Going to Extremes: An Investigation into Consumers' Excessive Behaviours

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Certificate of Authenticity

I, Alex Belli, declare that this thesis, is submitted in fulfilment of the requirements for the award of Doctor of Philosophy in the Business School at the University of Technology Sydney. This thesis is wholly my own work unless otherwise reference or acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis. This document has not been submitted for qualifications at any other academic institution. This research is supported by the Australian Government Research Training Program.

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Preface

Excess has become an integral part of the 21st century consumer's lifestyle. Indeed, more and more often do we read about issues such as addictions, binging behaviours and overdoses in the news, which are all issues stemming from excessive behaviours. For example, a recent survey about technology usage among Australians showed that respondents tend to check their phones every 12 minutes from the moment they wake up until the moment they go to bed (Taylor 2018). Other surveys estimated that 47% of Australians with an eating disorder suffer from binge eating (Eating Disorders Victoria 2018) whereas around 20% of Australians over the age of 14 drink a risky amount of alcohol at least once a year (Health Direct 2017). The gravity and the pervasiveness of these issues have urged companies to rethink their policies, strategies and initiatives in order to shift their main focus on consumers' wellbeing.

Specifically, the growing concern of marketing practices not being ethical and focusing on a company's profits has been sensitising researchers in the past few decades towards societal issues that ensue from consumption (Sirgy and Lee 1996, 2006; Tang, Guo and Gopinath 2016). This trend has given rise to original research in consumer psychology and in decision making aimed at encouraging companies and public policy practitioners to implement strategies that enable consumers to help them flourish psychologically, prosper and pursue happiness (Mazis 1997; Mogilner, Aaker and Kamvar 2012). This broad area of research, which sets out to improve people's quality of life, encompasses several streams such as that of consumer well-being, "transformative consumer research" and "nudging". Specifically, as part of this dissertation project, the author decided to focus on three different aspects of "excess" and its impact on consumers' wellbeing – excessive decision-making (i.e. maximization), excessive risk-taking and excessive consumption.

First, the term consumer well-being (CWB) refers to individual's cognitive and affective appraisals of their experiences with consumer goods and services, and, broadly speaking, with the whole consumption process (Lee, Syrgy, Larse and Wright 2002; Sirgy, Lee and Rahtz 2007). Suranyi-Unger Jr (1981) suggests that consumer well-being is synonym with individual well-being, which refers to one's satisfaction with their own life, presence of positive affect and lack of negative affect (Diener, Suh and Oishi 1997). Therefore, being able to identify needs, wants and interests of consumers and meet them efficiently leads marketing practitioners to play an essential role in enhancing one's quality of life (Kotler 1986).

Within this area of investigation, scholars have analyzed how one's decision-making strategy affects their overall well-being. Traditionally, decision makers have been categorized as either maximizers or satisficers (Schwartz, Ward, Lyubomirsky et al. 2002; Schwartz 2004). Maximizers represent those individuals that tend to exhaustively seek the best option when they make a choice, i.e. they select the alternative which is more likely to result in the maximum benefits available or the highest utility (Simon 1955; Paivandy, Bullock, Reardon et al. 2008). In contrast, satisficers are those individuals that tend to be content with a "good enough" option and don't obsess over other alternatives (Schwartz 2004). This literature stream thus far has failed to propose a unified view on whether being a maximizer is actually detrimental for individuals, showing contrasting results. In order to resolve this debate, the first essay of the current dissertation project meta-analyzes 196 effect sizes retrieved from 57 published and unpublished articles and examines the effects of maximization on both the positive and negative dimensions of well-being. As well as testing some of the well-established moderators of the effects (e.g. using different maximization scales), this study also attempts to propose a new account for the so-called "maximization paradox" (Dar-Nimrod, Rawn, Lehman and Schwartz 2009), phenomenon that refers to maximizers' willingness to have more choice alternatives to the extent that it undermines their well-being. This essay, called "*Maximizing Choice but Minimizing Well-being: A Meta-analysis on the Maximization Paradox"*, will

discuss theoretical, methodological and public policy/managerial implications light of the findings.

Second, transformative consumer research (TCR) represents a theory-based research stream that explores individual and group-level issues and opportunities related to consumption with the aim of enhancing consumer well-being (Mick 2008; Ozanne, Mick, Pechmann and Pettigrew 2015). Part of this movement has focused on the use "nudges", i.e. elements of choice architecture that modifies people's behaviour in a predictable way without forbidding options or changing their economic incentives (Thaler and Sunstein 2008). In this domain, researchers have investigated, for instance, whether disclosing calories of food options on menus affects healthy choices (Zlatevska, Neumann and Dubelaar 2017), and whether grouping low-calorie options could be an effective alternative (Parker and Lehmann 2014). The second and third essays of this PhD dissertation fall into this research stream.

The second essay, titled *"Is Time Pressure a Risky Business? A Meta-analysis"*, analyses whether time pressure induces risk-seeking, and under what circumstances this occurs. Over time, studies have showed mixed results, demonstrating time pressure could both lead to risk-taking and risk-aversion (Busemeyer 1985). More recently, Saqib and Chan (2015) have proposed a "risk-preference reversal" effect under time pressure, in that they found the effects predicted by Tversky and Kahneman's (1981) prospect theory were reversed in such conditions. However, their contingency effect did not replicate in other studies (e.g. Guo et al. 2017), advocating for further analysis of moderating effects of the effect.

This project meta-analyses a total of 102 effect sizes divided into three subgroups to separately test whether framing effects, probability of the best possible outcomes, expected values and other moderators explain the relationship between time pressure and risk seeking. The study also tests for novel moderators that have not been addressed directly in primary studies, such as the role of ambiguous risk information and the role of the person affected by the outcomes of the risky decision.

The third and last essay, *"Beating the Clock: How Time Pressure Triggers Overconsumption"* uses a series of scenario-based and lab experiments to test whether time pressure leads people to overconsume (eat or drink). This study was inspired by the Sydney lockout laws, a set of regulations preventing the sale of alcoholic drinks in clubs after 3 am as a measure to fight alcohol-related violence (Ménedez, Weatherburn, Kypri and Fitzgerald 2015; New South Wales Government 2016) and attempts to provide public policy makers insights into the effects of the policy. Relying on the theory of affective forecasting, the future (forecasted) emotional state of an individual dictates their present decisions (MacInnis and Patrick 2006; Wilson and Gilbert 2005). The paper investigates whether time pressure creates a feeling of anticipated regret or "a feeling of missing out" (Wiltermouth and Gino 2013), hence creating a discrepancy within the individual causing a compensatory consumption behaviour aimed at restoring balance (Lee, Rotman and Perkins 2014). Alongside testing this hypothesis, the study also proposes (but does not test for) boundary conditions of this effect. For instance, we suppose that priming savouring, i.e. "awareness of current pleasure from a target-specific consumption experience" (Chun, Diehl and MacInnis 2017), or reducing portions could limit overconsumption under time pressure.

