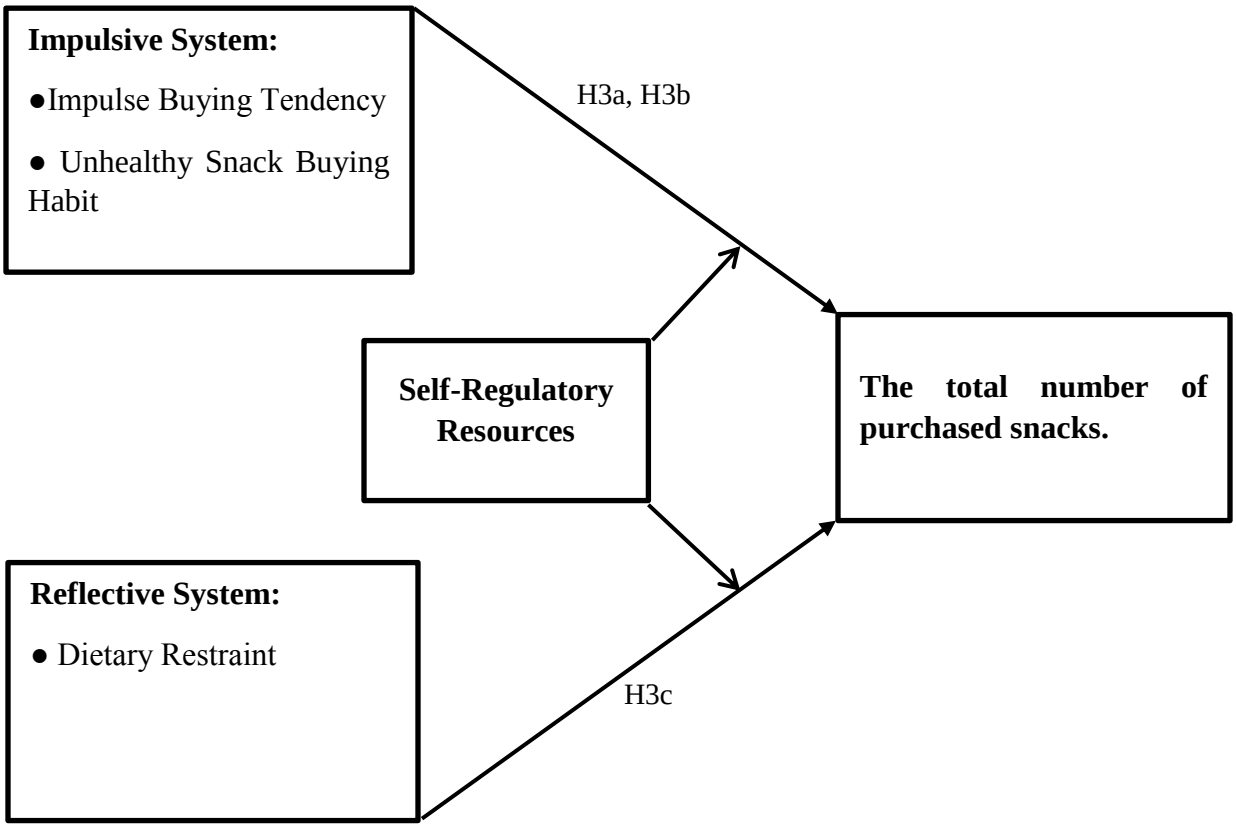
Figure 3.5. A suggested model for the prediction of the percentage of unhealthy snacks purchased by impulsive versus reflective determinants and self-regulatory resources as moderator.



In short, the abovementioned hypotheses consider the possibility that self-regulatory resources moderate the impact of impulsive and reflective systems on unhealthy snack impulse buying. Moreover, although it is not the primary concern of this study, we additionally hypothesize that the total number of purchased snacks (includes healthy and unhealthy) does not represent a self-control conflict. In this respect, Vohs and Faber (2007, study 3) showed that people were vulnerable to buy more food impulsively under depletion conditions regardless of whether the food was healthy or unhealthy. Contrary to these results, in this research, we propose that the total number of purchased snacks does not represent a war between the reflective and the impulsive system. In fact, we argue that it is the unhealthy snack impulse buying that represents a self-control conflict and impulse buying studies are more relevant when there is a war between the reflective and the impulsive system (see figure 3.6). Therefore, we predict:

H3. Self-regulatory resources do not moderate the impact of (a) impulse buying tendency, (b) unhealthy snack buying habit, and (c) dietary restraint on the total number of purchased snacks.

Figure 3.6. A suggested model for the prediction of the total number of purchased snacks by impulsive versus reflective determinants and self-regulatory resources as moderator.



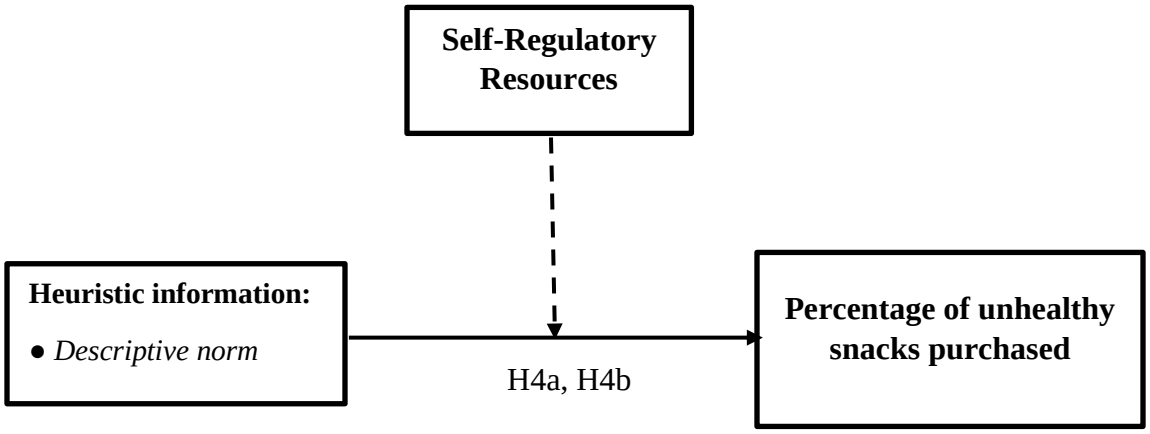
3.4.2. The temporary components of the reflective system

While in the previous section we discussed how the final impulse buying behavior is determined by reflective-impulse precursors depending on the abundance or the scarcity of self-regulatory resources, the temporary components of the reflective system (i.e., descriptive norm) would be the core idea of the second part. Drawing on the reflective-impulsive model, we discussed that even the application of heuristics (i.e., descriptive norm) takes place in the reflective system, thereby depending on the availability of self-regulatory resources. Drawing upon a social-psychological perspective, we applied the descriptive norms as environmental cues acting as social proof heuristics. We propose that the act of these social proof heuristics takes place in the reflective

system based on the existence of enough self-regulatory resources (see figure 3.7). For the sake of simplicity, this section only focuses on the percentage of unhealthy snacks purchased as the outcome variable[19]. Following a growing body of literature applying descriptive norms in favor of healthy food to promote healthy food purchases/choices (e.g., Salmon et al., 2015; Salmon et al., 2014), we propose that:

H4. (a) Descriptive norms exert their influence through a conscious pathway, whereby (b) the percentage of unhealthy snack purchased would be decreased.

Figure 3.7. Descriptive norm becomes a temporary part of the reflective system as a function of self-regulatory resources.



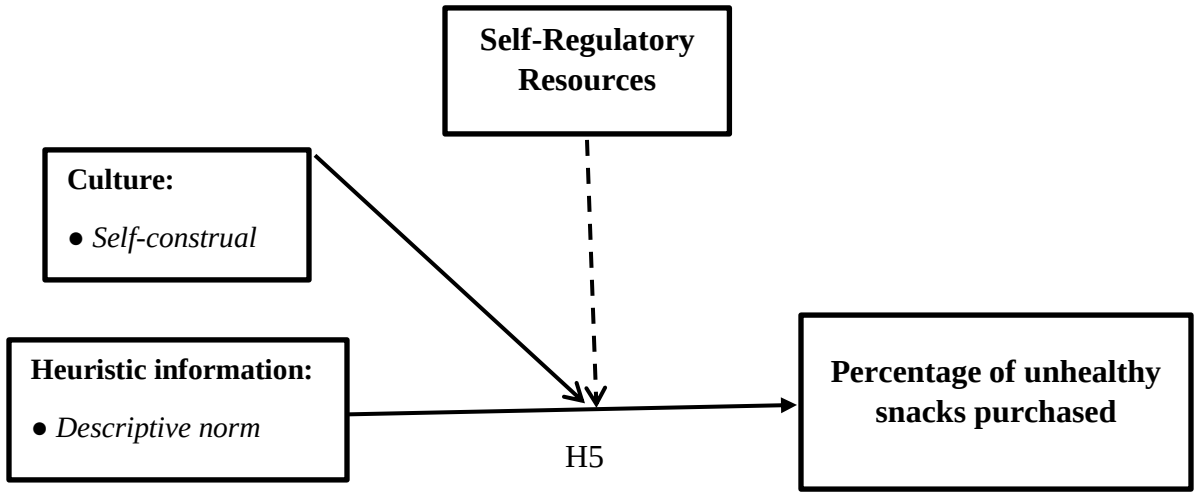
Also, we highlighted the existing controversies about the cultural explanation of impulse buying both in cultural and individual level. To address these research gaps, we applied the logic of the Markus and Kitayama's (1991) theory of independent and interdependent self-construals (i.e., a cultural-psychological perspective). According to the logic of this theory, we argue that the

[19] We have also analyzed the number of unhealthy snacks purchased. However, for the sake of simplicity, this study only reports the results of the percentage of unhealthy snacks purchased.

interaction between different aspects of self (i.e., independent and interdependent self-construals) and the social proof heuristic can determine the unhealthy snack impulse buying. We postulated that while those with interdependent self-construals are more likely to follow descriptive norms as a means of affiliating with others and a desire to behave correctly, the goal of maintaining a positive self-concept can steer those with independent self-construals away from descriptive norm adherence (see figure 3.8). In short, we predict that:

H5. Self-regulatory resource availability promotes adherence to the descriptive norm, but only for those people with an interdependent self-construal.

Figure 3.8. Descriptive norm becomes a temporary part of the reflective system as a joint function of self-regulatory resources and self-construals.



3.5. Summary

This chapter aimed to highlight the current contradictory findings regarding impulse buying studies. Integrating psychological, social psychological and cultural psychological perspectives was the aim of this chapter to outline a new model of impulse buying behavior. Drawing from the logic of the reflective-impulsive model, we argue that both reflective and impulsive precursors can determine impulse buying. In this regard, we proposed that self-regulatory resources moderate the influence of reflective-impulsive precursors on unhealthy snack impulse buying. We also discussed the importance of social norms (descriptive norms) as a temporary component of the reflective system depending on the availability of self-regulatory resources. Moreover, we showed how the effect of descriptive norms on impulse buying varies as a function of cultural components (i.e., self-construals). In this respect, five hypotheses have been proposed (see Table 3.1). Finally, since this study aims to obtain evidence of a cause-and-effect relationship, it is crucial to control the effect of confounding factors (Christensen, Johnson, & Turner, 2015). To address this issue, the next chapter includes a set of control variables (e.g., body mass index).

Table 3.1. A summary of all proposed hypotheses.

Hypothesis	Specific Hypothesis
H1	The number of unhealthy snacks purchased (e.g., chocolate) should be predicted by (a) impulse buying tendency and (b) unhealthy snack buying habit when self-regulatory resources are low. (c) However, when self-regulation resources are high, dietary restraint should determine the number of unhealthy snacks purchased.
H2	The proportion of unhealthy snacks purchased should be predicted by (a) impulse buying tendency and (b) unhealthy snack buying habit when self-regulatory resources are low. (c) However, when self-regulation resources are high, dietary restraint should determine the proportion of unhealthy snacks purchased.
H3	Self-regulatory resources do not moderate the impact of (a) impulse buying tendency, (b) unhealthy snack buying habit, and (c) dietary restraint on the total number of purchased snacks.
H4	(a) Descriptive norms exert their influence through a conscious pathway, whereby (b) the percentage of unhealthy snack purchased would be decreased.
H5	Self-regulatory resource availability promotes adherence to the descriptive norm, but only for those people with an interdependent self-construal.

4. Research design and Methodology

4.1. Overview

4.2. Research design

4.3. Product selection

4.4. Main studies

4.5. Ethical considerations

4.6. Summary

4.1. Overview

The previous chapter provided the justification for the proposed model and related hypotheses. Once we understand the research problem, we can figure out what sort of research design and data collection techniques will allow us to reach our main goals (Rugg & Petre, 2007). The following chapter will review the major research approaches providing our justification for the selected research design. Moreover, this chapter also covers a comprehensive description of methods and tools to acquire the primary purpose of this research.

4.2. Research design

Research design refers to "a term often used in connection with whether logical arrangements permit causal inferences; also refers to all the decisions made in planning and conducting research" (Rubin & Babbie, 2011, P.628). Moreover, understanding the strengths and weaknesses of different approaches can be regarded as the central part of selecting a research design (Bechhofer & Paterson, 2012).

There are different types of research designs, including survey (sampling), field experiments, case study and controlled experiments (Rugg & Petre, 2007). Interestingly, McGrath (1981) conceptualized the research design (research strategy) as a process requiring selection between three dimensions, including generalizability, precision, and realism. He argued that although a desirable research design aims to maximize all of these criteria, it is rarely possible to occur in the real world. It is based on the premise that any attempt to increase one of these horns will result in a decrease of the other two. In the same way, Rugg and Petre (2007) discussed that each research design has its advantages and disadvantages because there is usually a trade-off between precision and reality. Similarly, Bechhofer and Paterson (2012) argued that a good

research design should address issues of control and comparison. Therefore, in the following, a review of various types of research designs would be provided to choose the most appropriate method.

4.2.1. Survey (sampling)

A survey, which is a nonexperimental mode of observation, includes a sample of respondents and a standardized questionnaire (sometimes interview protocol) administered to them (Rubin & Babbie, 2011). Survey studies ask behaviors that are unrelated to the context of study assuming that the context should not play a part in the behavior of concern (McGrath, 1981). More especially, as an advantage, existing large sample of survey studies makes findings more generalizable (Rubin & Babbie, 2011). However, this method is not flawless. McGrath (1981) argued that although there is a high level of generalizability in a survey, there is concern regarding the precision and reality. In the same vein, Rubin and Babbie (2011) argued that surveys often appear superficial regarding complex topics, which can also be accompanied by uncertainty about causality[20].

4.2.2. Fieldworks and field experiment

Researchers can present (e.g., physically) in an area (e.g., company or organization) studying the local by living or working there for a period, or by making repeated visits (Bechhofer & Paterson, 2012). It is suggested to use fieldworks in any research design concerning the more intimate details of social life. It is based on the premise that fieldworks provide opportunities to study the details of everyday life by making close and intimate acquaintance with those with whom they interact

[20] The author argued that method of longitudinal surveys might help to establish some degree of causality, but still less robust than experimental design.

(Bechhofer & Paterson, 2012). Also, field experiments are also conducted in a real-life setting with engaging in daily activities and manipulating variables (Christensen et al., 2015). For example, Regan and Llamas (2002) used a female confederate engaging in real shopping situations to study whether the behavior of employees varies based on shoppers' appearance. To manipulate the outcome variable, the female confederate presented in shopping centres with either formal or casual dress. In short, while field experiments involve doing an intervention and then seeing the effect of the intervention, fieldworks do not necessarily encompass an intervention (Rugg & Petre, 2007). Both field experiment and fieldwork are high in realism aspect (McGrath, 1981). However, this realism comes at a cost because there is no control over variables (Rubin & Babbie, 2011). Therefore this method is high in realism aspect but low in generalizability and precision perspectives (McGrath, 1981).

4.2.3. Case study

"A case study is an idiographic examination of a single individual, family, group, organization, community, or society" (Rubin & Babbie, 2011, p. 443). Put another way, the choice of group and place is an essential part of case studies (Bechhofer & Paterson, 2012). There are two categories of case studies: while intrinsic case study provides a deep understanding of one particular case (e.g., one team), instrumental case study concerns more general idea than just a particular case (see Christensen et al., 2015; Rugg & Petre, 2007). Interestingly, in case studies, examination of data is usually conducted in a situation in which the activity takes place, thereby researcher can observe subjects within their natural environment (Zainal, 2007). However, there is a lack of generalizability in this method in a strictly statistical sense (Bechhofer & Paterson, 2012). In fact, with the sample size of one team, we cannot conclude that our case is the only team using one special approach and whether it may have been pretty much like all the other teams (Rugg & Petre,

2007). Finally, the case study is more appropriate for descriptive work than to make causal propositions (Gerring, 2004). Otherwise stated, case studies are often criticized for lack of rigour influencing the direction of findings (Zainal, 2007). In short, it can be concluded while case studies are high in realism, they are low in generalizability and precision.

4.2.4. Controlled experiments (experimental design)

When the purpose of the study is causal in nature, the researcher needs to design a study capable of determining the cause of variations we observe (e.g., whether especial intervention is effective) (Rubin & Babbie, 2011). In this regard, Rugg and Petre (2007) considered the controlled experiment as the best way of getting a definitive answer to a research question. It is based on the fact that other research designs (e.g., field experiment) cannot control stray variables (i.e., unexpected variables). In other words, experimental design is the best choice for researchers in order to offer a causal description (Christensen et al., 2015).

The core idea in the experimental design is that the researcher deliberately changes or manipulates one (or more) independent variable and observe the outcome (Bechhofer & Paterson, 2012; Christensen et al., 2015). Therefore, the primary goal of experimental research (e.g., psychological experiment) is to control stray variables, whereby any changes observed in the dependent variable can be attributed to the independent variable (Christensen et al., 2015; Rugg & Petre, 2007). In this respect, dividing the sample randomly into two groups is one of the most uncomplicated experimental design (Bechhofer & Paterson, 2012; Christensen et al., 2015). The researcher manipulates, for instance, a new method or a new drug to a group of people but not to the control group. After some while, the researcher can compare the two groups and assess whether the new methods or new drugs are useful (e.g., level of participants' anxiety). If we observe any

change and the results are significantly different between the two groups (control group versus experimental group), it can be concluded that there is a causal relationship between the dependent variable and the independent variable (Christensen et al., 2015; Rugg & Petre, 2007). Therefore, one of the advantages of controlled experiments is the high level of control over experimental conditions (Christensen, 1994). Similarly, McGrath (1981) argued that the laboratory experiment is an attempt to maximize precision about the measurement of behavior. On the other hand, it seems that the findings from experiments are the results of artificial environments, and hence it is hard to extend the results to a real-life situation (Christensen, 1994). Said differently, laboratory experiments are very low in generalizability and realism (McGrath, 1982).

4.2.5. Chosen research design

This section provided a review of different research designs, and now we are willing to select the most appropriate research design to achieve the primary goals of our study. In this vein, it has been suggested that the experimental research should be applied because some participants may be either unable or unwilling to recall their feelings resulting from the complex nature of impulse buying (Rook, 1987). Moreover, studies with correlational nature do not allow to make a causal claim, and hence experimental designs are crucial to acquire more evidence for causation (Verplanken et al., 2005). Interestingly, a recent meta-analysis of impulse buying showed that while the experimental design has been applied only by 21% of studies, significantly larger effects were found for experimental studies (Amos et al., 2014). Moreover, as discussed earlier, our proposed model is a dual-systems framework in nature, mainly according to the logic of the reflective-impulsive model. In this respect, experiments have frequently been applied by previous studies as one the most critical methods to support the dual-system models of health behavior (see the review done by Hofmann et al., 2008a).

In sum, we think the experimental design is the most appropriate research design to fulfil the stated purposes. Although we acknowledge that this method fails to satisfy the requirements of generalizability and realism, it maximizes precision. It is based on the premise that the external validity (i.e., generalizability) and the internal validity (i.e., precision) have an inverse relationship (Christensen et al., 2015). Thus, it can be expected that high level of control in experiments can maximize internal validity but minimize external validity and generalizability (Christensen, 1994; Christensen et al., 2015). In addition, it can be discussed that "no implantable research practice is generally necessary or sufficient to attain external valid research findings" (Lynch, 1983, P225). Although we do not neglect the importance of external validity, the primary priority of an experiment is to establish direct cause-effect relationships concerning the internal validity. Once the experimental effect with a high level of internal validity is identified, then external validity can be investigated by future studies with different participants and other contexts to generalize the findings (Christensen, 1994; Christensen et al., 2015). For instance, Salmon et al. (2014) assigned the attempt to establish generalizability as a line for future studies.