The author believes these three essays will not only contribute to the current consumer well-being literature, but will also substantially benefit consumers, researchers, public policy makers and marketing practitioners in that it provides insights into how excessive decision-making affects life quality, and how marketing strategies based on time pressure will impact on risk-seeking and overconsumption. Overall, the author believes the findings of these studies will provide new perspectives and avenues for better marketing practices.

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Essay 1

Maximizing Choice but Minimizing Well-being: A Meta-Analysis on the Maximization Paradox

Abstract

Empirical evidence has suggested that individuals adopting a maximizing decision-strategy ("only the best will do") are victims of a "paradox", in that the effort they expend to enlarge their choice sets and search for the best option ultimately imperils their wellbeing. However, recent research has challenged the commonly held beliefs that maximization is detrimental for an individual's wellbeing and that overchoice is the main culprit of this phenomenon. In order to overcome these assumptions, we conducted two multi-level meta-analyses on 197 effect sizes, focusing on the effects of maximization on both positive and negative wellbeing. First, we found that maximization is a "double jeopardy" for decision-makers, as it increases negative wellbeing and reduces positive wellbeing. In addition, these effects are mitigated by how the maximization trait is conceptualized (high standards dimension only versus multiple dimensions), the type of wellbeing studied (eudaimonic versus positive hedonic wellbeing) and the decision context (consumption vs others). Furthermore, this study revisits and provides a more comprehensive account of the "maximization paradox" and the assumption that having too much choice decreases maximizers' wellbeing. Our results offer insights for marketing and public policy and put forward interventions to inhibit the negative effects of maximization.

Key words: *maximization; wellbeing; choice; autonomy; meta-analysis*

Introduction

Imagine two twin brothers, Julius and Vincent, who were separated at birth and only met as adults. Julius is the typical good boy who has always strived to excel in everything. Vincent is a troublemaker, who lives a very frivolous lifestyle and is complacent with it. As well as their personality differences, they also cope with decisions in a different manner. For example, they have never met their mother, and out of all the possible courses of action available Julius is relentlessly committed to find her and have all the unsolved questions about his childhood answered, whereas Vincent has accepted the fact he was abandoned. Who would be more at peace with himself and have a better quality of life: Julius or Vincent?

By reading this brief scenario, movie buffs would have probably been reminded of a 1988 comedy movie, whereas researchers in psychology and marketing would have probably thought of the distinction between two individual decision-making styles: "maximizing" and "satisficing. Maximizers (in the above scenario, Julius) are those individuals who exhaustively seek for the best option when making a choice, i.e. they select the alternative that is more likely to result in maximum benefit (Schwartz, Ward, Lyubomirsky et al. 2002; Simon 1978). Conversely, satisficers (i.e. Vincent) tend to be content with a "good enough" option and do not obsess over other alternatives (Schwartz 2004). However, when it comes to provide an answer to whether maximizers or satisficers experience a higher level of wellbeing, the literature has shown contradictory findings.

On the one hand, some studies indicate that, although maximizers generally make better choices than satisficers, they feel worse about them (Iyengar, Wells and Schwartz 2006). Specifically, they expend more resources to maximize their choices and this process undermines their satisfaction and intensifies their levels of regret, stress and depression (de Bruine et al. 2016; Purvis et al. 2010; Weinhardt et al. 2012). This phenomenon has been coined "the maximization paradox" (Dar-Nimrod, Rawn, Lehman and Schwartz 2009).

On the other hand, some studies have cast doubts over the idea that maximization is detrimental for one's wellbeing and challenged some of the assumptions underpinning this research domain.

First, Diab et al. (2008) claimed that the positive correlations between maximization, dissatisfaction with life and other negative indicators of wellbeing observed in past research are due to the conceptualization of the maximization trait provided by Schwartz et al. (2002). Instead, they proposed that maximization is equated only to "having high standards" (e.g. *"I never settle for second best"*) rather than including the other dimensions of the trait "alternative search" (e.g. *"When I watch TV, I channel surf, often scanning through the available options even while attempting to watch one program"*) and "decision difficulty" (e.g. *"When shopping, I have a hard time finding clothing that I really love"*). Using this conceptualization they showed no difference between maximizers and satisficers in terms of happiness and life satisfaction.

Second, Kokkoris (2016) claimed that the relationship between maximization and wellbeing depends on which dimension of wellbeing is considered. Up until then researchers had identified a negative relationship of maximization with both hedonic wellbeing, i.e. "*a person's cognitive and affective evaluation of his or her life*" (Diener et al. 2002, 63), and clinical wellbeing, i.e. the absence of mental or physical illness. Interestingly, he suggested that, because maximizers constantly strive to make the best choices, they should experience eudaimonic or psychological wellbeing, i.e. wellbeing as self-actualization and self-fulfilment (Ryan and Deci 2001; Ryff 1989; Waterman et al. 2010).

Third, many studies have analysed maximizers' response to choices in consumer contexts, where, due to the sheer volume of options in each product category (Mittal 2016; Settle and Golden 1974), the negative effect of choice on wellbeing is assumed to be stronger than in non-consumption contexts (e.g. Huber, Köcher, Vogel and Meyer 2012; Scheibehenne, Greifender and Todd 2009; Schwartz et al. 2002). However, recent empirical studies have

revealed that, although maximizers sought more choice options in consumption contexts, they were not dissatisfied with their decisions (Mittal 2016; Sisso and Shayo 2017) as opposed to what other studies had found in other decision contexts (Kay Leach and Patall 2013; Mikkelson and Pauley 2013).