4.3. Product selection

As we discussed, unhealthy snack impulse buying is the main concern of this study. Based on the literature review, we selected "Snickers", "doughnut" and "cookies" as examples of unhealthy (hedonic) foods, as well as "apple", "mandarin" and "pear" as examples of healthy (utilitarian) foods. To check whether we selected the appropriate products, we used the method applied by Antonides and Cramer (2013). Therefore, as a pilot study before the main study, 45 different undergraduate students from the University of Deusto were asked to rate both food groups regarding three products attributes: "attractiveness", "healthiness" and "appropriateness (good for you)". We showed them two sets of photos, one with the Snickers, doughnut, and cookies, and the second set with an apple, mandarin, and pear. The participants were asked to rate both sets regarding these three product attributes (e.g., is it healthy? or is it good for you? on a seven-point scale; *1 = not at all; 7 = very much*). We expected that healthy products receive higher ratings on "healthiness" and "appropriateness", and that unhealthier products receive higher ratings on "attractiveness". Table 4.1 shows the results of this pilot and finds the expected results for all attributes. Therefore we will use these two product categories for the main study[21].

Table 4.1. Average product attitudes and *t*-value for product attitude differences (results from a pilot study, $N = 45$).

Attributes	Healthy snacks *M* (*SD*)	Unhealthy snacks *M* (*SD*)	*t*(44)	*p* <
Attractiveness	4.28 (1.41)	4.88 (1.26)	-2.10	.05
Healthiness	6.60 (0.89)	1.94 (0.71)	25.39	.01
Appropriateness	5.66 (1.17)	3.79 (1.53)	5.83	.01

[21] Part of this section (pages 105) has been used in manuscript previously accepted for publication (see Moayery et al., in press-b).

4.4. Main studies

As we discussed earlier, the model was divided into two sections: "*The permanent impulsive-reflective components"* and *"the temporary components of the reflective system"*. Therefore, we conducted two separate experiments to analysis more closely the proposed hypotheses. In the following, the tools and procedures applied to each experiment will be explained.

4.4.1. Experiment 1

Pertaining to the first part of our model, we postulated that while the impulsive system (impulse buying tendency and unhealthy snack buying habit) can predict buying behavior when self-regulatory resources are low, the reflective system (dietary restraint) can predict buying behavior under condition of high self-regulatory resources. In other words, we proposed that self-regulatory resources moderate the impact of reflective-impulsive precursors on unhealthy snack impulse buying (see proposed hypotheses in Table 4.2).

Table 4.2. Proposed hypotheses regarding the first part of the model.

Hypothesis	Specific Hypothesis
H1	The number of unhealthy snacks purchased (e.g., chocolate) should be predicted by (a) impulse buying tendency and (b) unhealthy snack buying habit when self-regulatory resources are low. (c) However, when self-regulation resources are high, dietary restraint should determine the number of unhealthy snacks purchased.
H2	The proportion of unhealthy snacks purchased should be predicted by (a) impulse buying tendency and (b) unhealthy snack buying habit when self-regulatory resources are low. (c) However, when self-regulation resources are high, dietary restraint should determine the proportion of unhealthy snacks purchased.
H3	Self-regulatory resources do not moderate the impact of (a) impulse buying tendency, (b) unhealthy snack buying habit, and (c) dietary restraint on the total number of purchased snacks.

4.4.1.1. Experimental design and participants

One hundred undergraduate students (40 males, 60 females; M_{age} = 19.65 years, *SD*= 1.45 years) from the University of Deusto, Spain received 3 euros in exchange for their participation in the experiment. They were randomly assigned to one of the conditions of the 2- group design (self-regulatory resource depletion vs. control condition), with 20 males and 30 females per condition[22]. We calculated sample size based on the premise that a minimum sample of 20 participants per condition is required (Simmons et al., 2011), whereby a sample of 40 would be the minimum for this study. However, because the power of a statistical test is highly related to the sample size (Christensen et al., 2015), we calculate the sample size more precisely with G*power 3.1 program (see Faul, Erdfelder, Buchner, & Lang, 2009). In this regard (see Table 4.3), the sample size would be calculated based on effect size, alpha levels, and power analysis by taking into account three assumptions: (1) effect size around .02, .15 and .35 can be labelled as small, medium and large respectively (Cohen, 1988), (2) power of at least .80 is recommended (Christensen et al., 2015) and (3) self-regulatory resource depletion represents a medium-to-large effect size (Hagger et al., 2010):

Table 4.3. Results of G*power analysis regarding the first experiment.

Effect Size	Significance Level	Statistical Power	**Sample Size**	Actual Power
Medium	.05	.80	100	.80
Large	.05	.80	49	.80

[22] Regarding gender, since we recruited the same number of male and female in both conditions (Female = 30, Male = 20 in each condition), we expect no difference between the two groups in terms of gender which can control the effect of gender.

Given that we want to reach the highest possible power, we select the sample size of 100. Also, this experiment was conducted during six weeks in February and March 2017 (after the exam period). Following the suggestion of Weijzen et al. (2009), we studied the snack buying after lunchtime which is an appropriate snacking time. Participants completed the study between 15:00 and 18:00 by taking into account the fact that lunchtime in Spain is between 14:00 and 15:00 (Ribas-Barba et al., 2007). Each session had a maximum of 4 participants and lasted 25 minutes. The experiment was presented to students as a study about marketing and entertainment[23].

4.4.1.2. Independent variables

(a) Impulsive system

Impulse Buying Tendency (IBT). We selected the 20-item scale from Verplanken and Herabadi (2001) to measure the impulse buying tendency (e.g., "I usually think carefully before I buy something"; on a seven-point scale; 1= *strongly disagree*, 7= *strongly agree;* $\alpha = .86$). This scale includes two sets of items, including cognitive and affective facets of impulse buying. The cognitive facet refers to the lack of planning and deliberation in the shopping, whereas the affective facet refers to the feeling of pleasure and excitement, an urge to buy, and the difficulty to leave things. Moreover, this scale has been tested and validated in different countries, including Indonesia (Herabadi et al., 2009), Norway (Verplanken et al., 2005) and Canada (Silvera et al., 2008).

Unhealthy snack buying habit. We applied the Self-Report Habit Index (SRHI) developed by Verplanken and Orbell (2003) to study the effect of unhealthy snack buying habit (e.g., "buying

[23] Part of this section (pages 107 to 113) has been used in manuscript previously accepted for publication (see Moayery et al., in press-b).

chocolates and sweets is something I do frequently"; on a seven-point scale; 1= *strongly disagree*, 7= *strongly agree*). This twelve-item scale is considered to be the most frequently used measure of habit in health-related behavior (see Gardner, 2015a; Gardner, Corbridge, & McGowan, 2011). While we were mostly interested in investigating the unhealthy snack impulse buying, it is important to control for habitualness in fruits consumption (Hofmann et al., 2008a). Therefore, following the method applied by Conner, Perugini, O'Gorman, Ayres, and Prestwich (2007), we calculated the difference between unhealthy snack buying habit and healthy snack buying habit with positive scores indicating greater habit for unhealthy snack buying habit. We call this measure as the habit through the rest of the study (α = .92).

(b) Reflective system

Dietary Restraint. We used the *cognitive restraint subscale* (Spanish version by Jáuregui-Lobera et al., 2014) of Three-Factor Eating Questionnaire-R18 (Karlsson et al., 2000) to measure the dietary restraint (see also TFEQ [Stunkard & Messick, 1985]). This scale has been validated in different countries using different population, including obese people (Karlsson et al., 2000) and the general population (Giuliani, Calcott, & Berkman, 2013). The cognitive restraint subscale of TFEQ-R18 has been considered as a measure of eating self-control in everyday life, which is positively correlated with the degree to which people decrease their desire to consume craved food (Giuliani et al., 2013). More especially, the six items of the subscale (e.g., "I deliberately take small helping as a means of controlling my weight"; on a four-point-scale; 1= *definitely true*, 4= *definitely false*) were summed to form an index of dietary restraint with score of 0 to 100 (α = .85) following the method applied by Kong et al. (2012).

4.4.1.3. Moderator

Self-regulatory resource manipulation. We used the emotion-suppression task to deplete self-regulatory resources (see Muraven et al., 1998; Hofmann et al., 2007). All participants watched a 9.5-minute sequence from the movie 'American History X' (Friese et al., 2008)[24]. The scene describes a dinner argument in which one member of a family with racial attitude begins to show impolite behavior to other members of the family. Participants in the depletion condition (N = 50) were asked to suppress all emotion that came up while watching the movie and remain completely neutral, so that another person looking at them would not be able to identify whether the movie was happy or sad. Participants in the control condition (N = 50) were asked to watch the movie as in a cinema, so that they were free to let flow the emotions that came up in response to the movie. Also, while participants in the depletion group were informed that they were being videotaped to see whether they were able to regulate their facial expression, participants in the control condition did not receive any instruction about facial expression and only were informed that they were being videotaped[25]. Immediately after the emotion-suppression task, they were asked to answer to the manipulation check question ("how hard it was for you to follow the instructions that you were asked to bear in mind while watching the movie?"; on a seven-point rating scale; 1 = *very easy*, 7 = *very difficult*). We expected that participants in the depletion group experienced the emotion-suppression task to be harder than in the control group. Regarding the manipulation check, a meta-analysis by Hagger et al. (2010, p. 517) stated that "the impairment of task performance observed

[24] In a pilot study before the main study, we also tested 7-minute sequence from the movie "City of God" (Hofmann et al., 2007). However, the effect of the movie "American History of X" was greater.
[25] They were being videotaped in this task in order to bolster the cover story and we did not analysis this videotaping separately.

in ego-depletion experiments coincides with increased perceptions of fatigues, difficulty, and effort". These authors also confirmed that such perceptions can be applied as a manipulation check.

4.4.1.4. Dependent variables

Unhealthy snack impulse buying. A mock store spontaneous buying situation (Vohs & Faber, 2007) was employed to measure the dependent variables. This section was presented to participants as a so-called "product test section". We explained to them, as a cover story, that university's cafeteria was interested to know whether students like their new products. Participants were informed that they could buy these products using their 3 euros participation fee (or part of that) or leave this section without buying and receive the participation fee at the end of the study. Next, they were led to a room where the products (including Snickers, doughnuts, cookies, apples, mandarins and, pears) were displayed and arranged randomly on a table (we put four of each product). The experimenters (who were blind to the aim of study) explained to them again the process and informed them that all products cost fifty cents[26]. "These healthy and unhealthy foods were offered at a discounted price to encourage purchasing within the time frame of the stud[y]". (Prestwich et al., 2011, p. 877). Next, the participants were left alone to decide whether they wanted to buy or not. Once students returned to the laboratory, they were asked what they had bought and whether they liked the products to bolster the cover story. Therefore, we recorded the number of products that they had bought with a maximum number of six products and a minimum of zero product. Three dependent variables calculated from the buying section task were:

(1) The number of unhealthy snacks purchased (NUSP [see Friese et al., 2008]).

[26] Fruits and snacks (i.e., Snickers, doughnut and cookies) sold for around 1 euro per unit at the university cafeteria (±10 cents). We set the price of healthy snacks equal to the price of unhealthy snacks in order to control the price effect (Salvy, Kluczynski, Nitecki, & O'Connor, 2012).

(2) The percentage of unhealthy snacks purchased which was calculated based on the proportion of unhealthy snacks purchased to the total number of purchased snacks (PUSP [see Conner et al., 2007]).

(3) The total number of purchased snacks (TNPS), including healthy and unhealthy snacks.

4.4.1.5. Control variables

Positive and negative affect. The Spanish version (Joiner Jr, Sandin, Chorot, Lostao, & Marquina, 1997) of the Positive and Negative Affect Schedule (PANAS) scale (Watson, Clark, & Tellegen, 1988) was used to measure the positive (e.g., "excited") and negative (e.g., "ashamed") affect (on a five-point scale; 1= *very slightly or not at all*, 5= *extremely*). This scale contains two 10-item mood scales in order to measure the positive and negative affect (α =.73). In this regard, positive and negative affect were measured in order to control the effect of video-watching task on participants' mood states (Vohs & Faber, 2007).

Body Mass Index (BMI). We ask the respondents to write their weight and height. BMI was determined as weight in kilograms divided by the square of height in meters. This control factor is based on the premise that obese people might show an increased preference for high-calorie foods (see Giesen, Havermans, Douven, Tekelenburg, & Jansen, 2010).

Positive and negative affect, as well as BMI, were measured to compare the two conditions regarding these control variables that might affect the unhealthy snack impulse buying. For all abovementioned scales that we did not have their Spanish version, we translated them into Spanish. Also, since we did this study in a university with Basque as another official language, we translated all scales from Spanish to Basque. Moreover, professional translators performed a back translation process. In this respect, 13% of participants preferred the Basque version to the Spanish version.

4.4.1.6. Procedure

Upon arrival at the laboratory, the experimenters[27] welcomed participants in this study that was introduced as "marketing and entertainment". After filling out a consent form, in the first phase of the study (the so-called marketing section), participants filled in the Impulse Buying Tendency scale (IBT). Then, in the so-called entertainment section, they participated in the emotion-suppression task (self-regulatory resources manipulation) by watching the movie clip of 'American History X'. Participants in the depletion condition had to suppress all the emotions, while participants in the control condition could let flow all their feelings when they were watching the clip. After watching the clip, they responded to the manipulation check question and the PANAS. Subsequently, they were asked to participate in the mock store spontaneous buying situation which was introduced as a "product evaluation test section". Finally, they completed dietary restraint scale, the healthy and unhealthy snack buying habit scales and a series of demographic questions (including self-report weight and height), after which participants were debriefed. This design was based on the premise that any sensitizing to eating behavior and food buying should be avoided before the product purchase section (see Hofmann et al., 2007).

4.4.2. Experiment 2

The first part of the model, discussed whether the final impulse buying behavior can be determined by reflective-impulsive precursors depending on the availability of self-regulatory resources. On the other hand, the temporary components of the reflective system (i.e., descriptive norm) would be the core idea of the second part. Following the reflective-impulsive model, we discussed that

[27] In both experiment 1 and experiment 2, we employed several experimenters (men and women), who were blind to the aim of this study to control the experimenter effects (see Christensen et al., 2015).

even the application of heuristics (i.e., descriptive norm) takes place in the reflective system, thereby depending on the availability of self-regulatory resources. Drawing upon a social-psychological perspective, we applied descriptive norms as environmental cues acting as social proof heuristics. We propose that the act of these social proof heuristics takes place in the reflective system based on the existence of enough self-regulatory resources. We also postulated that while those with interdependent self-construals are more likely to follow descriptive norm a means of affiliating with others and the desire to behave correctly, the goal of maintaining a positive self-concept can steer those with independent self-construals away from descriptive norm adherence (see proposed hypothesizes for this section in Table 4.4).

Table 4.4. Two sets of hypothesizes regarding the second part of the model.

Hypothesis	Specific Hypothesis
H4	(a) Descriptive norms exert their influence through a conscious pathway, whereby (b) the percentage of unhealthy snack purchased would be decreased.
H5	Self-regulatory resource availability promotes adherence to the descriptive norm, but only for those people with an interdependent self-construal.

4.4.2.1. Pilot study

Drawing from the theory developed by Markus and Kitayama (1991), it has been discussed that the differences in the self-construals give an opportunity to explain cross-national behavioral differences. Accordingly, it can be expected that Western cultures (e.g., the United States) emphasize individualism encouraging the formation of independent self-construals (e.g., to be independent, unique and autonomous). On the other hand, the non-Western cultures put emphasize on collectivism promoting the creation of interdependent self-construals (e.g., to be aligned with

values such as harmony and cohesion) (see Matsumoto, 1999). In other words, self-construals, as an individual level culture, have become an increasingly popular way of studying cultural differences (Levine et al., 2003). In this regard, we discussed that the differences in self-construals provide us with an opportunity to justify the existing controversies in impulse buying studies. We argued that the adherence to the descriptive norm is associated with differences in self-construals: those individuals with an interdependent self-construal are more likely to follow the descriptive norm. Therefore, it is vital for us to establish a rigorous method for measuring self-construals before the main study. Is it crucial to have cross-national research to measure the self-construal differences? In this respect, we agree with Oyserman and Lee (2008), who argued that "cross-national literature on the effect of individualism and collectivism is both impressive and spotty" (p. 329).

Although referring to independent versus interdependent is a clear distinction between members of Western and Eastern cultures, all individuals carry both independent and interdependent self-construals at the same time depending on the situation and current motives (Gardner et al., 1999). Put another way, we concur with the stream of research suggesting the existence of multiple construals of self in the same individual (e.g., Matsumoto, 1999; Oyserman & Lee, 2008). This stream of research provides us with two possible empirical approaches (see Suh, Diener, & Updegraff, 2008):

1. To conduct priming method to establish a linkage between variable X and cultural phenomenon Y (Suh et al., 2008). Simply stated, we can bring culture into the laboratory (Trafimow, Triandis, & Goto, 1991). Priming experiments involve simple between design manipulating the accessibility or salience of aspects of individualism and collectivism (independent and interdepend self-construals) (Oyserman & Lee,

2008). Therefore, we assume that even people with generally independent or interdependent self-construals might be derived to take the opposite perspective (Zhang & Shrum, 2008).

2. To unpackaged the influence of culture by replacing culture as an unspecific variable by a more specific individual level context variables (Suh et al., 2008). Otherwise stated, we can reduce reliance on nationality and race by studying individual differences in self-construal as an independent variable (Brockner, De Cremer, van den Bos, & Chen, 2005; Matsumoto & Kupperbusch, 2001).

While the former refers to self-construal changes resulting from situational factors, the latter refers to chronic individual differences regarding aspects of self. Therefore, in a pilot study, we begin with the possibility of priming culture. If the results confirm the effectiveness of this method, we can apply this method to the real research. Otherwise, we can study the self-construal by existing scales measuring different aspects of self.

To study this, we used a self-construal priming method developed by Ybarra and Trafimow (1998; see also Mandel, 2003), the so-called "the Sumerian warrior story". In a pilot study, 47 undergraduate students from the University of Deusto were randomly assigned to one of the conditions of the two-group design (independent self-construal priming vs. interdependent self-construal priming). In this regard, all participants read a short story of "Sostoras", a Sumerian warrior, who is obligated to select an officer for an upcoming battle. This method asks participants to imagine the situation and the difference between independent and interdependent self-construal conditions is based on the selection of the officer (see the complete story in the Appendices). In the independent self-construal priming (private self-prime), participants were asked to imagine that "Sostoras" selects a talented general. In this respect, participants in this group were asked to

describe the benefits of this selection to "Sostoras" himself. On the other hand, in the interdependent self-construal priming, participants were asked to imagine "Sostoras" selecting the officer from his family members. Participants in this group were asked to describe the benefits of this selection to Sostoras's family. Immediately after this priming method, participants were asked to answer to a "self-view index" developed by Hamilton and Biehal (2005) to check the effect of priming method (e.g., "This story encouraged me to think of myself"; on a seven-point rating scale; 1 = *strongly disagree*, 7 = *strongly agree*; α=0.82). We expected participants in the independent self-construal priming condition as having higher scores on the independent cognition than interdependent cognition. On the other hand, we expected participants in the interdependent self-construal priming condition as having higher scores on the interdependent cognition than independent cognition. We ran a 2 (self-view× priming methods) factorial ANOVA with the self-view as a within-subject factor. The results (F (1, 45) = .50, $p < .05$) showed that the manipulation was not effective. It means that "the Sumerian warrior story" that has been already proved as a useful tool to change self-construals in other studies (e.g., Zhang et al., 2006), is not effective in this context. We have selected this method because this is one of the priming methods through which both group and relational focuses are evoked in its collectivism prime (Oyserman & Lee, 2007). This failure can be attributed to the fact that this kind of priming method has moderate effect size (Oyserman & Lee, 2007). Similarly, Levine et al.'s (2003) study also did not support the idea that situational priming affects self-construals. Therefore, we would study differences in self-construals by applying self-construal scale.

4.4.2.2. Experimental design and participants

One hundred twenty-eight undergraduate students (80 females, 48 males; M_{age} = 19.74 years, *SD*= 1.47 years) from the University of Deusto, Spain received 3 euros in exchange for their

participation in the experiment. The design was a 2 (self-regulatory resource depletion vs. control condition) by 2 (descriptive norm vs. no heuristic) between-subjects design. We calculate the sample size with G*power 3.1 program (see Table 4.5) by taking into account three assumptions: (1) social norms show a large effect size on food intake (there is no evidence of buying behavior; e.g., Robinson et al., 2014b) and self-regulatory resource depletion represents a medium-to-large effect size (Hagger et al., 2010), (2) effect size around .02, .15 and .35 can be labelled as small, medium and large respectively (Cohen, 1988), (3) power of at least .80 is recommended (Christensen et al., 2015):

Table 4.5. Results of G*power analysis regarding the second experiment.

Effect Size	Significance Level	Statistical Power	**Sample Size**	Actual Power
Medium	.05	.80	118	.80
Large	.05	.80	57	.80

We recruited 128 participants by taking into account those providing incomplete data. Furthermore, this experiment was conducted during six weeks in February and March 2017 (after the exam period). Following the suggestion of Weijzen et al. (2009), we studied the snack buying after lunchtime which is an appropriate snacking time. Participants completed the study between 15:00 and 18:00 by taking into account the fact that lunchtime in Spain is between 14:00 and 15:00 (Ribas-Barba et al., 2007). Each session had a maximum of 4 participants and lasted 25 minutes[28]. The experiment was presented to students as a study about marketing and entertainment.

[28] In total, we had 7 sessions every day. Therefore, we randomly allocated each session to either experiment 1 or experiment 2.

4.4.2.3. Independent variable

Descriptive norm manipulation. While there have been several studies regarding the influence of social norms on food choice or intake (see Higgs, 2015; Robinson et al., 2014b), to our knowledge, only few studies have investigated this idea in the domain of food purchase (i.e., Bevelander, Anschütz, & Engels, 2011; Salmon et al., 2015). To study this, we follow Salmon and colleagues (2015), who associated the healthy food products with a social proof heuristic (i.e., environmental cues providing information about the majority of a reference group) (see also Salmon et al., 2014). This method exposes participants to norm information by delivering fictional information (e.g., text-based statistical information) about the food choice/purchase made by previous participants in the same experiment (see also Higgs, 2015; Robinson et al., 2014b). Consequently, to manipulate the effect of the descriptive norm, we randomly assigned participants to one of the two conditions: (1) a condition in which they were exposed to fictional information about snack purchase made by previous participants using a pie chart showing that "the majority of participants (75%) had purchased healthy snack" (N = 64); (2) a control condition (N = 64) without any norm information (See Goldstein, Cialdini, & Griskevicius, 2008; Salmon et al., 2014).

Descriptive norm (nonexperimental). Descriptive norm also can be investigated through self-report scale. We adopted a single-item developed by Aarts and Dijksterhuis (2003) asking the participant to what extent they believe that the majority of other students in the University of Deusto buy fruits as a snack? (On a seven-point scale; 1= *not at all*, 7= *absolutely*). We call this measure as the current perception of descriptive norms through the rest of this study.

4.4.2.4. Moderators

(a) Self-construal

We applied the self-construal scale (SCS) developed by Singelis (1994) to measure the strength of an individual's interdependent and independent self-construals. This scale contains two distinct constructs measuring the two dimensions of self, which can coexist in individuals. This scale is one of the widely used scales about cultural studies (Grace & Cramer, 2003; Levine et al., 2003). More especially, we applied a shortened and modified version of Singelis scale (see Fernández, Paez, & González, 2005). The modified version includes six items measuring interdependence self-construals (e.g., it is important for me to respect decisions taken by the group; on a four-point scale; 1= *totally disagree*, 4= *totally agree*) as well as six items measuring independent self-construals (e.g., I enjoy being unique and different from others in many respects; 1= *totally disagree*, 4= *totally agree*). Also, participants were told that in this study group refers to groups of friends and peers at the University of Deusto. It is based on the premise that self-construal scales should be anchored to specific in-groups to avoid bias related to meaning of "others" and "group" (Gudykunst and Lee, 2003). Moreover, since an individual with an interdependent self-construal can be defined as a person with high interdependent self-construal and low independent self-construal (Lee et al., 2000), we calculated the difference between the interdependent and independent self-construals with positive scores indicating higher interdependent self-construal tendency. We call this measure as interdependent self-construal through the rest of this study.

(b) Self-regulatory resource manipulation

We used the emotion-suppression task to deplete self-regulatory resources (see Muraven et al., 1998; Hofmann et al., 2007). All participants watched a 9.5-minute sequence from the movie

‘American History X’ (Friese et al., 2008). The scene describes a dinner argument in which one member of a family with racial attitude begins to show impolite behavior to other members of the family. Participants in the depletion condition (N = 64) were asked to suppress all emotion that came up while watching the movie and remain completely neutral, so that another person looking at them would not be able to identify whether the movie was happy or sad. Participants in the control condition (N = 64) were asked to watch the movie as in a cinema, so that they were free to let flow the emotions that came up in response to the movie. In addition, while participants in the depletion group were informed that they were being videotaped to see whether they were able to regulate their facial expression, participants in the control condition did not receive any instruction about facial expression and only were informed that they were being videotaped. Immediately after the emotion-suppression task, they were asked to answer to the manipulation check question (“how hard it was for you to follow the instructions that you were asked to bear in mind while watching the movie?”; on a seven-point rating scale; 1 = *very easy*, 7 = *very difficult*). We expected that participants in the depletion group experienced the emotion-suppression task to be harder than in the control group.

4.4.2.5. Dependent variable

Unhealthy snack impulse buying. A mock store spontaneous buying situation (Vohs & Faber, 2007) was employed to measure the dependent variables. This section was presented to participants as a “product test section”. We explained to them, as a cover story, that university’s cafeteria was interested to know whether students like their new products. Participants were informed that they could buy these products using their 3 euros participation fee (or part of that) or leave this section without buying and receive the participation fee at the end of the study. Next, they were led to a room where the products (including Snickers, doughnuts, cookies, apples,

mandarins, and pears) were displayed and arranged randomly on a table (we put four of each product). In this part, participants were randomly assigned to one of the two conditions: a condition in which they were exposed to fictional information about snack purchasing made by previous participants using a pie chart showing that the majority of participants (75%) had purchased healthy snack (N = 64), or to control group (N = 64), without any norm information (see the information obtained for the descriptive norm manipulation). The experimenters (who were blind to the aim of study) explained to them again the process and informed them that all products cost fifty cents[29]. "These healthy and unhealthy foods were offered at a discounted price in order to encourage purchasing within the time frame of the stud[y]". (Prestwich et al., 2011, p. 877). Next, the participants were left alone to decide whether they wanted to buy or not. Once students returned to the laboratory, they were asked what they had bought and whether they liked the products to bolster the cover story. Therefore, we recorded the number of products that they had bought with a maximum number of six products and a minimum of zero product. As discussed early, this part of model mainly focused on the percentage of unhealthy snacks purchased as the outcome variable for the sake of simplicity.

4.4.2.6. Control variables

Positive and negative affect. The Spanish version (Joiner Jr et al., 1997) of the PANAS scale (Watson et al., 1988) was used to measure the positive (e.g., "excited", "proud") and negative (e.g., "ashamed", "afraid") affect (on a five-point scale; 1= *very slightly or not at all*, 5= *extremely*).

[29] Fruits and snacks (i.e., Snickers, doughnut and cookies) sold for around 1 euro per unit at the university cafeteria (±10 cents). We set the price of healthy snacks equal to the price of unhealthy snacks in order to control the price effect (Salvy et al., 2012).

This scale contains two 10-item mood scales in order to measure the positive and negative affect (α =.73).

Body Mass Index (BMI). We ask the respondents to write their weight and height. BMI was determined as weight in kilograms divided by the square of height in meters. This study controls the body mass index based on the premise that obese people might show an increased preference for high-calorie foods (see Giesen et al., 2010).

Unhealthy and healthy snack buying habit. We applied Self-Report Index (SRHI) developed by Verplanken and Orbell (2003).

Positive and negative affect, BMI and habit were measured to compare the four conditions regarding these control variables that might affect the unhealthy snack impulse buying and the norm mechanism. For all abovementioned scales that we did not have their Spanish version, we translated them into Spanish. Also, since we did this study in a university with Basque as another official language, we translated all scales from Spanish to Basque. Moreover, professional translators performed a back translation process.

4.4.2.7. Procedure

Upon arrival at the laboratory, the experimenter welcomed participants in this study that was introduced as "marketing and entertainment". After filling out a consent form, in the first phase of the study, participants filled in the current perception of descriptive norms. Then, they participated in the emotion-suppression task (self-regulatory resources manipulation) by watching the movie clip of 'American History X'. Participants in the depletion condition had to suppress all the emotions, while participants in the control condition could let flow all their feelings when they were watching the clip. After watching the clip, they responded to the manipulation check question

and the PANAS. Subsequently, they were asked to participate in the mock store spontaneous buying situation which was introduced as a "product evaluation test section". Participants were randomly assigned to either social proof heuristic condition or the no heuristic condition. Finally, they completed the self-construal scale, the healthy and unhealthy snack buying habit scales and a series of demographic questions, after which participants were debriefed.

4.5. Ethical considerations

All scholars researching with human subjects, regardless of the topic, should take into account ethical considerations (Rubin & Babbie, 2011). Dawson (2007) defined research ethics as treating both participants and their information with honesty and respect. In this sense, we follow ethical standards suggested by Christensen et al. (2015), including informed consent, deception, and debriefing (according to ethics codes of APA, 2002). Similarly, Alferes (2012) also argued that all randomized experiments must take into account ethical issues beginning with informed consent and ending with warm debriefing.

4.5.1. Consent form

The consent form is considered to be vital, which informs participants about all aspects of the study (Christensen et al., 2015). The consent form should provide full information about the features of the research that might affect their decision to choose to either decline or participate in the study (Christensen et al., 2015; Rubin & Babbie, 2011). We have applied an active consent form asking participants to indicate that they had read the form and voluntarily participated in the study. This mainly includes:

(a) *Potential harm or risks:* In this regard, it is essential to determine whether participants will be at any risk, including physical or mental discomfort. Therefore, participants

were informed that this study would not involve any physical or emotional risk to them beyond that of everyday life.

(b) Benefits and rights: It is essential to inform participant about benefits of their participation, including incentives (Christensen et al., 2015). Participants were told that they would be paid 3 euros in exchange for their participation in this study. In fact, incentives can be used to recruit subjects without any ethical qualms in situations in which all other ethical criteria are met (Grant & Sugarman, 2004). Also, we informed them that they had the right to quit the study without any consequence at any time. In addition, they were given the author's email enabling them to contact with researchers to get information about the results of the study.

(c) Anonymity and confidentiality: It is essential to sure anonymity and confidentiality especially in case of sensitive data which be called upon by a court of law (Dawson, 2007). In this respect, although we are not dealing with sensitive data, it was reflected in the consent form that anonymity and confidentiality were guaranteed. This anonymity and confidentiality obtained with the nature of randomization process that we used. In this process, we allocated a random number to each participant, which helped us to be sure about the anonymity and the confidentiality.

(d) Purpose of study and procedures: In this respect, it has been discussed that the consent form should reflect the purpose and the procedures of the study (Christensen et al., 2015; Rubin & Babbie, 2011). However, the current ethics code admitted that there might be a time when it is appropriate to dispense with consent form (Christensen et al., 2015). In this researcher, we concealed the true nature of the study. In this respect, the applied deception can raise ethical issues which need to be justified (Rubin &

Babbie, 2011). The deception, as an essential ethical code, will be discussed in the following.

4.5.2. Deception

Deception is a relatively widespread practice across a wide range of areas of study (such as personality, marketing, and social psychology) through which a considerable percentage of participants have undergone deception (Ortmann & Hertwig, 2002; Silverman, Shulman, & Wiesenthal, 1970). Interestingly, most of the critical findings of psychology have been assessed drawing on deceptive experimentation with human subjects (Miller et al., 2008). The deception is based on the premise that many areas of experimentations require that subjects not be apprised of the nature of manipulation (Silverman et al., 1970). In other words, although it runs counter to the basic moral principles of trust, researchers must conduct their research with integrity and well-designed advancing our understanding of behavior (Christensen et al., 2015). However, deception in research should be accompanied by justification (Rubin & Babbie, 2011). Put another way, justified deception can promote scientific validity (Miller et al., 2008). In this regard, Christensen et al. (2015) argued that one of the threats to construct validity is the participant effect. Consequently, what participants perceive as the purpose of study can influence the outcome of the study. Drawing on this stream of research, in the current study we also concealed the main purpose of the study because it could profoundly influence the results of the study. In fact, by taking into account the fact that participants in experiments usually tend to make a positive self-presentation (Christensen et al., 2015), it is plausible that they would behave differently if they knew the aim of the study. The deceptions have been applied in this research were adopted from previous experiments in this field (e.g., Hofmann et al., 2007; Muraven et al., 1998; Vohs & Faber, 2007).

4.5.3. Debriefing

Debriefing as the last part of these ethics codes "refers to a post-experimental interview or discussion with participants about the purpose and details of the study, including an explanation for the use of any deception" (Christensen et al., 2015, p. 131). Stated differently, debriefing as a standard ethical safeguard in deceptive research usually takes place at the end of the experiment informing participants about the use of deception and its rational (Miller et al., 2008). Following the suggestion of Christensen et al. (2015), we fully informed participants about the deception, the aim of the study and the influence of experimental manipulations on their behavior. Finally, participants were thanked and were paid the 3 euros and were asked to confirm verbally that they were leaving the session without any negative feeling resulted from our experiment.

4.6. Summary

This chapter was firstly aimed at justifying the chosen research method. This study selected experimental design because this method provides us with a high level of precision. Also, we discussed that the field of impulse buying studies lacks enough experimental research to establish causal direction. This chapter also provided a full description of tools and methods applied in this experimental research. Following the last chapter, the present chapter offered detail of two laboratory experiments. For each experiment, we explained the sample, scales, experimental methods, and procedures.

5. Analyses and results

5.1. Overview

5.2. The permanent impulsive-reflective components (experiment 1)

5.3. The temporary components of the reflective system (experiment 2)

5.4. Summary

5.1. Overview

Data were analyzed mostly using SPSS. First, preliminary analyses (randomization check, manipulation check, and scale construction) were discussed. Next, analyses of the hypotheses were offered (e.g., correlations, regression, simple slope test, ANOVA). As discussed earlier, for the sake of clarity, we have divided the model into two sections: "*the permanent impulsive-reflective components"* and "*the temporary components of the reflective system*". We have also conducted two separate experiments regarding these two sections. Therefore, the statistics were offered based on this classification.

5.2. The permanent impulsive-reflective components (experiment 1)

Pertaining to the first part of our model, we postulated that while the impulsive system (impulse buying tendency and unhealthy snack buying habit) can predict buying behavior when self-regulatory resources are low, the reflective system (dietary restraint) can predict buying behavior when self-regulatory resources are high. Put another way, we proposed that self-regulatory resources moderate the impact of reflective-impulsive precursors on unhealthy snack impulse buying. The number of unhealthy snacks purchased (NUSP), the percentage of unhealthy snacks purchased (PUSP) and the total number of purchased snacks (TNPS) were measured as dependent factors.

5.2.1. Preliminary analyses

5.2.1.1. Randomization check

On average participants reported almost a moderate level of positive affect (*M* = 3.06, *SD* = .69) and low level of negative affect (*M* = 1.47, *SD* = .36) with a mean BMI of 22.47 (*SD* = 3.46)[30]. Three separate one-way ANOVAs were performed on the BMI (*F* = .65, *p* = .42), positive affect (*F* = 2.13, *p* = .14) and negative affect (*F* = .02, *p* = .87) as dependent variables demonstrated no significant differences between the two conditions, which is indicative of the accuracy of randomization (see Salmon et al., 2014). The average number of unhealthy snacks purchased was 1.06 (*SD* = 1.08) on a scale ranging from zero to six which constituted 53% of the total purchased products (*N* = 100)[31]. It is important to mention that only 16% of participants did not purchase any products.

5.2.1.2. Manipulation check

As we expected, participants in the depletion condition *(M* = 3.64, *SD* = 1.93) rated the emotion suppression task as more difficult than those in the control group (*M* = 1.80, *SD* = .90), *t* (69.3) = 6.09, *p* < .001, *d* = 1.2, which means that self-regulatory resource manipulation was successful (Vohs & Faber, 2007). Moreover, the analysis showed that (see Table 5.1) the central variables (impulsive system, reflective system, and dependent variables) do not differ significantly as a function of self-regulatory resource depletion (see Hofmann et al., 2007). This finding is consistent

[30] Which is within the healthy weight range (see Giesen et al., 2010; Robinson et al., 2014a).
[31] Part of this section (pages 130 to 143) has been used in manuscript previously accepted for publication (see Moayery et al., in press-b).

with our proposition regarding the interaction between independent factors and self-regulatory resources.

Table 5.1. Means and standards deviations of central variables and t-value for central variable differences as a function of experimental conditions.

	Depletion condition		Control condition		*t*	*df*	*p*
Central variables	*M*	*SD*	*M*	*SD*			
IBT	3.73	1.01	3.57	.79	.89	98	.37
Habit	-1.10	2.19	-1.47	1.86	.91	98	.36
Dietary restraint	36.44	21.27	38.77	23.28	-.52	98	.60
NUSP	1.16	.99	.96	1.16	1.40	96	.16
PUSP	54.49	37.61	42.25	40.57	1.56	98	.12
TNPS	1.92	1.36	2.02	1.72	.24	93	.80

Note: Habit ranges -6 to 6 with positive scores indicating greater habit for unhealthy snack buying habit.

5.2.1.3. Scale construction

Impulse Buying Tendency (IBT). The 20 items of impulse buying tendency scale were subjected to a principal component analysis with Varimax rotation. Similar to those results obtained by Verplanken and Herabadi (2001), the scree-test indicated the existence of a two-component structure with the first six eigenvalues of 6.50, 2.34, 1.28, 1.12, 1.02, and 1.00 respectively. Furthermore, we have applied a free version of Monte Carlo PCA for parallel analysis (see Watkins, 2005). The results of the parallel analysis also confirmed the existence of two components of IBT. In total, the two components accounted for 48.61 % of the variance (see Table 5.2). Therefore, the presence of two components of IBT, including cognitive aspects (two subscales: lack of planning and deliberation) and affective aspects (four subscales: feelings of

pleasure and excitement, an urge and to buy, the difficulty to leave things, and possible regret afterwards) have been supported. Finally, all twenty items were summed to create the scale of IBT.

Table 5.2. The impulse buying tendency scale and factor loading for a two-factor solution.

Item	IBT-Cognitive	IBT-Affective
Cognitive items		
Before I buy something I always carefully consider whether I need it.	.810	-.043
Most of my purchases are planned in advance.	.810	-.121
I only buy things that I really need.	.799	-.043
I usually only buy things that I intended to buy.	.754	.019
I usually think carefully before I buy something.	.656	-.099
It is not my style to just buy things.	.646	.265
If I buy something, I usually do that spontaneously.	.603	.138
I often buy things without thinking.	.470	. 300
I am used to buying things 'on the spot'.	.416	-.127
I like to compare different brands before I buy one.	.400	.156
Affective items		
I always see something nice whenever I pass by shops.	-.237	.791
If I see something new, I want to buy it.	.065	. 741
I find it difficult to pass up a bargain.	-.006	.707
I sometimes cannot suppress the feeling of wanting to buy something.	.108	.690
It is a struggle to leave nice things I see in a shop.	.275	.640
I am a bit reckless in buying things.	.199	.466
I can become very excited if I see something I would like to buy.	-.072	.458
I'm not the kind of person who 'falls in love at first sight' with things I see in shops.	.175	. 413
I am a bit reckless in buying things.	.256	.408
I sometimes feel guilty after having bought something.	.096	.382

Unhealthy snack buying habit. The 12 items of the Self-Report Habit Index (SRHI) were subjected to a principal component analysis with Varimax rotation. We repeated the same process for both healthy and unhealthy snack buying habits. For instance, in the case of unhealthy snack buying habit, similar to those results obtained by Verplanken and Orbell (2003), only the first eigenvalue was higher than one (6.59). The scree-test indicated the existence of a one-component structure accounting for 54.92% of the variance.