Finally, the findings by Mittal (2016) also question the idea that having too much choice is detrimental for maximizers' wellbeing and suggest that a more thorough analysis of the concept of freedom of choice should be undertaken to understand the relationship between maximization and wellbeing. In fact, the amount of choices available is only one of the two components of freedom of choice alongside autonomy (Rozin 2014), i.e. an individual's ability to willingly engage in behaviours and fully endorse the actions and values expressed by those behaviours (Martin and Hill 2012; Ryan and Deci 2001; Ryan and Deci 2006). Thus far, the role of autonomy in the relationship between maximization and wellbeing has been overlooked in the literature, but it could represent a complementary (or alternative) explanation of maximizers' poorer quality of life compared to overchoice.

These conflicting findings and unexplored issues have therefore left the decision-making literature with a series of unsolved questions. First and foremost, is maximization beneficial or detrimental for an individual's wellbeing? And are there conditions that modify these effects?

To the best of our knowledge, the current study is the first attempt to provide an answer to these questions by conducting two sub-group multivariate multi-level meta-analyses. To this effect, we examine the relative impact of maximization on 197 effect sizes drawn from studies conducted in 15 countries and divided into indicators of positive wellbeing and negative wellbeing ($k = 114$ and $k = 83$, respectively). The meta-analytic approach was chosen as it represents a mathematically rigorous mechanism that, by combining effect sizes from several studies, increases the statistical power of summary estimates over individual studies and

resolves inconsistencies in research by identifying potential moderators (Borenstein et al 2009; Ioannadis and Lau 1999; Stone and Rosopa 2017).

The contributions of the current study are manyfold. By comparing the effect of maximization on different dimensions of wellbeing, it establishes that maximization is a "double jeopardy" for individuals in that it decreases individuals' positive wellbeing and increases their negative wellbeing. Our meta-analysis also discovers some important moderators of these effects, the first being the conceptualization of maximization as "high standards" only instead of "decision difficulty" and "alternative search", while the second being the conceptualization of wellbeing as eudaimonic rather than hedonic. Additionally, it finds that maximizers experience increased positive wellbeing in consumption decision contexts as opposed to other decision contexts (e.g. career, relationship, etc.). Our results question the commonly held belief that having too much choice is the culprit of maximizers' misery. We investigate the effect of overchoice and that of the autonomy granted by one's environment. We show that autonomy better accounts for the maximization paradox (Dar-Nimrod et al. 2009) than Schwartz et al.'s "tyranny of choice" (2002). We also discover that these effects hold regardless whether wellbeing is measured as a trait or a state and of other methodological moderators.

The remainder of the article is as follows: after reviewing the literature on maximizers and wellbeing and proposing moderators of the relationship, the paper discusses the methodology employed, the results for positive and negative wellbeing, and then addresses the methodological, theoretical and practical implications of the findings.

Background Literature

Maximisers & Satisficers: Who are They?

The notion of "utility maximizer" stems from the concept of "homo oeconomicus", which is the cornerstone of classic economic theory (Kirchgässner 2008). The economic man

is a rational individual who has a stable set of preferences and is assumed to know all the important aspects of his environment, such as event probabilities, as well as the benefits and costs of his decision outcomes. In addition, this rational actor is endowed with high computational skills, which enable him to always choose the best solution or course of action. Therefore, maximizing means to rationally make the decision that will maximize one's utility.

Developments in behavioural economics and psychology, however, have cast doubts over the assumption of infinite rationality, and proposed alternative models of human behaviour and decision-making (Kahneman 2003; Thaler 1980). Herbert Simon (1955, 1957) claimed that it is impossible for decision-makers to maximize their utility: due to limitations in human cognition, they cannot possibly scrutinize every available option when faced with a choice. Thus, he asserted that decision-makers have bounded rationality (Barros 2010; Scillirò 2012), who should be viewed as satisficers rather than maximizers. Combining the terms of "satisfying" and "sufficing", satisficing consists of selecting an "adequate" or "good enough" option instead of searching for the best alternative.

Drawing upon Simon's theory of bounded rationality, Schwartz and co-authors (2002) proposed that maximization and satisficing are individual traits. According to their conceptualization, maximizers are those individuals who seek to make the best possible decision and ignore the boundaries of rationality. In contrast, those individuals that simply look for "*something that crosses the threshold of acceptability*" are considered to be satisficers (Schwartz et al. 2002, 1179).

In contrast to satisficers, maximizers rely on downward and upward social comparison to assess the quality of their decisions (Weaver, Daniloski, Schwartz and Cottone 2015), they invest considerable time and effort in their information search and analysis of all possible alternatives (Chowdhury, Rathneshwar and Praggyan 2009), they often ruminate over past choices and engage in counter-factual thinking (Kay Leach and Patall 2013; Schwartz et al.

2002). For the last 15 years marketing and consumer psychology researchers have investigated the behavioural patterns of maximizers and satisficers and how it affects their wellbeing.

Maximization & Wellbeing: Does the Type of Wellbeing Matter?

Wellbeing is a multifaceted indicator of quality of life (Levy and Guttman 1975; Shin and Johnson 1978) and using the distinction between positive and negative wellbeing found in the literature (Cacioppo, Gardner and Berntson 1997; Karademas 2007; Lomas and Ivtzan 2015; Ramanathan and Williams 2007), we focus on four conceptualizations of wellbeing in this study (see to Table 1) and develop the hypotheses accordingly.

[Insert Table 1 here]

Positive Wellbeing

Research has highlighted an important aspect of the relationship between maximization and positive wellbeing, i.e. positive indicators such as happiness, positive affect, satisfaction, etc.: although maximizers tend to attain better outcomes than satisficers, they feel worse about these outcomes than satisficers do. For example, in a job search context, a study by Iyengar, Wells and Schwartz (2006) revealed that, even though maximizers land positions in which they earn 20% more than satisficers do, they are less satisfied with their occupation. Importantly, this pattern has been found across various life domains. Among university students, those who have higher maximizing tendencies do not see their academic major as suitable due to the numerous degrees available, and more frequently consider dropping out (Dahling and Thompson 2013). In a study about romantic relationships, Mikkelson and Pauley (2013) found that maximizers are more unlikely to experience satisfaction with their partners and feel less invested and committed in their relationship.

Why does this effect occur? Schwartz explains that maximizers expect to obtain the best outcomes (2002), thus set unrealistic or even impossible goals for themselves. Research

has shown that fulfilling one's goals increases subjective wellbeing (Diener, Suh and Oishi 1997), hence unrealistic standards may be counterproductive in that regard (Epstein and Eidelson 1981; Towsend Liu 2012). For this reason, maximization is likely to weaken positive wellbeing (e.g. happiness, satisfaction with life, positive affect). We hypothesise the following:

H_{1a}: Maximization has a negative relationship with positive wellbeing.

However, does this hypothesis hold for all the conceptualizations of positive wellbeing? First, according to the literature, positive wellbeing can be equated to hedonic pleasure, encompassing constructs such as happiness, satisfaction and optimism. These indicators have been referred to as "hedonic" or subjective wellbeing (Burroughs and Rindfleisch 2002; Diener 1984; Diener 2009). A second perspective is offered by Ryff (1989), who described positive wellbeing as optimal psychological functioning. This psychological or "eudaimonic" approach assumes that wellbeing can be achieved only when an individual strives towards their true nature (from the Greek "daimon" meaning "true self"; Ryff 1989). In this sense, eudaimonic wellbeing arises "from the development of one's best potential and the fulfilment of self-expressive goals" (Kokkoris 2016, 174), and compares to the concept of self-actualization (Maslow 1954). Some authors argue that maximizers enjoy higher eudaimonic wellbeing. They may obtain eudaimonic pleasure as this type of wellbeing is attained when the decision process itself, rather than the outcome, is geared toward looking for the best. Therefore, we expect that the relationship between maximization and positive wellbeing is moderated by the type of wellbeing considered:

H_{1b}: Maximization has a positive relationship with eudaimonic wellbeing but a negative relationship with hedonic wellbeing.

Negative Wellbeing

Studies indicated that maximizers tend to be more worried throughout the search process (Iyengar, Wells and Schwartz 2006), and experience higher self-blame and regret with the decisions made (Roets et al. 2012; Dar-Nimrod et al. 2009). The positive relationship between maximization and these negative indicators of wellbeing (e.g. regret, negative affect etc.) can be ascribed to the upward social comparison tendency of maximizers (Weaver et al. 2015). Empirical evidence has in fact shown that upward inter-personal comparison is linked to destructive behaviours and emotions (Carmona, Buunk, Peiro, Rodriguez and Bravo 2006; White, Langer, Yariv, Welch IV 2006). This leads to our next hypothesis:

H_2: Maximization has a positive relationship with positive wellbeing.

Yet, the relationship between maximization and negative wellbeing could be different depending on the conceptualization of the latter. We have identified two conceptualizations of negative wellbeing: the first includes negative affect and regret (i.e. negative hedonic wellbeing), while the second includes emotion-based disorders, such as depression, distress and other pathological somatic and physiological symptoms (Bradburn and Caplovitz 1965; Zautra and Hempel 1984), which we will refer to as clinical wellbeing respectively (refer to Table 1).

Recent studies have attributed depressive and manic symptoms to decision-making impairments, such as indecisiveness (Leykin, Sewell Roberts and DeRubeis 2011; Murphy, Rubinsztein, Michael and Rodgers 2001), which is a defining characteristic of maximizers (Diab et al. 2008; Spunt et al. 2009). However, from the available literature it is unclear whether maximization has a stronger impact on clinical wellbeing or negative hedonic wellbeing. Answering this question has important implications for clinicians and psychologists, who should understand whether maximization translates into temporary negative emotional states or more severe pathological conditions. As part of this study we will compare the effect of

maximization on negative wellbeing and discover on which of those two types of negative indicators maximization has a stronger effect.

Research Question 1: *Is the relationship between maximization and negative subjective wellbeing stronger or weaker than clinical wellbeing?*

Conceptualization of Maximization: Does it Matter?

According to the the original Maximization Scale (MS), the maximizing trait is characterized by three separate dimensions (Schwartz 2004). The first is high standards, i.e. always striving for the best (e.g. *"I never settle for second best").* The second is alternative search, i.e. expending considerable effort into exploring all possible alternatives (e.g. *"When I watch TV, I channel surf, often scanning through the available options even while attempting to watch one program"*). The third is decision difficulty, i.e. finding choosing frustrating (e.g. *"When shopping, I have a hard time finding clothing that I really love"*). Later, Nenkov et al. (2008) presented a Short Form of the Maximizing Scale (SFMS), which preserved the same conceptualization of the trait as the MS.

However, Diab, Gillespie and Highhouse (2008) claimed that the conceptualization of maximization offered by Schwartz et al. (2004) and later by Nenkov et al. (2008) fail to reflect the original definition of the maximization tendency provided by Simon (1955), i.e. pursuing the identification of the best alternative. As a consequence, they created and validated the Maximizing Tendency Scale (MTS) by discarding the decision difficulty and alternative search dimensions altogether, and by focusing only on the "high standards" dimension (e.g. "*No matter what it takes, I always try to choose the best thing*").

There is some theoretical and empirical evidence to support the notion that "high standards" increase positive wellbeing and decreases negative wellbeing. Studies outside the maximization literature empirically showed that having high standards is related to positive affect and satisfaction (Carver and Ganellen 1983; McNulty 2016) but is unrelated to

depression and negative affect (Carver, La Voie, Kuhl and Ganellen 1988; Frost, Heimberg, Holt, Mattia and Neubauer 1993). Therefore, we expect that "high standards", represented by the MTS by Diab et al. (2008), moderates the effect of maximization on wellbeing, in that:

H_{3a}: *The negative relationship between maximization and positive wellbeing will be moderated by the MTS in comparison to the MS and the SFMS.*

H_{3b}: *The positive relationship between maximization and negative wellbeing will be moderated by the MTS in comparison to the MS and the SFMS.*

Wellbeing and Decision Context: Are Maximizers Worse-off in Consumption Contexts?

Previously, we highlighted the idea that maximizers experience lower positive wellbeing and higher negative wellbeing, but we did not explore whether this is true in every context. Specifically, research to date has assumed that maximization is detrimental for one's experiences as a consumer, as consumption is often a context affected by the choice overload phenomenon (Huber, Köcher, Vogel and Meyer 2012; Scheibehenne, Greifender and Todd 2009). However, based on recent empirical evidence, it is unclear whether consumer decisions are indeed as detrimental for maximizers as other decisions.

Consumer wellbeing is defined as an individual's satisfaction in the consumption domain, and involves attitudes towards purchases, possessions and other experiences related to the consumption of goods (Lee et al. 2002; Suranyi-Unger 1981). Although previous studies of the relationship between maximization and consumer wellbeing showed conflicting results (e.g. Dar-Nimrod et al. 2009 and Mittal 2016), we believe that the consumer decision context mitigates the relationship between maximization and wellbeing.