Dietary restraint. The six items of cognitive restraint subscale were subjected to a principal component analysis with Varimax rotation. Only the first eigenvalue was greater than one (3.49). The scree-test indicated the existence of one-component structure accounting for 58.16% of the variance.

5.2.2. Testing main effects

We first checked all items regarding skewness and the presence of outliers (Verplanken et al., 2005). While we applied the percentage of unhealthy snacks purchased without any change, we implemented a log-transformed index of the number of unhealthy snacks purchased (s_k = 1.78) and the total number of purchased snacks (s_k =.90)[32] because they were positively skewed (Hofmann et al., 2007).

The z-order correlation was calculated as the first evidence of our predictions (see Table 5.3). In addition, since hierarchical regression (see Table 5.4) is a powerful tool to analyze experimental data and is applied frequently to investigate theory-based hypotheses (Petrocelli, 2003), we applied three distinct hierarchical regressions on the number of unhealthy snacks

[32] While all statistic processes for these two factors have been done based on Log transformed data, the means reported on Table 5.1 are based on row data to make an easier interpretation.

purchased (NUSP), the percentage of unhealthy snacks purchased (PUSP) and the total number of purchased snacks (TNPS) (see also Dawson, 2014). We entered the control variables at the first step, added the moderator (self-regulatory condition [SRC]) and the independent factors (IBT, habit and dietary restraint) at the second step, and entered the interaction terms at the third step (Frazier, Tix, & Barron, 2004). For the number of unhealthy snacks purchased, we entered positive emotion, BMI, and gender as control variables. Also, gender and BMI were entered as control variables for the percentage of unhealthy snacks purchased and the total number of purchased snacks respectively (see Table 5.5). As it is recommended, we entered the *z*-standardized version of all continuous variables as well as the dummy coded version of moderator and gender (Dawson, 2014). Then we ran a simple slope test to investigate more closely the association between predictors and dependent variables (Dawson, 2014; Frazier et al., 2004)[33].

We did not analyze the number of healthy snacks purchased because of recent evidence showing that only unhealthy snacks buying can be affected by self-regulatory depletion and not the healthy snack buying (see Salmon et al., 2016). This can be attributed to the fact self-control only associates with unhealthy snack intakes and not with healthy snack intakes (Adriaanse et al., 2014)[34]. To support this idea, we additionally calculated the z-order correlation related to the number of healthy snacks purchased (see Table 5.3). The result showed that our assumption was correct because healthy snacks did not match with the concept of self-control conflict discussed in

[33] We used an online resource (www.jeremydawson.com/slopes.htm.) suggested by Dawson (2014) to calculate simple slope test. This test is done by calculating a predicted value of the outcome variable under high and low values of independent variable at two values of the moderator (condition vs. control).
[34] More especially, both Salmon et al. (2016) and Adriaanse et al. (2014) analyzed the healthy snacks and unhealthy snacks separately.

our proposed model. Therefore, for the rest of study, we do not analyze the number of healthy snacks purchased separately.

Table 5.3. The zero-order correlation for the central variables as a function of self-regulatory resource depletion.

	2	3	4	5	6	7
Depletion condition						
1.IBT	.02	.00	.27*	.22#	.00	-.17
2.Habit		-.22#	.33**	.44**	.09	-.28*
3.Dietary restraint			.01	.01	-.01	.00
4.NUSP						
5.PUSP						
6.TNPS						
7.NHSP						
Control condition						
1.IBT	.27*	.15	-.18	-.16	-.14	-.01
2.Habit		-.27*	.01	.28*	-.27*	-.38**
3.Dietary restraint			-.33*	-.38**	-.13	.11
4.NUSP						
5.PUSP						
6.TNPS						
7.NHSP						

Note: # $p < .08$, *$p < .05$, **$p < .01$; NHSP = Number of unhealthy snacks purchased.

Table 5.4. A summary of hierarchical regression analysis for variables predicting the dependent factors.

	Dependent variables								
	NUSP			*PUSP*			TNPS		
	B	B (SE)	ß	B	B (SE)	ß	B	B (SE)	ß
Step3									
BMI	-.015	.006	-.25**	-	-	-	-.05	.02	-.22**
Gender	-.03	.04	-.08	-8.97	7.94	-.11	-	-	-
Positive emotion	.05	.02	.28***	-	-	-	-	-	-
IBT	.04	.03	.20	8.94	5.33	.22	-.01	.03	-.06
habit	.09	.02	.43***	14.92	4.94	.37***	.03	.03	.13
Dietary restraint	.04	.03	.19	4.85	5.42	.12	.01	.03	.05
SRC	-.01	.03	-.04	-9.53	7.10	-.12	.00	.04	-.01
IBT× SRC	-.079	. 04	-.26*	-15.84	7.45	-.28**	.00	.04	.00
Habit × SRC	-.09	.04	-.28**	-3.80	7.79	-.48	-.12	.05	-.34**
Dietary restraint × SRC	-.10	.04	-.35**	-15.86	7.51	-.29**	-.06	.04	-.20

NOTE: *p < .06, **p < .05, ***p < .01; We just reported the last step; B = Unstandardized Regression Coefficient; SE = Standard Error of Beta; ß = Standardized Regression Coefficient.

5.2.2.1. Test of H1 (a, b, c)

The z-order correlation was calculated as the first evidence of H1 (see Table 5.3). Consistent with H1a and H1b, NUSP significantly increased as a function of IBT and habit in the depletion condition but not in the control condition. Moreover, in line with H1c, the reflective system (dietary restraint) showed a negative association with NUSP only when self-regulatory resources were high. Then we applied a hierarchical regression (R^2 = .28) on the number of unhealthy snacks purchased (NUSP). When predicting the number of unhealthy snacks purchased, the results

confirmed the expected interaction between habit and experimental conditions (ß = -.28, t = - 2.15; p = .03), as well as IBT and experimental condition (ß = -.26, t = -1.92; p = .057) (although marginally). In addition, as predicted, interaction between dietary restraint and experimental conditions (ß = -.35, t = -2.45; p = .01) appeared significant (see Table 5.4 [we just reported the last step]). The simple slope test revealed that, as expected by H1a and H1b, IBT (t = 1.85, p = .06) and habit (t = 2.9, p = .004) significantly increased the number of unhealthy snacks purchased in the depletion condition (although marginally significant regarding IBT; see figure 5.1 and 5.2), but not in the control condition (t = -1.04, p = .27 and t = .03, p = .97 respectively). Moreover, consistent with our prediction, the simple slope test showed that dietary restraint decreased the number of unhealthy snacks purchased (see figure 5.3; t = -1.96, p =.05) in the control condition but not under the depletion condition (t = 1.29, p = .19). In sum, these findings support H1a (although marginally), H1b, and H1c.

Table 5.5. The correlations between the dependent variables and the control variables.

	NUSP	*PUSP*	*TNPS*
BMI	-.18*	-.09	-.18*
Gender(Spearman's rho)	-.14#	-.14#	-.04
Positive Emotion	.23*	.10	.09
Negative Emotion	.09	.09	.03

NOTE: # $p < .08$, *$p < .05$.

Figure 5.1. The number of unhealthy snacks purchased as a function of impulse buying tendency and experimental conditions.

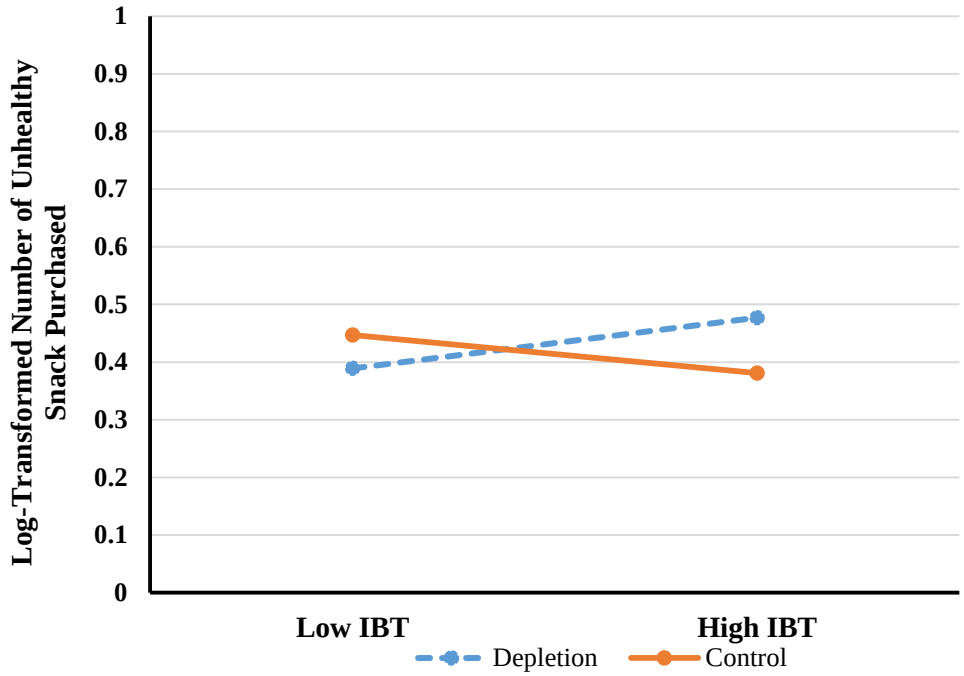


Figure 5.2. The number of unhealthy snacks purchased as a function of habit and experimental conditions.

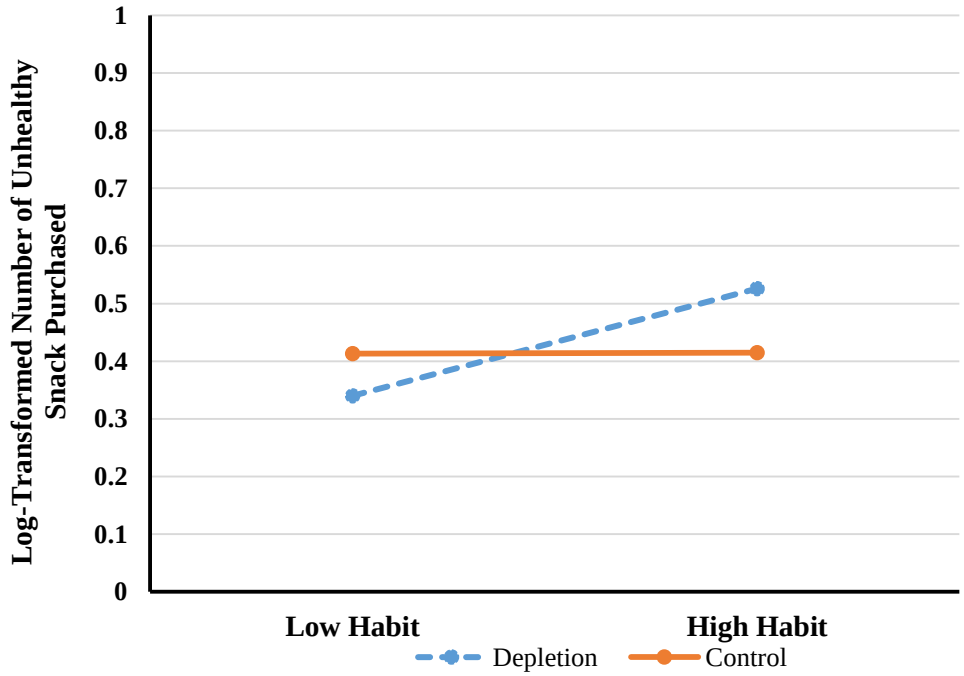
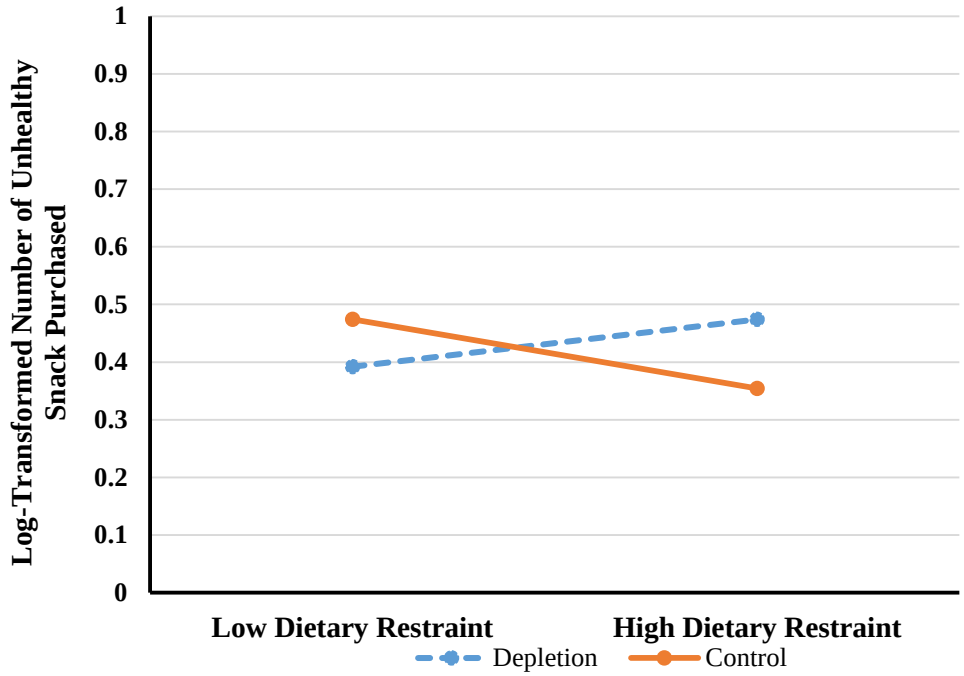


Figure 5.3. The number of unhealthy snacks purchased as a function of dietary restraint and experimental conditions.



5.2.2.2. Test of H2 (a, b, c)

The z-order correlation was calculated as the first evidence of H2 (see Table 5.3). As predicted by H2a, IBT was positively associated with the percentage of unhealthy snacks purchased (PUSP) in the depletion condition but not in the control condition. On the other hand, PUSP significantly increased as a function of habit in both conditions which is inconsistent with H2b. Also, congruent with H2c, the reflective system (dietary restraint) showed a negative association with PUSP in the control condition but not in the depletion condition. Then we applied a hierarchical regression (R^2 = .26) on the percentage of unhealthy snacks purchased (see Table 5.4)[35]. When predicting the

[35] We have done this process also by controlling those individuals who did not buy any product, and we obtained similar results. When predicting the percentage of unhealthy snacks purchased after controlling those individuals who did not buy any products (R2 = .31), the results supported our prediction in terms of

percentage of unhealthy snacks purchased, the results supported our prediction in terms of interaction between IBT and experimental conditions (ß = -.28, t = -2.12; p = .03), as well as the expected interaction between dietary restraint and experimental conditions (ß = -.29, t = -2.11; p = .03). Interestingly, but beyond our expectation, habit significantly increased the percentage of unhealthy snacks purchased, regardless of the experimental conditions. Regarding the impulsive system, the simple slope test showed that impulse buying tendency (t = 1.94, p = .055) increased the percentage of unhealthy snacks purchased (see figure 5.4) in the depletion condition, but not in the control condition (t = -1.25, p = .21). These data support H2a. However, inconsistent with H2b, the simple slope test showed that in both conditions habit significantly increased the percentage of unhealthy snacks purchased (see figure 5.5). Moreover, consistent with our prediction, the simple slope test showed that dietary restraint decreased the percentage of unhealthy snacks purchased (t = -2.12, p = .03) in the control condition. On the other hand, as expected, dietary restraint was not related to this dependent variable when self-regulatory resources were low (t = .89, p = .37). These data support H2c (see figure 5.6)[36]. Interestingly, dietary restraint not only did not decreased both NUSP and PUSP in the depletion condition, but also there were positive associations (although insignificantly) with behavioral outcomes. Since this idea is not the main concern of this study, we do not emphasize this finding.

interaction between IBT and experimental conditions (ß = -.26, t = -1.96; p = .05), as well as the expected interaction between dietary restraint and experimental conditions (ß = -.26, t = -1.82; p = .07).

[36] Additionally, similar to the percentage of unhealthy snacks purchased, we also calculated the difference between the numbers of unhealthy snacks purchased and the number of healthy snacks purchased with positive scores indicate more unhealthy snacks purchased. The analysis yielded identical results. The results showed that while depletion condition led to significantly more unhealthy snacks for people with high impulse buying tendency, the control condition led to less unhealthy snacks and even more healthy snacks in restrained eaters.

Figure 5.4. The percentage of unhealthy snacks purchased as a function of impulse buying tendency and experimental conditions.

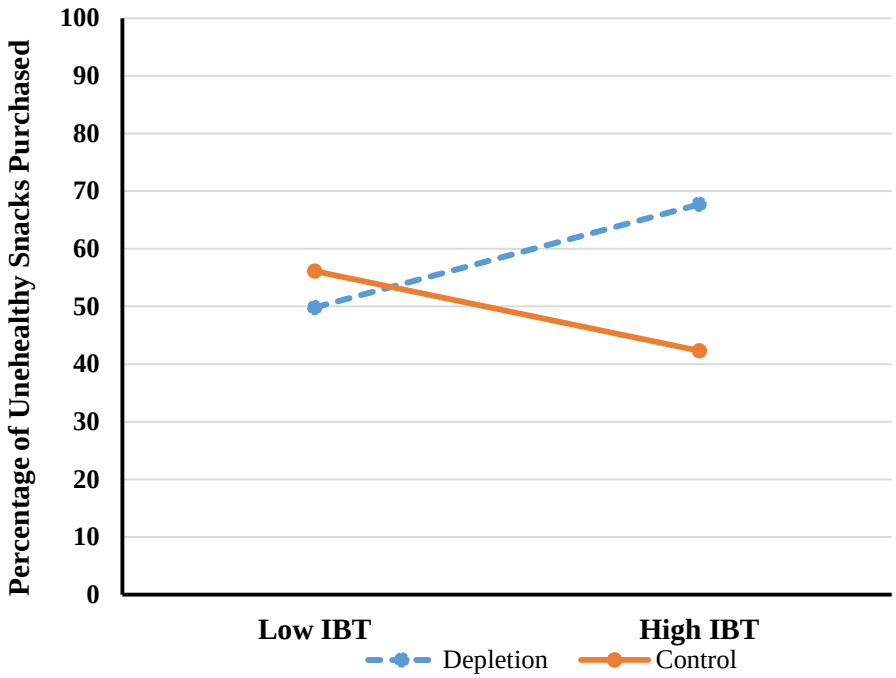


Figure 5.5. The percentage of unhealthy snacks purchased as a function of habit and experimental conditions.

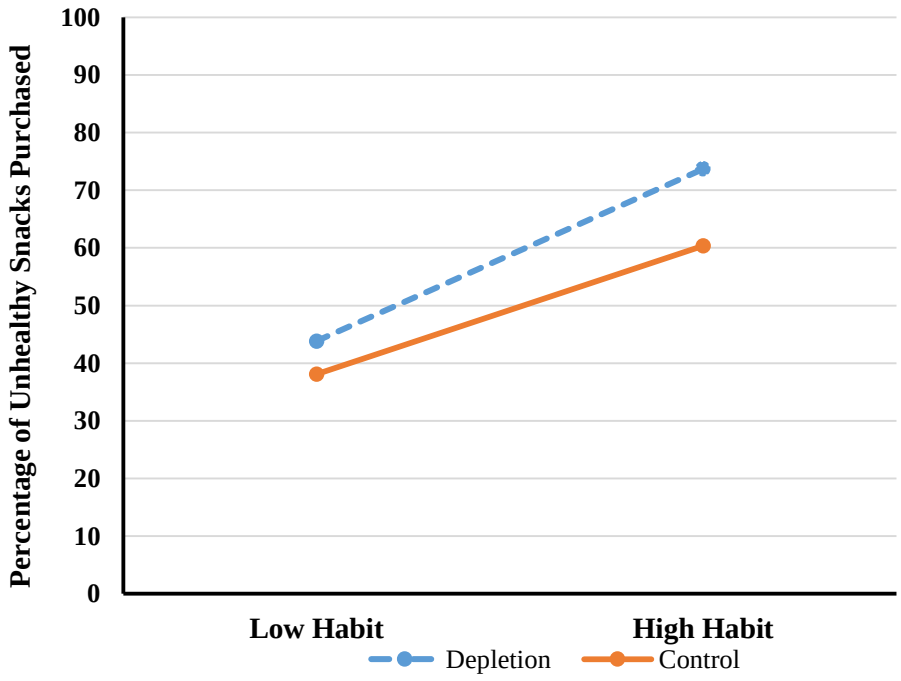
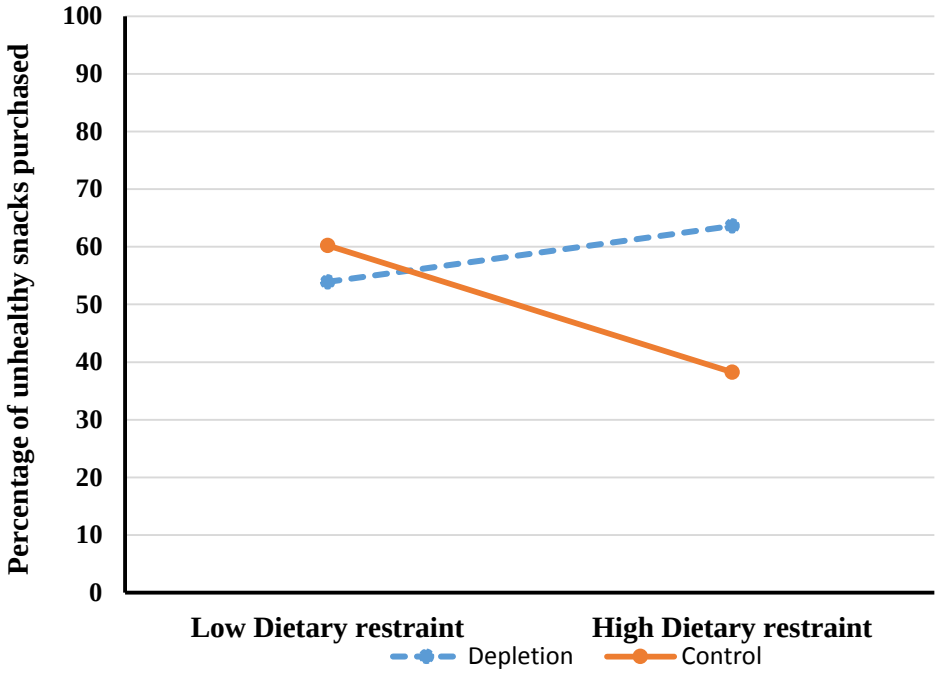


Figure 5.6. The percentage of unhealthy snacks purchased as a function of dietary restraint and experimental conditions.



5.2.2.3. Test of H3 (a, b, c)

The z-order correlation was calculated as the first evidence of H3 (see Table 5.3). As predicted by H3, both reflective and impulsive systems were unrelated to the total number of purchased snacks (TNPS) in both conditions, except habit which appeared negatively associated with TNPS in the control condition. Then we applied a hierarchical regression on the total number of purchased snacks (see Table 5.4). When predicting the total number of purchased snacks, the result (R^2 = .12) appeared to be in line with our prediction, so that the interactions of experimental conditions with both dietary restraint and impulse buying tendency were insignificant. However, contrary to our expectation, habit showed a significant interaction with experimental condition (ß = -.34, t = -2.45; p = .01). Regarding the impulsive system, the simple slope test showed that, as predicted by H3a, impulse buying tendency appeared unrelated to the total number of purchased snacks in both

conditions. Furthermore, although consistent with our prediction habit also did not associate with this dependent variable in the depletion condition (t = .98, p =.32), habit was negatively related to this outcome variable in the control condition (t = -2.10, p =.03). These data reject H3b. Finally, the simple slope test showed that dietary restraint did not associate with the total number of purchased snacks in both conditions, as expected by H3c. Table 5.6 presents a summary of the hypotheses discussed in this section.

Table 5.6. A summary of H1, H2, and H3.

Dependent variables	Independent variables	Hypothesized influences	Result
Number of unhealthy snacks purchase	**Impulsive system**	Impacts only under depleted self-regulatory resources	
	IBT	*H1a*	Supported
	Habit	*H1b*	Supported
	Reflective system	Impacts only under the control condition	
	Dietary restraint	*H1c*	Supported
Percentage of unhealthy snacks purchased	**Impulsive system**	Impacts only under depleted self-regulatory resources	
	IBT	*H2a*	Supported
	Habit	*H2b*	Rejected
	Reflective system	Impacts only under the control condition	
	Dietary restraint	*H2c*	Supported
Total number of purchased snacks	**Impulsive system**	Does not affect under experimental conditions	
	IBT	*H3a*	Supported
	Habit	*H3b*	Rejected
	Reflective system	Does not affect under experimental conditions	
	Dietary restraint	*H3c*	Supported

5.3. The temporary components of the reflective system (experiment 2)

Pertaining to the second part of our model, we applied the descriptive norms as environmental cues acting as social proof heuristics. We propose that the act of these social proof heuristics takes place in the reflective system based on the existence of enough self-regulatory resources. We also postulated that while those with interdependent self-construals are more likely to follow descriptive norms as a means of affiliating with others and a desire to behave correctly, the goal of maintaining a positive self-concept can steer those with independent self-construals away from descriptive norm adherence.

5.2.1. Preliminary analyses

5.2.1.1. Randomization check

On average participants reported almost a moderate level of positive affect (M = 3.04, SD = .66), low level of negative affect (M = 1.46, SD = .40), low level of chocolate buying habit (M = 2.67, SD = 1.16), moderate level of fruit buying habit (M = 3.88, SD = 1.43) with a mean BMI of 22.23 (SD = 3.19)[37]. Five separate one-way ANOVAs were performed on the BMI (F = 2.09, p = .15), positive affect ($F < 1$, p = .88), negative affect (F = 1.83, p = .17), chocolate buying habit (F = .18, p = .66) and fruit buying habit (F = .02, p = .88) as dependent variables demonstrating no significant differences between the four conditions, which is indicative of the accuracy of randomization (see Salmon et al., 2014).

[37] Which is within the healthy weight range (see Giesen et al., 2010; Robinson et al., 2014a).

5.2.1.2. Manipulation check

As we expected, participants in the depletion condition *(M* = 3.59, *SD* = 1.93) rated the emotion suppression task as more difficult than those in the control group (*M* = 1.81, *SD* = .90), *t* (89.4) = 6.67, $p < .001$, *d* = 1.18, which means that self-regulatory resource manipulation was successful (Vohs & Faber, 2007).

5.2.2. Testing main effects

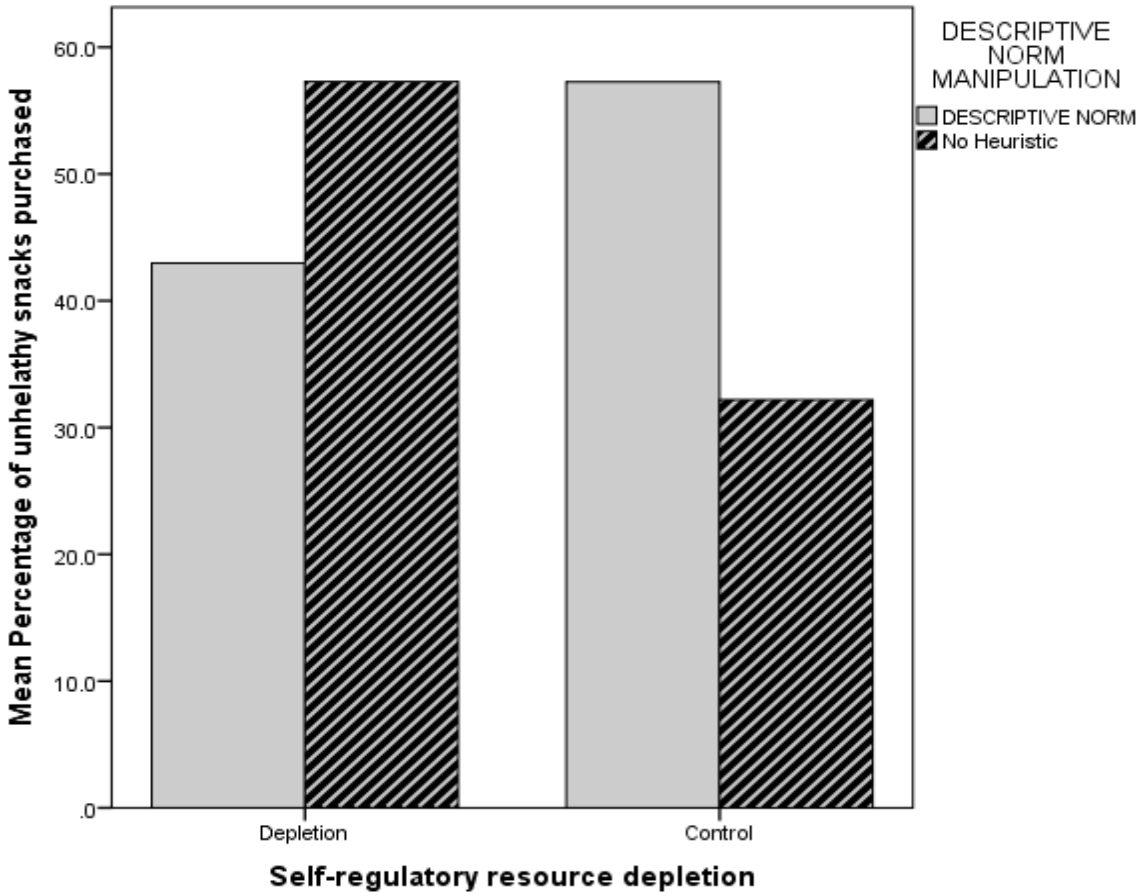
We first checked all items regarding skewness (Verplanken et al., 2005). For the sake of simplicity, we only report results about the percentage of unhealthy snacks purchasing as the outcome variable.

5.2.2.1. Test of H4 (a, b)

An analysis of variance (ANOVA) on the percentage of unhealthy snacks purchased, with self-regulatory resource depletion (depletion vs. control) and descriptive norm manipulation (descriptive norm vs. no heuristic) as independent variable showed an interaction effect. The finding demonstrated that the interaction between self-regulatory depletion and descriptive norm manipulation was significant, (*F* (1, 124) = 8.66, $p < .01$). Therefore, there were no main effects of self-regulatory resource depletion and descriptive norm manipulation on the percentage of unhealthy snacks purchased (all *Fs* < 1). Analysis of the simple main effect showed that in the depletion condition, as predicted, there was no significant difference between the percentage of unhealthy snacks purchased in the descriptive norm condition (*M* = 42.96, *SD* = 39.99) and the no heuristic condition (*M* = 57.28, *SD* = 37.12), *F* (1, 124) = 2.28, $p = .13$. On the other hand, in the control condition (no depletion) there was significant difference between the percentage of

unhealthy snacks purchased in the descriptive norm condition (M = 57.26, SD = 36.15) and the no heuristic condition (M = 32.18, SD = 38.05), F (1, 124) = 7.02, p = .009. These results are consistent with H4a. On the other hand, contrary to our prediction, the descriptive norm manipulation increased the percentage of unhealthy snacks purchased (see figure 5.7)[38]. This finding is in contrast with H4b.

Figure 5.7. The percentage of unhealthy snacks purchased as a function of descriptive norm manipulation and self-regulatory resource depletion.

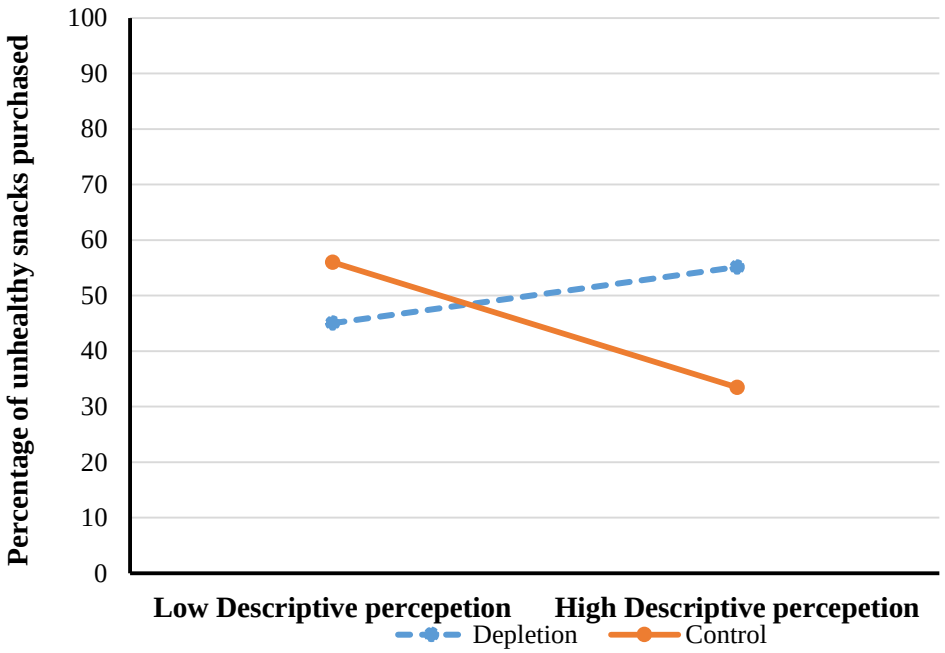


[38] Regarding the number of unhealthy snacks purchased, similar results have been observed (F (1, 124) = 6.48, $p < .05$).

In addition, we have also measured the current perception of descriptive norms. In this regard, we applied a hierarchical regression on the percentage of unhealthy snacks purchased. We entered the moderator (self-regulatory condition [SRC]) and the independent factor (the current perception of descriptive norms) at the first step, followed by the interaction term at the second step (Frazier et al., 2004). As it is recommended, we entered the *z*-standardized version of continuous variable (the current perception of descriptive norms) as well as the dummy coded version of the moderator (Dawson, 2014). When predicting the percentage of unhealthy snacks purchased, the results confirmed (R^2 = .06) the expected interaction between the current perception of descriptive norms and experimental conditions (ß = -.31, t = -2.38; p = .01)[39]. The simple slope test revealed that the current perception of descriptive norms significantly (t = -2.52, p =.01) decreased the percentage of unhealthy snacks purchased (see figure 5.8) in the control condition, but not in the depletion condition (t = .97, p = .33). These results are consistent with both H4a and H4b.

[39] Regarding the number of unhealthy snacks purchased, similar results have been observed (ß = -.25, t = -1.84; p = .06).

Figure 5.8. The percentage of unhealthy snacks purchased as a function of the current perception of descriptive norms and self-regulatory resource depletion.



In sum, it can be concluded that H4a has been supported. This is based on the results showing that self-regulatory resource availability promoted adherence to descriptive norm regardless of the type of descriptive norm. However, while the descriptive norm manipulation increased the outcome variable which is against the H4b, the current perception of descriptive norms decreased the outcome variable which is consistent with H4b. Therefore, we partially accept H4b because the results were significant only in case of the current perception descriptive norms. Also, we ran a further analysis to account for the increased unhealthy snacks impulse buying resulting from the descriptive norm manipulation. In this respect, we have found four possible underlying reasons for the observed adverse effect of descriptive norm manipulation.

(1) According to Burger et al. (2010) "people often have distorted perceptions of descriptive norms" (p. 240). In this respect, the database was primarily splitted into two groups

based on the current perception of descriptive norm (highly believe others buy fruits as snack vs. do not believe). Then we ran again an analysis of variance on the percentage of unhealthy snacks purchased, with self-regulatory resource depletion (depletion vs. control) and descriptive norm manipulation (descriptive norm vs. no heuristic) as the independent variable. The results supported the idea that the interaction effect is significant for those people who do not believe that the majority of other students in the University of Deusto buy fruits as a snack (F (1, 75) = 2.82, p = .09 vs. F (1, 45) = 4.57, p = .03). Therefore, it can be concluded for those who do not believe that others buy healthy snacks, the descriptive norm manipulation opens doors for them to buy more unhealthy snacks.

(2) We predict the possibility of boomerang effect (Burger et al., 2010; Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007). According to Schultz et al. (2007), "the descriptive norm acts as a magnet for behavior for individuals both above and below the average norm" (p.430). However, there is a risk of turning healthy eaters into less-healthy eaters by providing a general population with descriptive norm data (Burger et al., 2010). Following this idea, the database was primarily splitted into two groups based on fruit buying habit (high vs. low). Then we ran again an analysis of variance on the percentage of unhealthy snacks purchased, with self-regulatory resource depletion (depletion vs. control) and descriptive norm manipulation (descriptive norm vs. no heuristic) as the independent variable. The results showed that the interaction effect is significant for those with weak fruit buying habit (F (1, 63) = 1.33, p = .25 vs. F (1, 57) = 9.18, p = .001). Therefore, the boomerang effect did not appear in this study.

(3) In our study, following Salmon and colleagues (2015), we delivered the norm message that the majority of students previously participated in our study had bought healthy snacks (e.g., fruits). This message coveys norms about other people food choice in a specific situation (see also

Higgs, 2015; Robinson et al., 2014b). On the other hand, according to Cruwys, Bevelander, and Hermans (2015), people feel certain about their food choice (rather than the amount of food), and hence they do not follow others for guidance in determining their food choice. Consequently, in the condition of encountering the norm message about food choice, people are less susceptible to social norms, and they usually follow their routines (Cruwys et al., 2015). Following this idea, the database was primarily splitted into two groups based on the unhealthy snack buying habit (high vs. low). Then we ran again an analysis of variance on the percentage of unhealthy snacks purchased, with self-regulatory resource depletion (depletion vs. control) and descriptive norm manipulation (descriptive norm vs. no heuristic) as the independent variable. The results showed that the interaction effect is significant for those people having strong habit of unhealthy snacks buying (F (1, 59) = 4.27, p = .04 vs. F (1, 61) = 2.59, p = .11). Thus, it can be assumed that the nature of applied norm message led participants to follow their unhealthy routines.

(4) Women are more likely to resist than men to change their normative misperceptions (Borsari & Carey, 2003). In this respect, we suspect that the female participants in our study had higher resistance to change their misperceptions about descriptive norms, and hence the descriptive norm manipulation was not successful to change their behavior. Following this idea, the database was primarily splitted into two groups based on gender (male vs. female). Then we ran again an analysis of variance on the percentage of unhealthy snacks purchased, with self-regulatory resource depletion (depletion vs. control) and descriptive norm manipulation (descriptive norm vs. no heuristic) as the independent variable. The results showed that the interaction effect is significant for females (F (1, 44) = 1.33, p = .25 vs. F (1, 76) = 7.99, p = .006). Thus, it can be expected that female participants had resistance to accept new information about descriptive norms.

5.2.2.2. Test of H5

Our fifth hypothesis concerns the effect of descriptive norms on unhealthy snack impulse buying depending on the interaction between self-regulatory resources and self-construals. Also, because in the last section it has been shown that only the current perception of descriptive norms can decrease the amount of unhealthy snacks buying, in this section we focus only on the current perception of descriptive norm (as the independent factor) rather than norm manipulation. To test this hypothesis, we ran a moderation analysis using the PROCESS macro for statistical software package SPSS (Hayes, 2012)[40]. This process tested whether the three-way interaction between the current perception of descriptive norm (independent variable), self-regulatory depletion and self-construals (moderators) is statistically significant by generating 5,000 bootstrap confidence interval. When predicting the percentage of unhealthy snacks purchased[41] and considering the interdependent self-construal as moderator, R^2-*change* for the model was .04, F (1, 120) = 5.48, p = .02, with the following coefficient for the three-way interaction: -15.80 (SE = 6.75), t = -2.34, p = .02. These findings support H5. In addition, as expected, the two-way interaction between the current perception of descriptive norms and the self-regulatory resources appeared significant. On the other hand, the two-way interaction between norm and interdependent self-construal and the two-way interaction between interdependent self-construal and self-regulatory resources appeared insignificant. To probe the significant interaction, we follow the method suggested by Hayes (2012). This method checks the significant level according to the percentiles of the moderators when estimating the conditional effect of dependent variables (the current perception of descriptive

[40] We selected this computational tool because it can calculate three-way interaction even in the form of interval variables as well as offering tools for probing (Hayes, 2012). This approach protects us from problems deriving from dichotomizing a continuous variable via the median split (Rucker et al., 2015).

[41] The same results have been observed in the case of the number of unhealthy snacks purchased (F (1, 120) = 3.91, p = .05).

norms). The probing showed that the interaction term is significant only at the very high (90th percentile), high (75th percentile) and moderate (50th percentile) levels of interdependent self-construal (all $p < .05$), but only under condition of high self-regulatory resources. Therefore, it can be concluded that consistent with our prediction, following descriptive norms is significant under condition of high self-regulatory resources and only for those people with interdependent self-construals. In sum, the H5 has been supported.