As previously discussed, maximizers tend to be more regretful about, less satisfied with and less committed to the choices they make: even though they think they made the best decision in their extensive search process, they may believe that they would have made a better decision had they kept searching (Schwartz et al. 2002). In this sense, maximizers may be experiencing cognitive dissonance, which refers to an uncomfortable feeling or tension

stemming from the inconsistency between two thoughts or between thoughts and actions (Williams and Aaker 2002). This tension, in turns, prompts cognitive reappraisal of the underlying elements of the decision in order to alleviate the negative state (Cummings and Venkatesh 1976). We contend that the nature of consumer decisions would help maximizers reduce this tension as opposed to other types of decisions.

Indeed, consumer decisions are generally more reversible than decisions in other contexts (e.g. relationship, career, etc.), and research demonstrated maximizers tend to feel more satisfied with reversible decisions than with irreversible ones (Shiner 2015). Consumers can indeed benefit from a lot of contractual tools in the market place, like money back guarantees, cooling off periods and so on. Undeniably, these "safety nets" make it easier for consumers to change their mind about a product and return it, hence decreasing cognitive dissonance. Thus, we argue that consumption choices attenuate the relationship between maximization and positive wellbeing in comparison to decisions in other contexts (e.g. career, relationship), which instead have a lower level of "reversibility". Therefore:

H_{4a}: *The negative relationship between maximization and positive wellbeing will be moderated in consumer decision contexts in comparison to other contexts (e.g. career, relationship, etc.).*

H_{4b}: *The positive relationship between maximization and negative wellbeing will be moderated in consumer decision contexts in comparison to other contexts (e.g. career, relationship, etc.).*

Maximizing and the Role of Autonomy

Scholars have suggested that the freedom of choice has enabled individuals to feel in charge of their lives, control their environment, satisfy their needs and, therefore, attain wellbeing (Deci and Ryan 2000; Fischer and Boer 2011). Nevertheless, Schwartz (2000) contended that having too many choice options may paralyze individuals and consequently lower their wellbeing, and referred to this phenomenon as "tyranny of freedom" or "tyranny of choice". Many researchers have been able to demonstrate this theory and two meta-analytic

reviews have supported this view (Chernev, Böckenholt and Goodman 2015; Scheibehenne, Greifender and Todd 2010).

However, other scholars have criticized the approach of equating "too much choice" with freedom of choice and self-determination, claiming they are distinct concepts (Ryan and Deci 2006). Precisely, freedom of choice is characterized not only by the number of choices available, but also by the lack of coercion over one's behaviour (Rozin 2014). Martin and Hill (2012) refer to this second component of freedom of choice as "autonomy", and explain it "*is diminished only if one's choices are seen as constrained by external forces beyond one's control*" (1158). The maximization literature to date has mainly focused on the amount of choices available as the culprit of maximizers' misery and it has not provided theoretical guidance on the role of autonomy granted by one's environment. Therefore, we test for a more complete account of "the maximization paradox" by including both autonomy and the amount of choices available as potential explanations of the impact of maximization on quality of life.

Research Question 2: *How do amount of choice available and autonomy moderate the relationship between maximization and wellbeing?*

Methodology

Data Collection

As shown in Appendix A, to locate effect sizes of the relationship between maximization and wellbeing, we conducted an extensive search on Google Scholar, JSTOR, EBSCO, Elsevier and ProQuest. This initial search was not restricted to any specific language, therefore we also looked for and retrieved papers in English, French, Italian, German and Spanish, if available. The main keywords used to search for the relevant papers included "maximizing" and "maximizers", "wellbeing", "happiness", "satisfaction", and "depression". There was no exclusion based on the research design or the publication status: survey-based and experimental studies, students' theses and discussion papers were all eligible for inclusion in an attempt to minimize publication bias. We also manually retrieved papers referenced in

the articles found. Lastly, we sent out a call for unpublished studies on the mailing lists of the main academic associations in psychology and marketing (ELMAR, JDM, ACR and SCP) to increase our sample. At this stage, a total of 73 papers were found, which comprised 15 working papers, 3 faculty publications, 4 student theses and 51 published journal articles.

Predictor Variable

Maximization was the independent variable. In order to be eligible for inclusion, studies had to specify and include a measurement of the maximizing trait. Inclusion was limited to those papers using Schwartz et al.'s Maximizing Scale (MS, 2002), Nenkov et al.'s Short Form of the Maximizing Scale (SFMS, 2008) based on the three dimensions of the trait and Diab et al.'s Maximizing Tendency Scale (MTS, 2008) based on high standards only. These were chosen because they were deemed the most commonly employed in the literature to date. Papers employing other scales (Lai 2010; Turner et al. 2012), were excluded from the analysis. 11 papers did not meet this first criterion and were excluded leaving 62 papers: 9 adopted different maximization scales from the ones shortlisted, one did not report it, and another one was a literature review.

Outcome Variable

The shortlisted studies needed to report any measure of wellbeing encompassing indicators such as depression, satisfaction, happiness, affect, self-esteem etc. as previously described in the literature review. Constructs measuring mental health issues and physical wellbeing also qualified for inclusion. 4 articles did not satisfy this criterion. Moreover, one paper was eliminated as the author failed to provide the data necessary for inclusion after being personally contacted.

Final Number of Effect Sizes

The final number of papers included was 57, representing a total of 197 effect sizes. The studies were published (or conducted) between 2001 and 2017, and included study participants from the USA, Canada, Chile, France, the UK, the Netherlands, Spain, Italy, Germany, Turkey, Finland, Israel, China, Japan and the Philippines. Approximately 20% of the papers in the final sample were unpublished (refer to Appendix B and C for the list of papers and effect sizes).

Coding and Effect Size Measure

The effect sizes collected were categorized based on the valence of the dependent variable reported, and were entered in two separate datasets: one for positive wellbeing indicators (e.g. happiness, satisfaction, etc.) and one for negative wellbeing indicators (e.g. depression, regret, etc.). Table 1 lists the indicators, and their measurement scales, included in the meta-analysis. These indicators are categorized by both valence and wellbeing dimension (i.e. hedonic, eudaimonic and clinical).