5.4. Summary

This chapter provides a detailed description of the data analysis techniques used to test the hypotheses and the results. Regarding the experiment 1, the preliminary analyses showed the accuracy of randomization and the effectiveness of self-regulatory resource depletion. Moreover, the result supported the H1and H2 (except H2b). Therefore, consistent with our prediction, unhealthy snacks impulse buying can be predicted by the impulsive system only in the low self-regulatory resource condition, whereas the reflective system associates with behavior only under condition of high self-regulatory resources. The results also showed that the total number of purchased snacks did not associate with impulse buying tendency and dietary restraint under experimental conditions. However, habit associated with the total number of purchased snacks under condition of high self-regulatory resources.

Regarding the experiment 2, the preliminary analyses showed the accuracy of randomization and the effectiveness of self-regulatory resource depletion. The results supported the idea that the current perception of descriptive norms can decrease unhealthy snacks impulse buying only in the high self-regulatory resource condition. Moreover, the results supported the fact that the descriptive norm manipulation is associated with behavior only under condition of high self-regulatory resources. However, in contrast with our prediction, the descriptive norm

manipulation had an opposite effect. This chapter provided four plausible explanations for the adverse impact. Finally, the results supported the idea that self-regulatory resource availability promotes adherence to the descriptive norm, but only for those people with an interdependent self-construal (see Table 5.7).

Table 5.7. A summary of all hypotheses.

Hypothesis	Specific Hypothesis	Result
H1	The number of unhealthy snacks purchased (e.g., chocolate) should be predicted by (a) impulse buying tendency and (b) unhealthy snack buying habit when self-regulatory resources are low. (c) However, when self-regulation resources are high, dietary restraint should determine the number of unhealthy snacks purchased.	*Supported*
H2	The proportion of unhealthy snacks purchased should be predicted by (a) impulse buying tendency and (b) unhealthy snack buying habit when self-regulatory resources are low. (c) However, when self-regulation resources are high, dietary restraint should determine the proportion of unhealthy snacks purchased.	*Supported (except H2b)*
H3	Self-regulatory resources do not moderate the impact of (a) impulse buying tendency, (b) unhealthy snack buying habit, and (c) dietary restraint on the total number of purchased snacks.	*Supported (except H3b)*
H4	(a) Descriptive norms exert their influence through a conscious pathway, whereby (b) the percentage of unhealthy snack purchased would be decreased.	*H3a supported* *H3b partially supported*
H5	Self-regulatory resource availability promotes adherence to the descriptive norm, but only for those people with an interdependent self-construal.	*Supported*

6. Discussion and implications

6.1. Overview

6.2. Findings

6.3. Theoretical implications

6.4. Practical and managerial implications

6.5. Limitations and suggestions for future research

6.1. Overview

Is impulse buying behavior just a product of the impulsive system? According to the current research, both impulsive and reflective systems can determine the final impulse buying behavior. These results are consistent with the body of research, showing that both impulsive and reflective determinants can predict one action (see Hofmann et al., 2008a; Hofmann et al., 2007; Strack et al., 2006). Our findings are consistent with a recent meta-analysis of consumer impulse buying showing that an interaction between individual traits (e.g., IBT) and situational factors has the most impact on impulse buying (Amos et al., 2014). These findings also correspond with the recent literature conceptualizing impulse buying as a process that can be viewed as being similar to other health-related behavior, such as food choices (Xiao & Nicholson, 2011; Xiao & Nicholson, 2013). The present study followed a dual-system account to examine the moderating role of self-regulatory resources on the influence of impulsive and reflective determinants of impulse buying. Consistent with the proposed model, the results supported that impulse buying can be defined as[42]:

> *A function of both reflective (i.e., goals and standards) and impulsive (i.e., impulse buying tendency and habit) systems depending on the availability of self-regulatory resources. In addition, the social proof heuristic (i.e., descriptive norms) might be applied to help the reflective system. However, this effect also varies as a function of the availability of self-regulatory resources and independent-interdependent dimensions of self-construals.*

The first part of the proposed model hypothesized that when there are enough self-regulatory resources, the reflective system can determine the impulse buying behavior. On the other hand, the scarcity of self-regulatory resources gives an upper hand to the impulsive system. We conducted

[42] Part of this section (pages 155-160, 166-168, and 174-176) has been used in manuscript previously accepted for publication (see Moayery et al., in press-b).

the first experimental study to support this argument. In this respect, dietary restraint represented the reflective system, while the impulsive system was represented by impulse buying tendency and unhealthy snack buying habit. The results supported this idea. The results showed that impulse buying tendency and habit predicted the number of unhealthy snacks purchased only when self-regulatory resources were low. However, the dietary restraint predicted the number of unhealthy snacks purchased only when enough self-regulatory resources were available. The same results have been observed in the case of the percentage of unhealthy snacks purchased with one exception, in which habit predicted the behavior regardless of self-regulatory resources. Also, this study investigated the possible association between the total number of purchased snacks and the reflective-impulsive components depending on the availability of self-regulatory resources.

The second part of the model concerned the temporary components of the reflective system. We postulated that when enough self-regulatory resources are available, the descriptive norm can become a temporary component of the reflective system. The results supported that the descriptive norm is associated with the unhealthy snacks impulse buying only when enough self-regulatory resources are available. More especially, while in this condition the current perception of descriptive norms decreased the unhealthy snacks impulse buying, the descriptive norm manipulation increased the behavior. We additionally offered some plausible underlying reasons for this adverse effect. Finally, the results showed that the influence of descriptive norm on unhealthy snack impulse buying is significant only for those with interdependent self-construals.

This chapter primarily reviews the main findings and whether these findings correspond with prior research. Then, the theoretical, practical and managerial contributions of these results will be discussed. Finally, limitations and suggestions for future research will be discussed.

6.2. Findings

6.2.1. Predicting the number of unhealthy snacks purchased (H1a, H1b, and H1c)

We analyzed the number of unhealthy snacks purchased to account for the increased unhealthy snacks purchasing reported by prior studies (e.g., Gracia & Albisu, 2001). The results supported the existence of a dual-process model predicting this behavior. Consistent with our prediction, the results showed that impulse buying tendency and habit predicted the behavior only when self-regulatory resources were low. Generally, these results correspond with previous research suggesting that acting based on the impulsive system will result in poor actions (e.g., an extra scope of ice cream) which are in conflict with declared evaluations and goals (Friese et al., 2008; Hofmann et al., 2007).

More especially, these findings are in line with prior studies showing that unhealthy snack choices and sweet snack intakes were associated with processing resources and food self-control respectively, but only for those people with high impulse buying tendency (Honkanen et al., 2012; Shiv & Fedorikhin, 1999). These findings appear to be consistent with prior studies arguing that it is difficult for those with impulsive tendency to extort self-control, and hence there is a negative association between self-control and impulse buying tendency (Chun et al., 2007; Roberts & Manolis, 2012). On the other hand, these findings contrast with Vohs and Faber (2007), who showed that there were not any differences between healthy and unhealthy food buying when self-regulatory resources were depleted for those individuals with high impulse buying tendency.

Moreover, the results showed that participants whose unhealthy snack buying has become strongly habituated were vulnerable to buy more unhealthy snacks only under condition of low self-regulatory resources. This is comparable to Neal, Wood, and Drolet (2013), who

experimentally showed that self-regulatory resource depletion increased the performance of bad habits (see also Gardner, 2015b). In fact, these results correspond to the body of literature arguing that the conflict between bad habits and conscious deliberation leads people to exert regulatory control to override bad habits (Ji & Wood, 2007; Ouellette & Wood, 1998). On the other hand, because the capacity for self-regulation is a limited resource (Baumeister, 2002; Baumeister et al., 2007), the capability to engage in reflective thought can be depleted by everyday demands (e.g., time pressure), and thereby reliance on eating habit ensues (Rothman et al., 2009).

In addition, consistent with our prediction, dietary restraint (the reflective system) decreased the number of unhealthy snacks purchased when self-regulatory resources were high. Consequently, people with higher dietary restraint bought less unhealthy snacks in this condition. On the other hand, dietary restraint was unrelated to this behavior in the depletion condition as expected. Similar results have been reported by scholars in the domain of candy consumption (Hofmann et al., 2007) and beer consumption (although measured with drinking restraint standards [Friese et al., 2008]). These results are congruent with the notion that self-regulatory resources are essential to alter responses in favor of standards and long-term goals (Baumeister et al., 2006; Baumeister et al., 2007; Vohs, 2006). Moreover, although it was not the main concern of this study, the dietary restraint not only did not decrease the unhealthy snack purchasing in the depletion condition, but also showed a positive association with the behavior (although insignificantly). Similarly, Ruderman and Christensen (1983) demonstrated that a preload (e.g., drinking a milkshake before eating a meal) caused restrained eaters to eat insignificantly more than those in the no-preload condition. We argue that this finding seems consistent with the "what-the-hell effect" (Herman & Polivy, 1975). Based on this body of literature, disturbing events (e.g., preload, certain cognitions, and alcohol) can diminish the self-control of both dieters and non-dieters, but

for dieters (restrained) it will result in overeating (Ruderman, 1986). This finding alone is surprising and begs more research since to our knowledge this effect has only been reported in eating domain and not in buying behavior. However, since it was not the main idea of this study, and the result also was not subtle enough, we do not overemphasize this finding.

6.2.2. Predicting the percentage of unhealthy snacks purchased (H2a, H2b, and H2c)

We analyzed the percentage of unhealthy snacks purchased to account for people's preference for unhealthy snacks buying relative to healthy snacks buying (e.g., Likus et al., 2013; Wansink et al., 2013). In other words, these findings can be considered as the underlying reasons for those studies showing that consumers' shopping baskets contained a larger proportion of food rated as impulsive and unhealthy (e.g., Thomas et al., 2010). In this respect, the results demonstrated that impulse buying tendency was effective to determine the behavior only when self-regulatory resources were low. Furthermore, consistent with our prediction, dietary restraint (the reflective system) decreased the percentage of unhealthy snacks purchased only in the high self-regulatory resource condition. Consequently, participants' buying basket contained fewer unhealthy snacks and they even preferred healthier alternatives relative to more harmful alternatives. Our finding contrasts with previous studies showing that the reflective system does not affect unhealthy snacks purchasing (Prestwich et al., 2011), and even increase unhealthy snack intakes (Honkanen et al., 2012). Overall, the results confirmed the presence of a dual-system account again.

However, habit violated our assumption in the case of the percentage of unhealthy snacks purchased. It seems there is a positive association between habit and the percentage of unhealthy snacks purchased in both conditions. To put another way, the effect of habit is robust regardless of self-regulatory resource condition. This finding appears to be consistent with previous studies

considering habit as the most critical predictor of unhealthy consumption which is directly activated by context cues, whereby it is difficult to change habitual behavior (Adriaanse et al., 2014; Nilsen et al., 2012; Rothman et al. 2009; Verhoeven, Adriaanse, Evers, & de Ridder, 2012). Therefore, we concur with the body of knowledge arguing that habitual responses can be blocked in certain circumstances albeit with difficulty (Gardner et al., 2015; Orbell and Verplanken, 2015). This finding also mirrors Ouellette and Wood's (1998) theory arguing that well-practised behavior in a constant context guides future behavior through two processes. In one route, habit directly affects future behavior and conscious deliberation is not required for the performance of the behavior. In the current research, we also reported the same conclusion, so that habit predicted the behavior without the engagement of dietary restraint in the depletion condition. Second, when the behavior is a function of conscious decision making, intention can mediate habit, and hence habit indirectly predicts the behavior (Ouellette and Wood, 1998). We also suspect the existence of a mediation effect of dietary restraint over the relationship between habit and the percentage of unhealthy snacks purchased[43]. In fact, the significant correlations between (a) habit and the percentage of unhealthy snacks purchased, (b) habit and dietary restraint, and (c) dietary restraint and the percentage of unhealthy snacks purchased, suggest that dietary restraint might mediate the relationship between habit and the behavior, but only under the control condition (see Table 5.3). Otherwise stated, while dietary restraint (as a part of conscious deliberation) aimed to make minimal the effect of habit through this mediation process (Ouellette and Wood, 1998), habit is still powerful enough to influence the behavior even under the control condition.

[43] Although we acknowledge that intention is incompatible with the concept of impulse buying (Rook & Fisher, 1995), it is not far from reality to assume that the dietary restraint, but not the intention, can mediate the relationship between habit and percentage of unhealthy snacks purchased. We draw this conclusion based on the fact that if intention can mediate habit, dietary restraint also mediates habit because both intention and restraint standards are cognitive constructs (see Hofmann, Friese, & Wiers, 2008).

6.2.3. Predicting the total number of purchased snacks (H3a, H3b and, H3c)

The results revealed that the total number of purchased snacks did not match with the definition of self-control conflict. This result appears to be consistent with our expectation that the total number of purchased snacks does not represent a war between the reflective and the impulsive system. The results showed that the total number of purchased snacks was associated with neither impulse buying tendency nor dietary restraint as predicted. In fact, this is based on the nature of the Reflective-Impulsive Model (RIM), which can predict consumer behavior better under conditions in which the reflective system conflicts the impulsive system (Vohs, 2006). Generally, people involve self-control when they perceive the short-term outcome of an activity as a threat to their long-term well-being (Khan et al., 2005). For example, while the self-control conflict between healthy and unhealthy food can predict unhealthy food decisions (Salmon et al., 2014), there is no association between self-control and fruit intake because fruit intake does not represent a self-control dilemma (Adriaanse et al., 2014). Contrary to Vohs and Faber (2007), who claimed that impulse buying behavior happens in the low self-regulatory resource condition regardless of whether the product is healthy or unhealthy, the current research emphasizes the reflective and impulsive dimensions of impulse buying. Surprisingly, although habit also did not associate with this outcome variable under the depletion condition, it appeared negatively associated with the control condition, which seems difficult to interpret. This can be attributed to the fact that habit did not correlate with the number of unhealthy snacks purchased in the control condition, whereas it was negatively correlated with the number of healthy snacks purchased (see Table 5.3). Consequently, the total number of purchased snacks decreased in the control condition as a function of habit.

6.2.4. Effect of the descriptive norm (H4a, H4b)

Consistent with our prediction, the current perception of descriptive norms decreased the percentage of unhealthy snacks purchased, but only when self-regulatory resources were high. The same results have been observed in the case of the number of unhealthy snacks purchased. Consequently, when enough self-regulatory resources are available, those people who believe that others buy healthy snacks: (a) may buy less unhealthy snacks, and (b) their buying basket contains fewer unhealthy snacks. Furthermore, consistent with our prediction, the descriptive norm manipulation also was associated with the outcome variable only in the high self-regulatory resource condition. On the other hand, contrary to our speculation, this manipulation significantly increased the percentage of unhealthy snacks purchased.

Therefore, it can be concluded that people need self-regulatory resources to process the descriptive norm (regardless of the type of descriptive norm). These self-regulatory resources lead the descriptive norm becomes a temporary part of the reflective system. These findings correspond with the stream of research arguing that the application of heuristic judgments takes place in the reflective system (Hofmann, Friese & Wiers, 2011; Strack & Deutsch, 2004). More especially, these results explicitly distinguished our proposed model from the social reaction model as expected (Gibbons et al., 1998; Gibbons et al., 2009; Gibbons et al., 2011). It is based on the premise that following norms is something effortful and people need to think and process the social norm messages (DeBono et al., 2011; Melnyk et al., 2011). Also, these results contradict the stream of research considering the self-regulatory resource depletion as a critical factor to increase conformity to descriptive norms (e.g., Jacobson et al., 2011; Salmon et al., 2015; Salmon et al., 2014). Taken together, these results support the heuristic nature of impulse buying (Verplanken & Sato, 2011; Xiao & Nicholson, 2013). These findings also respond to Robinson et al.'s (2014b)

meta-analysis showing the lack of knowledge regarding the underlying mechanism of normative influences.

Moreover, we only partially accepted that the descriptive norm can decrease unhealthy snack impulse buying. It is based on the premise that while the current perception of descriptive norms decreased the outcome variable, the descriptive norm manipulation increased the outcome variable. To provide an account for this discrepancy, we suspected the possibility of four underlying reasons. The first assumption took into consideration the effect of the current perception of descriptive norms (see Burger et al., 2010). We showed that the descriptive norm manipulation resulted in more unhealthy snacks buying only for those who did not believe that others buy healthy snacks. Moreover, the possibility of a boomerang effect (see Schultz et al. 2007) was not supported. We also provided evidence for the possibility that the nature of the applied norm message caused the adverse effect. This idea is based on the fact that people usually follow their routines when they encounter norms about food choice (Cruwys et al., 2015). Therefore, since the applied message conveyed norms about food choice, participants probably followed their unhealthy routines. We also showed that the adverse effect was significant only for female participants suggesting that female participants had resistance to accepting new information about descriptive norms.

In sum, we conclude that the norm perception partially can influence behavior towards the socially acceptable behavior. This finding is comparable to the stream of research showing that healthy choice will be increased if people receive descriptive norms in favor of healthy option (Burger et al., 2010; Salmon et al., 2014).

6.2.5. Effect of self-construals (H5)

The current perception of descriptive norms decreased the percentage of unhealthy snacks purchased in the high self-regulatory resource condition, but only for those individuals with an interdependent self-construal. The same results have been observed in the case of the number of unhealthy snacks purchased. These findings appeared to be consistent with our prediction. Therefore, it can be concluded that while people need self-regulatory resources to process the descriptive norm, being interdependent with others is required for a normative mechanism. These findings correspond with previous research in different ways.

First, these findings share similarity with the stream of research believing in the existence of two different construals of self and how this concept can influence human behavior as well as personal preferences (Cross & Madson, 1997; Kim & Markus, 1999; Markus & Kitayama, 1991; Triandis, 1989). This theory is based on the premise that "how the culture evaluates individual deviation from norm determines the individual's view on what it means to be different from other, and in turn, these views shape individual self-perception" (Kim & Markus, 1999, p. 787). In this study, we argued that those individuals with an independent self-construal do not follow descriptive norms to maintain a positive self-concept resulting from more focus on their internal attribute (see Cialdini & Goldstein, 2004). In the same vein, previous research showed that those individuals with independent self-construals tend to look at themselves as independent of others and require separating oneself from others, being unique and expressing one's inner attribute (Gudykunst & Lee, 2003; Markus & Kitayama, 1991; Singelis, 1994; Sivadas et al., 2008). On the other hand, we emphasized that those with an interdependent self-construal are more likely to follow descriptive norms as a means of affiliating with others and the desire to behave correctly. This idea is based on the premise that norm following might increase evolutionary fitness,

promotes a sense of cooperation and food sharing, and can be associated with social judgments (Higgs, 2015). Similarly, it has been discussed that people conform to norms to restore their sense of belonging and their self-esteem (Ciladini and Goldstein, 2004). In the same way, previous research showed that those with interdependent self-construals emphasize the connectedness and the interrelatedness of the person and the society (e.g., other members of the in-groups) (Cross & Madson, 1997; Gudykunst & Lee, 2003). For this group, public features (such as statues, belonging, fitting and engaging in appropriate action) are the main concerns (Singelis, 1994). To put another way, for those with interdependent self-construals, while one's internal attributes cannot result in feeling good about the self, the tasks associated with being interdependent with others (e.g., maintain harmony and belonging) should promote positive feeling about the self (Markuz & Kitayama, 1991). This finding shares similarity with those cross-cultural studies showing that normative mechanism is more rigorous in Asian countries such Korea because people in East Asian cultural contexts are not ashamed by following norms (Kim & Markuz, 1999; Paek et al., 2014). This is surprising because the participants in the current research were all European students[44]. Stated differently, this finding is consistent with prior studies showing that national culture (individualism versus collectivism) and self-construal (independent versus interdepend) produce a parallel effect (Matsumoto & Kupperbusch, 2001; Shavitt et al., 2006; Suh et al., 2008). Interestingly, Zhang et al. (2011) similarly discussed that a student in China with an independent self-construal might show a preference for German culture.

[44] Although Spain is slightly more collectivist than individualist, still we can consider Spain as a post-materialistic society with a high degree of freedom (Gouveia et al., 2003). In this regard, one study showed that individualism in Spain is remarkably higher than Asian countries, such as China (Fernández et al., 2005).

Second, these findings provide insight into the relationship between impulse buying and cultural components. These findings can account for the mixed results found by previous research. For instance, it is possible that individuals in high self-regulatory resource condition and with an interdependent self-construal might process a norm message emphasizing buying more healthy snacks, and hence buy less unhealthy snacks in the presence of others (e.g., as observed by Zhang and Shrum, 2008). In contrast, it is plausible that individuals in high self-regulatory resource condition and with interdependent self-construal might process norm message emphasizing buying more unhealthy snacks, and hence buy more unhealthy snacks in the presence of others and feels greater satisfaction with this buying (e.g., as observed with Lee & Kacen, 2008).

6.3. Theoretical implications

Our findings extend the literature in several areas. First and foremost, we consider our research to be the first empirical foundation for reflective and impulsive aspects of impulse buying behavior. While impulse buying has been considered as a product of the impulsive system (see Baumeister, 2002; Prestwich et al., 2011; Vohs, 2006; Vohs & Faber, 2007), the present research shows that impulse buying of unhealthy snacks can be differentially influenced by either impulsive system or reflective system as a function of the availability of self-regulatory resources. Based upon this discussion, we define impulse buying as a function of both reflective (i.e., goals and standards) and impulsive (i.e., impulse buying tendency and habit) systems depending on the availability of self-regulatory resources. Our results suggest that having enough self-regulatory resources does not protect people from unhealthy snack buying if they do not have personal standards regarding their diet. We agree that consumers engage in impulse buying "for a variety of non-economic reasons, such as fun, fantasy, and social or emotional gratification" (Hausman, 2000, p. 413). Therefore, while we consider impulse buying as an unavoidable part of everyday life in the modern

world, it is essential to take into account the situational factor (e.g., self-regulatory resources) as well as the impulsive and reflective components to determine the quality of purchase.

Second, applying habit as a predictor of impulse buying is a novel idea of this research. While the current body of literature distinguishes impulse buying from habitual purchases (Herabadi et al., 2009; Rook, 1987; Verplanken & Sato, 2011), the results of this research demonstrated habit as a strong predictor of impulse buying. This idea appears to be congruent with Rook and Hoch (1985), who regarded the frequency of purchased product as a criterion to distinguish impulse products. This finding corresponds with the fact that people usually have habits about what they buy and where they buy (East et al., 1994).

Third, our study can be conceived as an answer to Gardner et al.'s (2015) call for further theorizing around the precise role of habit in predicting health behavior. In this respect, our study is the first attempt at elucidating the simultaneous role of two impulsive components while they were conflicting with the reflective system. In this regard, while habit has been assumed to be a potential moderator of the impulsive system (e.g., Conner et al., 2007; Hofmann et al., 2008a), a recent meta-analysis suggested applying habit "as a determinant of action situated on a parallel, cue-driven pathway to behavior and variable, which can bypass deliberation" (Gardner et al., 2011, p. 185). Although several studies have suggested to investigate habit from a dual-systems perspective and propose it as an impulsive component (Gardner, 2015b; Gardner et al., 2011; Hofmann et al., 2011), to our knowledge just one study investigated habit as an impulsive determinant in the reflective-impulsive model (Presseau et al., 2014). In addition, while Presseau et al. (2014) admitted the importance of potential conflict between the impulsive and the reflective system, they studied those impulsive (habit) and reflective (intention) components working together without any psychological conflict. Moreover, to our best knowledge, few studies used

consumer impulsiveness as an impulsive component in a dual-system account (Honkanen et al., 2012; Vohs, 2006). Therefore, we regard our research as the first study of habit and impulse buying tendency acting as two impulsive determinants in a dual-system model while they are in conflict with the reflective system, and the existence of self-regulatory resources can determine the winner of this battle. While we consider impulse buying tendency as a "hot" urge and desire which can contain affective components, the habitual impulses generated by habit process can be considered as "cold" impulses which might not contain affective components (see Hofmann et al., 2011; Orbell & Verplanken, 2015).

Fourth, impulse buying has been theoretically conceptualized as a product of heuristic information processing (Verplanken & Sato, 2011; Xiao & Nicholson, 2013), whereas to our best knowledge only one study empirically tested this concept (Chen et al., 2016). Therefore, we consider our study fulfilling this gap by incorporating heuristics as determinants of impulse buying. More especially, while Chen et al. (2016) applied product-related textual information (e.g., numbers of "like") as heuristic cues, in the current research, we used descriptive norms acting as social proof heuristics. We argue that this idea, itself, has three main contributions: (a) while we acknowledge the previous studies incorporating the normative evaluation as a determinant of impulse buying (Omar & Kent, 2001; Rook & Fisher, 1995), the definition of normative evaluation by this body of knowledge seems ambiguous. For instance, Rook and Fisher (1995) applied the judgment of people about the appropriateness of impulse buying in a particular situation as a normative evaluation. However, based on the focus theory (Cialdini et al., 1991), norm theorists must be specific about whether they are referring to the descriptive or injunctive norm. The current study fulfilled this gap by applying descriptive norms acting as social proof heuristics. This idea was based on the premise that descriptive norms include more heuristic factors and young people

are more likely to pay attention to descriptive norm rather than the injunctive norm (Gibbons et al., 2003; Gibbons et al., 2009). (b) Applying descriptive norms acting as social proof heuristics also has a contribution to the dual-system theories. We proposed that this concept can distinguish the logic of the reflective-impulsive model from other dual-system models, such as the social reaction model (e.g., Gibbons et al., 1998; Gibbons et al., 2011). In this respect, while the social reaction model considers the social reaction path as a separate system from the reasoning system (i.e., reflective system), we showed that the social reaction path works as a temporary part of the reflective system. (c) In a general sense, this study has a contribution regarding the influence of social norms on consumer buying behavior. Although the effect of social norms has been studied in different domains of behavior (including healthy food choices and sustainable behavior such as grasscycling; see Robinson et al., 2014a; Salmon et al., 2014; White & Simpson, 2013), further research is needed to investigate the effect of social norms on consumer buying behavior (see Melynk et al., 2011). To the extent of our knowledge, only few studies have examined the effect social modelling on food purchase (Bevelander et al., 2011; Salmon et al., 2015). The current research addresses this gap by investigating the influence of interaction between social norm and self-regulatory resources on consumer impulse buying behavior. In this sense, we concur with Bevelander et al. (2011) arguing that purchase behavior can be affected by social influences in a way that is similar to eating behavior.

Fifth, integrating the focus theory (i.e., a social-psychological model) with a cultural-psychological perspective was a novel idea of this study. This idea, itself, has two main contributions: (a) it provides new insight into consumer impulse buying behavior. As discussed before, the effect of self-construal on impulse buying has been studied by prior research (e.g., Kacen & Lee, 2002) but the results were mixed (see Sharma et al., 2014b). In this study, we offer

a new approach by focusing on the descriptive norm, and how people with difference self-construals might follow the descriptive norm. In fact, this study takes a small first step to investigate impulse buying by those theories believing that even simple behavior (e.g., buying a café) can be determined by the way that the culture evaluates individual deviation from norms (e.g., Kim & Markus, 1999). For those with an independent self-construal, deviating from descriptive norm might be derived with the need to maintain a positive self-concept resulting from more focus on their internal attribute to promote their self-worth (see Cialdini & Goldstein, 2004). On the other hand, for those with an interdependent self-construal, following descriptive norm might be associated with a sense of belonging, cooperation and harmony (Ciladini & Goldstein, 2004; Higgs, 2015). (b) This idea has a contribution to those study attempting to outline the underlying reason for normative influences (e.g., Higgs, 2015; Robinson et al., 2014b). In this respect, Robinson et al. (2014b) called for further research regarding eating norms acting as a form of informational social influence (e.g., if others are doing it, I probably should be doing it). More especially, while changes in self-perception have been discussed by prior literature (e.g., Higgs, 2015), the effect of self-construals on conforming to descriptive norm has not been explored. This research fulfilled this gap.

6.4. Practical and managerial implications

Finally, the current findings have practical implications to improve people's health behavior in tempting situations based on Hofmann, Friese, and Wiers's (2008a) dual-systems perspective (see also Hofmann et al., 2011). By taking into account that a health-related behavior (e.g., unhealthy snacking) often commences with the purchase of snack products (Honkanen et al., 2012), we suggest an intervention strategy through which three components of our model simultaneously should be considered:

(1) *Change people's dietary restraint standards:* This change can be implemented by health-education (Hofmann et al., 2008a) through information about caloric balance and nutrition (Stunkard & Messick, 1985). In this respect, it has been discussed that governments should engage in all level to promote nutrition education in schools (Nestle & Jacobson, 2000). We think this dietary change is particularly important and relevant for those countries, like Spain, affected by obesity epidemic (Gutiérrez-Fisac et al., 2012).

(2) *Change impulsive precursors, including impulse buying tendency and habit*: Two approaches have been suggested by Veling and Aarts (2011), including (a) modifying the reward value of impulse-evoking objects by associating objects with negative affect (e.g., using fearful facial expression near the objects). In this vein, it has been shown that presenting fearful facial expression can control impulses toward rewarding food objects (Veling, Aarts, & Stroebe, 2011); (b) Associating rewarding objects with behavioral stop signal[45] (e.g., no-go cues). In this regard, it has been shown that using stop signal can reduce delicious food choice (Veling et al., 2013).

(3) *Creating situational circumstances through which the impulse can be overridden:* In this sense, according to the strength model, a series of exercises can be employed to increase self-regulatory strength, such as physical exercise and money management (Baumeister et al., 2006; Muraven & Baumeister, 2000). For instance, Muraven et al. (1999) investigated the influence of two weeks self-control exercises on students' self-control (e.g., improving posture and regulating mood). The results showed an improvement of self-control. Interestingly, it has been demonstrated that positive mood

[45] "Stop signals are cues in the environment that indicate that behaviour should be withheld" (Veling et al., 2013, p. 356).

(emotion) derived from watching a comedy movie can act against the self-regulatory resource depletion (Tice, Baumeister, Shmueli, & Muraven, 2007). Moreover, people can optimize their sleep and rest patterns in order to maximize their self-regulatory resources when most needed (Hofmann & Kotabe, 2012). Also, a series of self-control strategies have been suggested to consumers to override desires, including avoiding tempting situations and leaving the credit card at home (Hoch & Loewenstein, 1991). More especially, this physical avoidance from tempting situations not only can be considered as a self-control strategy, but also helps people to break their bad habits[46] (see Nilsen et al., 2012).

In addition, the results of this study encourage using descriptive norms as a sustainable way of promoting a healthy lifestyle. As discussed earlier, the results demonstrated that the current perception of descriptive norms can decrease unhealthy snack impulse buying. These findings alert governments and health policy-makers about the importance of group discussion and group education among young people (see Gibbons et al., 2011; Bevelander et al., 2011). The results of the current study suggest that it is crucial for young people to know what their peers are behaving. Therefore, we encourage having a group discussion to modify young people' perception regarding the behavior of their peers. This is based on the premise that young people usually have a misunderstanding about the dietary behavior of their peers (Lally, Bartle, & Wardle, 2011). For instance, it has been shown by prior research that usually young people overestimate the prevalence of alcohol consumption in their peers, and hence descriptive norm education has been offered to address this problem (Borsari & Carey, 2003). Also, the results regarding the current

[46] In this respect, one stream of research emphasizes the situations in which old habits are broken and new habits are established. For instance, implementation intentions have been introduced as a successful strategy in order to form new habits (see Verplanken, 2005; Verplanken, 2006).

perception of descriptive norms offer two more suggestions to the community. First, this norm perception would influence the unhealthy snacks impulse buying only for those with an interdependent self-construal. Therefore, the descriptive norm education should target those with an interdependent self-construal. Secondly, the result showed that the perception of descriptive norms influences unhealthy snack impulse buying only in the high self-regulatory resource condition. Therefore, for instance, it can be suggested that consumers should refrain from buying under time pressure because the behavior under time pressure can be elicited by the impulsive system (Friese et al., 2006).

Moreover, in this study, we also applied the descriptive norm message manipulation. The results have several managerial implications. The results firstly encourage those marketing campaigns promoting healthy purchases to use descriptive norms (e.g., what others are buying) only in those marketing channels stimulating cognitive deliberation (e.g., magazines) (Melnyk et al., 2011). It has also been suggested to avoid using this kind of message at the end of a working day or similar situations in which people usually do not have ample self-regulatory resources (Jacobson et al., 2011). It is based on the premise that the results of the current research showed that descriptive norm messages are processed by consumers only in the high self-regulatory resource condition. Moreover, we agree with the body of knowledge arguing that marketing campaigns using social norms might have adverse effects (e.g., Schultz et al., 2007). According to the results obtained in this study, a descriptive message in favor of healthy buying can increase unhealthy snack purchases. Thus, we agree that social norms can both spur and guide human behavior, and hence it might be more complicated than it first appears (Burger et al., 2010; Cialdini et al., 2006). For example, one study showed that using descriptive norm increased the theft of petrified wood from Arizona's Petrified Forest National Park (Cialdini et al., 2006). Taken

together, the results of the current study suggests that descriptive norm manipulation needs to be well designed by managers or marketers to promote desirable behavior. For example, it has been shown that while using sole descriptive norms caused boomerang effect, combining descriptive norms with injunctive norms (i.e., what most people approve) eliminated the boomerang effect (Schultz et al., 2007). Moreover, "not all norm messages are effective for everyone" (Paek et al., 2014). In this respect, the results of the current research showed that norm messages might increase the unhealthy snacks purchases for women, and for those who do not believe that others buy healthy snacks.

6.5. Limitations and suggestions for future research

Some limitations of the present study and direction for possible future studies should be discussed. While it has been suggested that both situational and dispositional boundary conditions can be applied as moderators in this dual-systems perspective (Hofmann et al., 2009; Hofmann et al., 2008a), we only applied one of the possible situational factors in the present research, the so-called self-regulatory resources. In addition, it can be argued that people with higher self-control trait are less vulnerable to self-control demands (versus those low in self-monitoring) (Muraven et al., 2005). As a consequence, it is plausible to assume that the effect of self-regulatory resource depletion might vary based on trait self-control (Hagger et al., 2010). Therefore, we encourage more study regarding the influence of other situational (e.g., cognitive load and alcohol consumption) and dispositional (e.g., trait self-control, self-monitoring and working memory capacity) moderators. Interestingly, since sleep can be viewed as the primary way of regaining self-regulatory resources (see Hofmann & Kotabe, 2012; Muraven et al., 2005), it can be proposed that people might have more self-regulatory resources during the day compared with evening or night. In this regard, while we have done this research in a controlled experiment, we suggest

further research with collecting data prospectively (Muraven et al., 2005) through which the effect of self-control demands in a different time of day can be framed. This idea also helps to study the self-control demand in a different time of day when people feel hungry (see Bevelander et al., 2011). Furthermore, by taking into account the fact that impulse buying is prevalent in online environments (Chen et al., 2016; Dawson & Kim, 2009; Ek Styven et al., 2017), we call further research in an online setting, such as mobile auction platforms (see Chen & Yao, 2018).

While there is a consensus among researchers to measure the reflective system by an explicit measure of verbal self-reports (Hofmann et al., 2009; Hofmann et al., 2008a), there is currently no consensus regarding measuring the impulsive system. On the one hand, it has been recommended that the new class of implicit measurement tools (e.g., Implicit Association Test) are the most appropriate tools for assessing impulses (Hofmann et al., 2009; Hofmann et al., 2008a). On the other hand, others argued that it may be unwise to assume that implicit measures are the only tools to tap the effect of the impulsive system on behavior (see Conner, Prestwich, & Ayres, 2011; Gibbons et al., 2011). For example, Conner et al. (2011) argued that "there is little evidence that implicit measures show incremental validity in predicting health behaviors". These authors even provided some evidence showing that "the explicit measure of affective attitude was the sole significant predictor of behavior" (Conner et al., 2011, p. 147). Based on this body of literature, explicit measures (i.e., self-report scales) are also appropriate to predict risk behavior (see Conner et al., 2011; Gibbons et al., 2011). However, while both self-report measures of impulsivity and behavioral task can predict behavior, these tools measure different aspects of impulsivity, and hence they have their pros and cons (Guerrieri et al., 2007). Therefore, although in the current research we have accepted the self-report of impulse buying tendency and habit as a tool to assess the impulses, we concur with Hofmann et al. (2011), who suggested a multitrait-

multimethod (MTMM) design through which both affective self-report and implicit measures can be employed to investigate the impulsiveness system. Future research seems desirable to use this recommended method. Also, regardless of the type of measure, future studies will need to identify other factors representing the impulsive-reflective precursors of impulse buying. For instance, we suggest that future studies examine the "need for touch" as an impulsive component because this construct contains some automatic processes (see Peck & Childers, 2003). Furthermore, we encourage future studies to consider factors such as attitude towards buying as a reflective determinant of impulse buying (see Prestwich et al., 2011).

In addition, reliance on a specific domain of behavior (e.g., unhealthy snacks buying) can cause another limitation of the current research (see Jacobson et al., 2011). In fact, the dual-system model was developed based on unhealthy snack impulse buying, which cannot be directly generalized to other domain of impulse buying behavior. Thus, we recommend future research to adopt the logic of the proposed model to a different area of buying behavior. Moreover, using young university students threatens the generalizability and external validity of the current research (see Salmon et al., 2014). Although there is no convincing evidence that students and adults might be different in terms of collectivism and individualism, the operation of self-control strength, and norm following (Muraven et al., 2005; Oyserman et al., 2002; Salmon et al., 2014), we still concern the generalizability of our findings. Therefore, while we discussed the importance and the prevalence of unhealthy snacks among young people, there is a need to investigate the proposed model with a broader sample.

Moreover, as we discussed earlier, the failure in the descriptive norm can be attributed to the fact that the participants did not believe the normative message. While we only used one norm message (i.e., 75% of students had purchased healthy snack), we recommend future research to

test the effect of different types of norm messages (e.g., the percentage varying from 65% to 85%; see Salmon et al., 2014). Furthermore, the failure can be attributed to the nature of the applied norm message. Thus, we suggest applying social norms targeting the number of food purchased rather than food choices (see Higgs, 2014; Robinson et al., 2014b). Also, while we discussed the importance of descriptive norms for young people, descriptive norm message accompanied with the injunctive norm is recommended to avoid adverse effects (Schultz et al., 2007). Therefore, we encourage more research regarding the interaction between descriptive norm and injunctive norm.

Another limitation concerns the cultural components of the proposed model. Firstly, as we discussed earlier, power distance also can be a determinant of impulse buying. Therefore, we encourage more research by taking into account the effect of power distance. Secondly, while we adopted the concept of self-construal as an individual level of collectivism and individualism and we discussed that they produce parallel results, there are concerns about this concept (see Levine et al., 2003; Matsumoto, 1999). Park and Levine (1999), for instance, argued that the meaning of interdependent self-construal might be different in the USA in comparison with Korea. Therefore, while we showed that our results correspond with prior cross-national studies, we encourage future research applying cross-national studies.

7. References

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8. Appendices

Appendix A. Pilot study (product selection)

Appendix B. Pilot study (self-construal priming)

Appendix C. Experiment 1

Appendix D. Experiment 2

Appendix A. Pilot study (product selection)

Consent form

You are invited to participate in a research study asking your opinion about some foods. PARTICIPANT'S RIGHTS: We inform you that the whole study will take approximately 10 minutes to complete. If you have read this form and have decided to participate in this project, please understand your participation is voluntary and you have the right to withdraw your consent or discontinue participation at any time without penalty .

Risks and privacy: We inform you that your participation in this study does not involve any physical or emotional risk to you beyond that of everyday life. The data for this project are being collected anonymously.

CONTACT INFORMATION: If you have any questions, concerns or complaints about this research, its procedures, risks, and benefits, contact the researcher, Meysam Moayery, at Meysam.Moayery@opendeusto.es.

I voluntarily agree to participate in this study by circling below:

Yes

No

In the following you will see the name and picture of different food products. Please read the sentences in the tables and indicate your opinion by circling the number that best matches your opinion.