The Pearson's product moment correlation coefficient *r* was the effect size analysed. Pearson's *r* is the most commonly used nonparametric measure of linear association (covariance) between two random variables (Wang 2012). Most of the effect sizes were taken directly from correlation matrices; however, in some cases this coefficient was calculated from Cohen's *d*, i.e. the standardized mean difference between the experimental and the control group (Cohen 1988), or from t-statistics[1]. Note that we used the values of *r* and its respective variance (*Vr*) based on Fisher's Z transformation[2] to correct for sampling error (Hunter and

[1] The conversion formulas utilised were retrieved from Borenstein et al. (2009) and are the following: (1) if the initial value was Cohen's d, $r = \frac{d}{\sqrt{d^2+a}}$ and $V_r = \frac{a^2 V_d}{(d^2+a)^2}$, where $a = \frac{(n_1+n_2)^2}{n_1 n_2}$ and n_1 and n_2 are the sample sizes of the control and experimental group; (2) if the initial value was a t-statistic: $r = \frac{t}{\sqrt{t^2+sample\ size-2}}$ and $V_r = \frac{(1-r^2)^2}{n-1}$, where $t = \frac{\beta}{Standard\ Error}$,

[2] The formulas we used to calculate Fisher's Z is $z = 0.5 \times \ln\left(\frac{1+r}{1-r}\right)$, whereas the conversion back to r is $r = \frac{e^{2z}-1}{e^{2z}+1}$ (Borenstein et al. 2009)

Schmidt 2004). Other measures reported were the sample sizes and the internal reliability indicators of the constructs reported (Chronbach's alphas).

After calculating Pearson's *r* and its variance, we disattenuated the values of the effect sizes. Disattenuation, also known as correction for attenuation, is a statistical procedure that consists in eliminating the effects of random error of psychometric measurements (Borenstein et al. 2009; Hunter 2004 and Schmidt)[3]. In case the article did not report the Chronbach's alphas of the measures, the reliability indicators for those measures were calculated as the average of the available reliability indicators weighted by the sample sizes of the studies they were drawn from (Hunter and Schmidt 2004). Moreover, we collapsed effect sizes for studies reporting repeated measures of the same variables from the same sample[4] (e.g. the variable "negative affect" in Iyengar et al. 2006). Finally, we conducted an outlier analysis to verify if some effect sizes had an undue effect on the results, thus compromising the validity and robustness of our meta-analysis (Viechtbauer and Cheung 2010). We did not identify any outlier with standardized residual greater than 2.57 despite a large effect size (Carrillat, Legoux and Hadida 2017). In the end, our dataset contained a total of 114 effect sizes in the positive model and 83 in the negative model.

Moderators

Moderators were coded alongside the effect sizes (refer to table 2 for the coding scheme of the moderators). As well as study identifiers, i.e. study id, authors, study number within the article and country, we identified, and coded for, three categories of moderators according to

[3] The formulas we used to calculate the disattenuated effect size (r_d) and calculate the disattenuated variance (V_{rd}) are $r_d = \frac{r_{xy}}{\sqrt{r_{xx}r_{yy}}}$ and $V_{rd} = \frac{V_{r_{xy}}}{a^2}$, where r_{xy} represents the attenuated correlation coefficient, r_{xx} and r_{yy} are the construct reliability indicators (Chronbach's alpha), $V_{r_{xy}}$ is the variance of r and $a^2$is the square value of the ratio between the attenuated and disattenuated value of r.

[4] If the number of effect sizes was two, the formulas used to combine the effect sizes are $\bar{Y} = \frac{1}{2}(Y_1 + Y_2)$ and $V_{\bar{Y}} = \frac{1}{4}(V_{Y1} + V_{Y2} + 2r\sqrt{V_{Y1}}\sqrt{V_{Y2}})$, where *Y* and *V* respectively denote the two effect size value and its variance, and r represents the correlation value between the two dependent variables. In case r was not reported, it was assumed as 0.5. If the number of effect sizes was higher, the formulas used to combine them were $\bar{Y} = \frac{1}{m}(Y_1 + \cdots + Y_m)$ and $V_{\bar{Y}} = \left(\frac{1}{m}\right)^2 \left(\sum_{i=1}^{m} V_i + (\sum_{i \neq i}(r_{ij}\sqrt{V_i}\sqrt{V_j}\right)$, where m is the number of effect sizes, and r_{ij} is the correlation between pairs of effect sizes (Hedges et al. 2009).

their function in the meta-analysis. These were country-level, theoretical-level and methodological-level moderators.

Country-level moderators comprised two macro-economic variables: average GDP per capita and the level of personal autonomy of the country where the study was conducted. We chose GDP per capita as a proxy for overchoice for several theoretical and empirical reasons. First, according to Schwartz (2005) and Roets et al. (2012), GDP per capita is an indicator of material wealth and, as such, it represents an approximation of the level of choice one has. Second, and most importantly, several studies demonstrated that product variety strongly correlates with GDP per capita. For example, Addison (2003) found a significant correlation coefficient of $r = 0.82$ between GDP per capita and product variety using data from 29 countries. We retrieved each country GDP per capita for the publication year of the articles (or the actual data collection year if provided) and the two years prior to that from World Bank (The World Bank Open Data 2017). These values were then averaged, and the mean was included in the meta-analysis.

A similar procedure was employed for the indicator of autonomy. We used the personal freedom indicator from the Cato Institute's Human Freedom Index 2016 (Cato Institute 2017). This indicator assesses the absence of coercive constraint across countries (Vásquez and Porčnik 2016), and measures the extent to which individuals in a country benefit from specific personal freedoms such as, among others, movement, religion, expression, information and association. Therefore, this index represents an appropriate measure of the level of personal autonomy people have. We averaged the values for the year of publication (or data collection) and the two years prior to it. For the years for which the personal freedom index was not reported we simply used an average of all the values available[5].

Theoretical moderators included three variables characterizing either the conceptualization of the independent variable, the type of wellbeing or the decision context.

[5] The correlation of the personal freedom values from year to year were all higher than 0.924, justifying our approach of averaging the available values for the missing years.

First, the moderator "maximization conceptualization" is a categorical variable indicating whether the reported measure of the trait was the scale developed by Schwartz et al. (MS, 2000), or by Nenkov et al. (SFMS, 2008), or by Diab et al. (MTS, 2008). Second, we also coded for the indicator of wellbeing represented by each effect size (see Table 2 for examples of these indicators divided by wellbeing dimension and valence). For example, we reported if the dependent variable measured "satisfaction", "happiness", "affect" and "regret". Besides, we coded all the constructs related to self-actualization, self-fulfilment and meaning of life as "eudaimonic" in the positive wellbeing dataset. In the negative model, we also included constructs relating to mental health such as "anxiety" and "depression", which we referred to as "clinical" (ref. to table 1). Third, in order to test for H_{4a} and H_{4b} we coded for the variable "context" which refers to the decision context in which a specific indicator of wellbeing was measured as reported in the studies. We treated this as a binary categorical variable, where "1" represented wellbeing as experienced in a consumption setting (e.g. satisfaction or happiness with a choice or purchase), and "0" represented other decision contexts (e.g. career, relationships etc.). Since the coding of the dimensions and context of wellbeing was subjective, the authors recruited one external researcher who re-coded the articles based on our guidelines (see Table 2). The coder-intercoder reliability score was 98.5%. In case of disagreement, the authors came to a consensus on the coding through discussion.

We further categorized the wellbeing measures between those measuring a trait or a state according to the specifications provided by Watson (1988): while traits measure general dispositions or tendencies, states are transitory and relate to a specific moment in time. Therefore, if the scale cited by the paper referred to the wellbeing indicator using the words "trait", "tendency", "general attitude" and "disposition", the effect size was coded as "trait" (1); in contrast, if the scale was operationalized the indicator as a "feeling" or "mindset" in the present or a specific moment in time, the effect was coded as "state"(0). We named this moderator "wellbeing level".

Finally, some methodological moderators were also added to control for result publication bias. These moderators included the publication type (published or unpublished) and precision, computed as the inverse of effect size standard error (Egger et al. 1997; Sterne and Egger 2001) (for more information, refer to the "publication bias" section). All the quantitative moderators were mean-centred before the analysis whereas dummy-coding was used for all the categorical moderators included in the model (ref. to Table 2 for the coding scheme and the reference categories of categorical variables).

[Insert Table 2 here]

Data Analysis, Model and Estimation

The analysis was conducted using Metafor, the meta-analytical package for R developed by Viechtbauer (2010). We conducted two sub-group meta-analyses to distinguish the results based on the valence of the dimensions of wellbeing (positive and negative). As we could not treat each effect size as independent from others due to the nesting of studies within each paper, we performed a multivariate multi-level meta-analysis using the article, the study number within the article and the effect size within study as the outer and inner levels. Adopting this procedure allowed us to better estimate the between study variance (Borenstein et al. 2009). We employed the following model to estimate the grand mean *r* (summary effect size):

$$ES_{ijk} = \beta_0 + \upsilon_{0j} + \psi_{ijk} + e_{ijk}, \quad (1)$$

where ES_{ij} is the effect size measure, β_0 represents the summary effect size without moderators, υ_{0j} is an estimation of the degree of within-article correlation of the study results, ψ_{ij} indicates between-effect size variance, and e_{ij} is the sampling error. Based on these specifications four separate meta-regression equations were derived:

- $ES.POS_{ijz} = \beta_0 + \beta_1 GDP.PER.CAPITA_{ijz} + \beta_2 AUTONOMY_{ijz} + \beta_3 ES.PRECISION_{ijz} + \beta_4 MA\ .MEASUREMENT_{ijz} + \beta_5 WELLBEING.OPERATIONALIZATION_{ijz} + \beta_6$

$$PUBLICATION.STATUS_{ijz} + \beta_7 WELLBEING.LEVEL_{ijz} + \beta_8$$

$$DECISION.CONTE\quad T_{ijz} + \upsilon_{0j} + \psi_{ijz} + e_{ijz} \qquad (2)$$

- $$ES.POS_{ijz} = \beta_0 + \beta_1 GDP.PER.CAPITA_{ijz} + \beta_2 AUTONOMY_{ijz} + \beta_3 ES.PRECISION_{ijz}$$

  $$+ \beta_4 MA\quad .MEASUREMENT_{ijz} + \beta_5 WELLBEING.OPERATIONALIZATION_{ijz} + \beta_6$$

  $$PUBLICATION.STATUS_{ijz} + \beta_7 WELLBEING.LEVEL_{ijz} + \beta_8$$

  $$DECISION.CONTE\quad T_{ijz} + \upsilon_{0j} + \psi_{ijz} + e_{ijz} \qquad (3)$$

where subscript *i* denotes the article, subscript *j* denotes the study and subscript z denotes the effect size. In both positive and negative wellbeing model, the restricted maximum likelihood model was used to estimate the between-study variance. We first ran models without moderators to check the grand mean estimate of *r* and the in-between study variance, and then ran the models with moderators (refer to tables 4a and 4b for the correlation matrices).

Publication Bias

In order to diagnose and control for publication bias, we relied on the tandem procedure suggested by Ferguson and Brannick (2012), which requires agreement among several indicators to determine whether the threat of publication bias can be ruled out. Refer to Table 3 for the results of these analyses. First, we calculated Rosenthal's and Rosenberg's fail-safe n for both models as a diagnostic tool. This value expresses *"the number of new, unpublished, or unretrieved nonsignificant ('null result') studies that on average would lower the significance of a meta-analysis to some specified level (e.g., to barely significant at p = .05 or to nonsignificant at p>.05)"* (Carson et al. 1990, 234-5). The Rosenthal's fail-safe n (1979) was 4,851 (Rosenberg = 4,355) for the positive model, whereas it was 104,975 (Rosenberg= 104,350) for the negative model. In both models, the-fail safe n exceeds 5k + 10, which is the number of effect sizes proposed by Rosenthal (1979) to identify a stable and robust meta-analysis (580 for positive and 425 for negative respectively). Second, we employed the trim-and-fill method and produced two funnel plots to visually analyse the effect estimates from

individual studies against their standard errors (Sterne and Egger 2001). All funnel plots show a good level of symmetry (see Figure 1). Third, we also ran the Eggers' regression analysis for the models to finally assess the asymmetry of the funnel plot (Egger et al. 1997). As shown by Table 3, all the tests yield an insignificant value, so publication bias can be excluded as a potential threat in the four models (Sterne et al. 2011). Lastly, as studies with small samples tend to be published only if their effect sizes are large enough (Carrillat, Legoux and Hadida 2018), we included the inverse of each effect size standard errors into the meta-regression to control for study precision. The beta coefficient for this variable is insignificant for both models.

[Insert Figure 1]

Positive Wellbeing Results

Models with No Moderators

To illustrate our results we used the models based on the disattenuated values of the effect sizes because these provide a more realistic estimation of the effect by eliminating measurement errors (Borenstein et al. 2009). The grand mean of the relationship is r = -0.10 (CI_{95} [-0.15; -0.05]). These results indicate that maximization has an overall small, yet significant, negative relationship with positive wellbeing (Cohen 1988). H_{1a} is supported.