1. Chocolate Bar 

	1= not at all			4= moderately			7= very much
It is good for you	1	2	3	4	5	6	7
It is attractive	1	2	3	4	5	6	7
It is healthy	1	2	3	4	5	6	7

2. Donut 

	1= not at all			4= moderately			7= very much
It is good for you	1	2	3	4	5	6	7
It is attractive	1	2	3	4	5	6	7
It is healthy	1	2	3	4	5	6	7

3. Cookie 

	1= not at all			4= moderately			7= very much
It is good for you	1	2	3	4	5	6	7
It is attractive	1	2	3	4	5	6	7
It is healthy	1	2	3	4	5	6	7

4. Apple 

	1= not at all			4= moderately			7= very much
It is good for you	1	2	3	4	5	6	7
It is attractive	1	2	3	4	5	6	7
It is healthy	1	2	3	4	5	6	7

5. Mandarin 

	1= not at all			4= moderately			7= very much
It is good for you	1	2	3	4	5	6	7
It is attractive	1	2	3	4	5	6	7
It is healthy	1	2	3	4	5	6	7

6. Pears 

	1= not at all			4= moderately			7= very much
It is good for you	1	2	3	4	5	6	7
It is attractive	1	2	3	4	5	6	7
It is healthy	1	2	3	4	5	6	7

Appendix B. Pilot study (self-construal priming)

Consent form

You are invited to participate in a research study asking your opinion about a video game character.

PARTICIPANT'S RIGHTS: We inform you that the whole study will take approximately 10 minutes to complete. If you have read this form and have decided to participate in this project, please understand your participation is voluntary and you have the right to withdraw your consent or discontinue participation at any time without penalty .

Risks and privacy: We inform you that your participation in this study does not involve any physical or emotional risk to you beyond that of everyday life. The data for this project are being collected anonymously.

CONTACT INFORMATION: If you have any questions, concerns or complaints about this research, its procedures, risks, and benefits, contact the researcher, Meysam Moayery, at Meysam.Moayery@opendeusto.es.

I voluntarily agree to participate in this study by circling below:

Yes

No

Independent self-construal priming

The aim of this study is to evaluate a video game character. Legendary characters have been widely used in video games and that in many games the player assumes the role of the character. Please imagine that you are a "Sostoras", an ancient Sumerian warrior and then read the following story carefully:

I, Sostoras, a warrior in ancient Sumer, was largely responsible for the success of "Sargon" in conquering all of "Mesopotamia". As a result, I was rewarded with a small kingdom to rule. About 10 years later, Sargon was conscripting warriors for a new war. I was obligated to send a detachment of soldiers to aid Sargon. I had to decide who to put in command of the detachment. After thinking about it for a long time, I eventually decided on "Tiglath" who was a talented general. This appointment had several advantages. I was able to make an excellent general indebted to me. This would solidify my hold on my own dominion. In addition, the very fact of having a general such as Tiglath as my personal representative would greatly increase my prestige. Finally, sending my best general would be likely to make Sargon grateful. Consequently, there was the possibility of getting rewarded by Sargon.

After reading the story please answer to the following questions:

1. Please help us by writing three new ways in which "Sostoras" could help himself more.

Interdependent self-construal priming

The aim of this study is to evaluate a video game character. Legendary characters have been widely used in video games and that in many games the player assumes the role of the character. Please imagine that you are a "Sostoras", an ancient Sumerian warrior and then read the following story carefully:

I, Sostoras, a warrior in ancient Sumer, was largely responsible for the success of "Sargon" in conquering all of "Mesopotamia". As a result, I was rewarded with a small kingdom to rule. About 10 years later, Sargon was conscripting warriors for a new war. I was obligated to send a detachment of soldiers to aid Sargon. I had to decide who to put in command of the detachment. After thinking about it for a long time, I eventually decided on "Tiglath" who was a member of my family. This appointment had several advantages. I was able to show my loyalty to my family. I was also able to cement their loyalty to me. In addition, having Tiglath as the commander increased the power and prestige of my family. Finally, if Tiglath performed well, Sargon would be indebted to my family.

After reading the story please answer to the following questions:

1. Please help us by writing three new ways in which "Sostoras" could help his family more.

2. Please indicate to what extent you agree or disagree with the following sentences after reading the story. Please circle the number for each sentence that shows you are in favor of it or against it.

	1= strongly disagree	2= disagree	3= somewhat disagree	4= neither agree nor disagree	5= somewhat agree	6= agree	7= strongly agree
a.This story encouraged me to think of myself	1	2	3	4	5	6	7
b. At this moment, I am focused on myself	1	2	3	4	5	6	7
c. Right now, a sense of 'I' is at the top of my mind	1	2	3	4	5	6	7
d. This story encouraged me to think of others I care bout	1	2	3	4	5	6	7
e. At this moment, I am focused on others I care about	1	2	3	4	5	6	7
f. Right now, a sense of 'We' is at the top of my mind	1	2	3	4	5	6	7

Appendix C. Experiment 1

Consent form

You are invited to participate in a research that concerns "Marketing and Entertainment". We inform you that the whole study will take approximately 25 minutes to complete.

Benefits and Rights: You will receive 3 Euros as payment for your participation. If you have read this form and have decided to participate in this project, please understand your participation is voluntary and you have the right to withdraw your consent or discontinue participation at any time without penalty. The data for this project are being collected anonymously.

Very important: We ask you to avoid speaking or explaining about this research for others until the end of this study at the end of March 2017.

I voluntarily agree to participate in this study by circling below:

Yes

No

First section: Marketing

1.1. Please indicate to what extent you agree or disagree with the following sentences about your buying attitude (buying in general and not special product).

	1= strongly disagree	2= disagree	3= somewhat disagree	4= neither agree nor disagree	5= somewhat agree	6= agree	7= strongly agree
a. I usually think carefully before I buy something.	1	2	3	4	5	6	7
b. I usually only buy things that I intended to buy.	1	2	3	4	5	6	7
c. If I buy something, I usually do that spontaneously.	1	2	3	4	5	6	7
d. Most of my purchases are planned in advance.	1	2	3	4	5	6	7
e. I only buy things that I really need.	1	2	3	4	5	6	7
f. It is not my style to just buy things.	1	2	3	4	5	6	7
g. I like to compare different brands before I buy one.	1	2	3	4	5	6	7
h. Before I buy something I always carefully consider whether I need it.	1	2	3	4	5	6	7
i. I am used to buying things ‘on the spot’.	1	2	3	4	5	6	7

	1= strongly disagree	2= disagree	3= somewhat disagree	4= neither agree nor disagree	5= somewhat agree	6= agree	7= strongly agree
j. I often buy things without thinking.	1	2	3	4	5	6	7
k. It is a struggle to leave nice things I see in a shop.	1	2	3	4	5	6	7
l. I sometimes cannot suppress the feeling of wanting to buy something.	1	2	3	4	5	6	7
m. I sometimes feel guilty after having bought something.	1	2	3	4	5	6	7
n. I'm not the kind of person who 'falls in love at first sight' with things I see in shops.	1	2	3	4	5	6	7
o. I can become very excited if I see something I would like to buy.	1	2	3	4	5	6	7
p. I always see something nice whenever I pass by shops.	1	2	3	4	5	6	7
q. I find it difficult to pass up a bargain.	1	2	3	4	5	6	7
r. If I see something new, I want to buy it.	1	2	3	4	5	6	7
s. I am a bit reckless in buying things.	1	2	3	4	5	6	7
t. I sometimes buy things because I like buying things, rather than because I need them.	1	2	3	4	5	6	7

Second section: Entertainment

(Depletion condition)

2.1. In this part, we ask you to watch nine minutes of a movie called "American History X". Please pay attention that **"you should suppress any feelings (like happiness and sadness) that come up while watching this clip and remain completely neutral so that another person looking at you would not be able to identify from your face whether the film was funny or sad" (Very important: You are being videotaped while watching this movie in order to see that you can prevent your face to show any emotion).**

Please **inform us when you reach this point of the questionnaire.**

After watching the clip, please answer the following questions**.**

(Control condition)

2.1. In this part, we ask you to watch nine minutes of a movie called "American History X". Please, watch the movie as if you were at the cinema and feel free to show any feelings. **(Very important: You are being videotaped while watching this movie)**

Please **inform us when you reach this point of the questionnaire.**

After watching the clip, please answer the following questions**.**

2.2. How hard was it for you to follow the instruction given to you for watching the video clip?

Very easy

Easy

Somehow easy

Neither easy nor hard

Somehow hard

Hard

Very hard

2.3. Do you think this movie is appropriate for children?

Yes No

2.4. 2.4. This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer. Indicate to what extent you feel this way **right now**. Use the following scale to record your answers.

	1= Very slightly or not at all	2= A little	3= Mooderately	4= Quite a bit	5= Extermely
interested	1	2	3	4	5
distressed	1	2	3	4	5
excited	1	2	3	4	5
upset	1	2	3	4	5
strong	1	2	3	4	5
guilty	1	2	3	4	5
scared	1	2	3	4	5
Hostile	1	2	3	4	5
Enthusiastic	1	2	3	4	5
proud	1	2	3	4	5
irritable	1	2	3	4	5
alert	1	2	3	4	5
ashamed	1	2	3	4	5
inspired	1	2	3	4	5
nervous	1	2	3	4	5
determined	1	2	3	4	5
attentive	1	2	3	4	5
jittery	1	2	3	4	5
active	1	2	3	4	5
afraid	1	2	3	4	5

End of the second section. **Pleas**e inform us whenever you reach this point of the questionnaire.

Third section: product evaluation test

3. In this part of the study, to have a break and to express our appreciation for your participation in our study, we ask you to take part in an activity that includes the introduction of a set of new products run by university's cafeteria. Since the university's cafeteria is interested to know whether students like these products, the products are offered at really good prices. You will receive 3 euros from us and you can spend all or a part of that in buying the products or you can take the whole of money at the end of this study.

After buying your product please answer to the **question in the next page.**

3.1. If you have selected something to buy from the products, please write what you have selected (By name and quantity).

Product 1:…….. quantity……..

Product 2:…….. quantity……..

Product 3:…….. quantity……..

Product 4:…….. quantity……..

Product 5:…….. quantity……..

3.2.Do you like these products?

Yes ○ No ○

End of the third section. Please answer to the fourth section (final) in the next pages.

Forth section: personal value and personal perception

4.1. In this part, you are asked to answer questions about your personal perception about food.

	1= Definitely true	2= Mostly true	3= Mostly false	4= Definitely false
a. I delibertaley take small helpings as a means of controlling my weight.				
b. I consciously hold back at meals in order not to weight gain.				
c. I do not eat some foods because they make me fat.				

d. How frequently do you avoid “stocking up” on tempting food?

Almost never ⬭ Seldom ⬭ Usually ⬭ Almost always ⬭

e. How likely are you to consciously eat less than you want?

Unlikely ⬭ slightly likely ⬭ moderately likely ⬭ very likely ⬭

f. On a scale of 1 to 18, where 1 means no restraint in eating (eating whatever you want) and 8 means total restraint (constanly limiting food intake and never “giving in”), what number would you give yourfel?

No restraint 1 2 3 4 5 6 7 8 total restraint

4.2. If you want to complete the following sentence with the sentences in the table based on your own experience, to what extent you are agree or disagree with the sentences in the table?

Buying chocolates and sweets is something ……..

	1= strongly disagree	2= disagree	3= somewhat disagree	4= neither agree nor disagree	5= somewhat agree	6= agree	7= strongly agree
….I do frequently.	1	2	3	4	5	6	7
…. I do automatically.	1	2	3	4	5	6	7
…. I do without having to consciously remember.	1	2	3	4	5	6	7
...that makes me feel weird if I do not do it.	1	2	3	4	5	6	7
….I do without thinking.	1	2	3	4	5	6	7
…. would require effort not to do it.	1	2	3	4	5	6	7
…. that belongs to my (daily, weekly, monthly) routine.	1	2	3	4	5	6	7
.. I start doing before I realize I'm doing it.	1	2	3	4	5	6	7
…. I would find hard not to do.	1	2	3	4	5	6	7
…. I have no need to think about doing.	1	2	3	4	5	6	7
…. that's typically 'me'.	1	2	3	4	5	6	7
…. I have been doing for a long time.	1	2	3	4	5	6	7

4.3. If you want to complete the following sentence with the sentences in the table based on your own experience, to what extent you are agree or disagree with the sentences in the table?

Buying fruits is something…….

	1= strongly disagree	2= disagree	3= somewhat disagree	4= neither agree nor disagree	5= somewhat agree	6= agree	7= strongly agree
….I do frequently.	1	2	3	4	5	6	7
…. I do automatically.	1	2	3	4	5	6	7
…. I do without having to consciously remember.	1	2	3	4	5	6	7
...that makes me feel weird if I do not do it.	1	2	3	4	5	6	7
….I do without thinking.	1	2	3	4	5	6	7
…. would require effort not to do it.	1	2	3	4	5	6	7
…. that belongs to my (daily, weekly, monthly) routine.	1	2	3	4	5	6	7
.. I start doing before I realize I'm doing it.	1	2	3	4	5	6	7
…. I would find hard not to do.	1	2	3	4	5	6	7
…. I have no need to think about doing.	1	2	3	4	5	6	7
…. that's typically 'me'.	1	2	3	4	5	6	7
…. I have been doing for a long time.	1	2	3	4	5	6	7

What is your age?

What is your gender?

Male Female

What is your weight? (In Kg)

What is your height? (In meters)

Thanks for you participation. We highly appreciate your contribution to our study and if there is any doubt please let us know by sending us email. If you have any questions, concerns or complaints about this research, its procedures, risks and benefits, please contact the researcher, Meysam Moayery, at Meysam.Moayery@opendeusto.es.

Appendix D. Experiment 2

Consent form

You are invited to participate in a research that concerns "Marketing and Entertainment". We inform you that the whole study will take approximately 25 minutes to complete.

Benefits and Rights: You will receive 3 Euros as payment for your participation. If you have read this form and have decided to participate in this project, please understand your participation is voluntary and you have the right to withdraw your consent or discontinue participation at any time without penalty .The data for this project are being collected anonymously.

Very important: We ask you to avoid speaking or explaining about this research for others until the end of this study at the end of March 2017.

I voluntarily agree to participate in this study by circling below:

Yes

No

First section: Marketing

1. To what extent, do you believe that the majority of other students in the University of Deusto buy fruits as a snack?

1= Not at all						7= Absolutely
1	2	3	4	5	6	7

Second section: Entertainment

(Depletion condition)

2.1. In this part, we ask you to watch nine minutes of a movie called "American History X". Please pay attention that **"you should suppress any feelings (like happiness and sadness) that come up while watching this clip and remain completely neutral so that another person looking at you would not be able to identify from your face whether the film was funny or sad" (Very important: You are being videotaped while watching this movie in order to see that you can prevent your face to show any emotion).**

Please **inform us when you reach this point of the questionnaire.**

After watching the clip, please answer the following questions**.**

(Control condition)

2.1. In this part, we ask you to watch nine minutes of a movie called "American History X". Please, watch the movie as if you were at the cinema and feel free to show any feelings. **(Very important: You are being videotaped while watching this movie)**

Please **inform us when you reach this point of the questionnaire.**

After watching the clip, please answer the following questions**.**

2.2. How hard was it for you to follow the instruction given to you for watching the video clip?

Very easy

Easy

Somehow easy

Neither easy nor hard

Somehow hard

Hard

Very hard

2.3. Do you think this movie is appropriate for children?

Yes No

2.4. This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer. Indicate to what extent you feel this way **right now**. Use the following scale to record your answers.

	1= Very slightly or not at all	2= A little	3= Mooderately	4= Quite a bit	5= Extermely
interested	1	2	3	4	5
distressed	1	2	3	4	5
excited	1	2	3	4	5
upset	1	2	3	4	5
strong	1	2	3	4	5
guilty	1	2	3	4	5
scared	1	2	3	4	5
Hostile	1	2	3	4	5
Enthusiastic	1	2	3	4	5
proud	1	2	3	4	5
irritable	1	2	3	4	5
alert	1	2	3	4	5
ashamed	1	2	3	4	5
inspired	1	2	3	4	5
nervous	1	2	3	4	5
determined	1	2	3	4	5
attentive	1	2	3	4	5
jittery	1	2	3	4	5
active	1	2	3	4	5
afraid	1	2	3	4	5

End of the second section. **Pleas**e inform us whenever you reach this point of the questionnaire.

Third section: product evaluation test

3. In this part of the study, to have a break and to express our appreciation for your participation in our study, we ask you to take part in an activity that includes the introduction of a set of new products run by university's cafeteria. Since the university's cafeteria is interested to know whether students like these products, the products are offered at really good prices. You will receive 3 euros from us and you can spend all or a part of that in buying the products or you can take the whole of money at the end of this study.

After buying your product please answer to the **question in the next page.**

3.1. If you have selected something to buy from the products, please write what you have selected (By name and quantity).

Product 1:…….. quantity……..

Product 2:…….. quantity……..

Product 3:…….. quantity……..

Product 4:…….. quantity……..

Product 5:…….. quantity……..

3.2. Do you like these products?

Yes ○ No ○

End of the third section. Please answer to the fourth section (final) in the next pages.

Forth section: personal value and personal perception

4.1. In this part, you are asked to answer questions about your personal value (Note: Group in this scale refers to friends and peers in the University of Deusto).

	1= Totally disagree	2= Disagree	3= Agree	4= Totally agree
a. I would stay in a group if they needed me, even if I were not happy with the group.	1	2	3	4
b. I will sacrifice my self-interest for the benefit of the group I am in.	1	2	3	4
c. I often have the feeling that my relationships with others are more important than my own accomplishments.	1	2	3	4
d. It is important for me to respect decisions made by the group.	1	2	3	4
e. My happiness depends on the happiness of those around me.	1	2	3	4
f. I enjoy being unique and different from others in many respects.	1	2	3	4
g. I am comfortable with being singled out for praise or rewards.	1	2	3	4
h. My personal identity is independent of others, is very important for me.	1	2	3	4
i. I act the same way no matter who I am with.	1	2	3	4
j. I prefer to be direct and forthright when dealing with people I've just met.	1	2	3	4
k. I'd rather say "no" directly, than risk being misunderstood.	1	2	3	4
l. It is important for me to maintain harmony within my group.	1	2	3	4

4.2. If you want to complete the following sentence with the sentences in the table based on your own experience, to what extent you are agree or disagree with the sentences in the table?

Buying chocolates and sweets is something ……..

	1= strongly disagree	2= disagree	3= somewhat disagree	4= neither agree nor disagree	5= somewhat agree	6= agree	7= strongly agree
….I do frequently.	1	2	3	4	5	6	7
…. I do automatically.	1	2	3	4	5	6	7
…. I do without having to consciously remember.	1	2	3	4	5	6	7
...that makes me feel weird if I do not do it.	1	2	3	4	5	6	7
….I do without thinking.	1	2	3	4	5	6	7
…. would require effort not to do it.	1	2	3	4	5	6	7
…. that belongs to my (daily, weekly, monthly) routine.	1	2	3	4	5	6	7
.. I start doing before I realize I'm doing it.	1	2	3	4	5	6	7
…. I would find hard not to do.	1	2	3	4	5	6	7
…. I have no need to think about doing.	1	2	3	4	5	6	7
…. that's typically 'me'.	1	2	3	4	5	6	7
…. I have been doing for a long time.	1	2	3	4	5	6	7

4.3. If you want to complete the following sentence with the sentences in the table based on your own experience, to what extent you are agree or disagree with the sentences in the table?

Buying fruits is something…….

	1= strongly disagree	2= disagree	3= somewhat disagree	4= neither agree nor disagree	5= somewhat agree	6= agree	7= strongly agree
….I do frequently.	1	2	3	4	5	6	7
…. I do automatically.	1	2	3	4	5	6	7
…. I do without having to consciously remember.	1	2	3	4	5	6	7
...that makes me feel weird if I do not do it.	1	2	3	4	5	6	7
….I do without thinking.	1	2	3	4	5	6	7
…. would require effort not to do it.	1	2	3	4	5	6	7
…. that belongs to my (daily, weekly, monthly) routine.	1	2	3	4	5	6	7
.. I start doing before I realize I'm doing it.	1	2	3	4	5	6	7
…. I would find hard not to do.	1	2	3	4	5	6	7
…. I have no need to think about doing.	1	2	3	4	5	6	7
…. that's typically 'me'.	1	2	3	4	5	6	7
…. I have been doing for a long time.	1	2	3	4	5	6	7

What is your age?

What is your gender?

Male Female

What is your weight? (In Kg)

What is your height? (In meters)

Thanks for you participation. We highly appreciate your contribution to our study and if there is any doubt please let us know by sending us email.If you have any questions, concerns or complaints about this research, its procedures, risks and benefits, please contact the researcher, Meysam Moayery, at Meysam.Moayery@opendeusto.es.