As for between-study variance, we observe a significant and moderate level of between-study heterogeneity with Cochran's Q (df = 80) = 968.0 ($p < .01$) and with $\tau^2 = 0.05$, which represents 92.2% (I^2) of the observed variance. These results suggest that moderating variables could account for the remaining variance.

Model with Moderators

The positive wellbeing meta-regression model shows greatly reduced heterogeneity. Although the Q-statistic is still significant (df = 99) = 451.03, ($p < .01$), the between-study variance has decreased from the models without moderators (Δ = .03), yielding a lower I^2

(80.8%). The value of the coefficient of determination (R^2) indicates the model is able to explain 58.41% of the variance between effect sizes. Also, the results from the analysis of bivariate correlations (see Table 4a) and of the variance inflation factor (VIF) showed that multicollinearity is not an issue[6]. The results of the meta-regression are shown in Table 5a.

In order to test for H_{1b}, affect was set as the reference category. Results indicate that the effect of maximization on positive affect is not different from its effect on the other dimensions of positive wellbeing (β_{Happ} = -0.00, p > .1; β_{Sat} = -0.02, p > .1; β_{Opt} = -0.07, p < .01; $\beta_{Self\text{-}E}$ = -0.13, p > .1), with the exception of the composite wellbeing index (β_{CWBI} = -0.23, p < .05), which, however, is unreliable with only k = 3. Nonetheless, we observe a reversal of the negative effect of maximization on positive wellbeing when considering the eudaimonic dimension, as demonstrated by its beta coefficient being larger than the intercept (β_{Eud}= 0.17, p < .01; *Intercept* = -0.08, p > .1). To support this effect, we analyse the intercept-free model, which draws a direct comparison between different levels of the well-being dimension (ref. to Appendix E). This model suggests that maximization has a positive relationship only with eudaimonic well-being (β_{Eud}= 0.11, p < .05; β_{Aff} = -0.08, p < .05; β_{Happ} = -0.08, p < .01; β_{Opt} = -0.16, p < .001; β_{Sat} = -0.09, p < .001; $\beta_{Self\text{-}E}$ = -0.16, p > .1; β_{CWBI} = -0.35, p < .01). It should be noted that this finding is robust both when eudaimonic wellbeing and when all the other indicators of positive wellbeing are set as the reference category (Table 6a column II and Appendix D). Thus, H_2 is supported.

Additionally, compared to the reference category MS, Diab et al.'s measurement strengthens the relationship between maximization and positive wellbeing, and actually it reverses its negative effect (β_{MTS} = 0.30, p < .01; *Intercept* = -0.08, p > .1), in support for H_{3a}. Note that the relationship between maximization and positive wellbeing is positive also when

[6]To calculate the variance inflated factor we used the formula VIF = $\frac{1}{1-R^2}$ where R^2 is the coefficient of determination of a model where an independent variable is regressed on other independent variables (Robinson and Schumacker 2009). Only three variables showed relatively high bivariate correlation in the positive wellbeing model higher than or close to r = 0.700 (Autonomy and GDP, and Trait vs State and Consumer Decision Context), however their VIF was lower than 10, with 2.25 for Autonomy, 2.04 for GDP, 2.02 for Trait vs State and 1.98 for Consumer Decision Context.

the trait is measured with the MTS in comparison to the SFMS as shown by the model with MTS as the reference category (β_{MTS} = 0.22, p , .01; β_{SFMS} = -0.28, p < .01, see table 6a column I).

We also tested for H_{4a} by using "other decision contexts" as the reference category. The results demonstrate that maximizers do not experience higher positive wellbeing in consumer decision contexts in comparison to others such as career or relationship (β_{Cons} = 0.05, p > .1). H_{4a} is therefore not supported.

Furthermore, autonomy has a significant negative impact on the relationship between maximization and positive wellbeing (β_{Aut} = -0.05, p < .05). Unexpectedly, the coefficient estimate for GDP per capita is insignificant (β_{GDP} = 0.05, p >.1). Specifically, while the degree of autonomy granted by one's environment exacerbates the negative relationship between maximization and positive wellbeing, the amount of choice available does not. Because experimental randomization may neutralize the effect of country-level variables, we tested the robustness of these two findings in a model without experimental studies eliminating 20 effect sizes. The findings were unaffected (see Tables 6a, column III), although GDP per capita became positive and marginal significant (β_{GDP} = 0.05, p <.1).

[Insert Tables 5a and 6a here]

Summary of Positive Wellbeing Results

First, maximizers experience higher eudaimonic wellbeing in comparison to subjective wellbeing. Second, our results indicate that the relationship between maximization and wellbeing is more positive when the trait is measured only through the high standards dimension only (Diab et al. 2008) as opposed to Schwartz's tridimensional scale in the positive wellbeing model. Third, we also find that maximizers experience the same level of positive wellbeing in consumer decision contexts as in other contexts. Fourth, we discovered that whilst autonomy exacerbates the relationship between maximization and positive wellbeing, the amount of choice available does not have the same effect as one would expect from previous

research. This shows that maximizers experience lower levels of positive wellbeing in environments where they are granted greater autonomy, but not in environments offering a higher variety of choice.

Negative Wellbeing Results

Model without Moderators

The effect of maximization on the negative dimensions of wellbeing is positive and moderate with $r = 0.48$ (CI_{95} [0.39; 0.57]), corroborating H_2. The model show a moderate to high level of between-effect size variance ($Q(df = 82) = 2{,}163.90$, $p < .00$, $\tau^2 = 0.05$, $I^2 = 93.9\%$). This warrants further examination of the moderators of the effects.

Model with Moderators

Although we still reject the null hypothesis of between-effect size homogeneity with Cochran's $Q(df = 72) = 664.65$ ($p < .01$), the model presents reduced heterogeneity in comparison to the model without moderators. This is suggested by a lower τ^2 and I^2 ($\tau^2 = 0.02$, $\Delta = .03$, $I^2 = 81.01\%$). In addition, the R^2 indicates that the moderators included account for 68.9% of the variance in the model. Akin to the positive model, all VIFs were lower than 10, ruling out multicollinearity as a potential issue[7]. Table 5b outline the results for the two meta-regression.

Consistent with the positive wellbeing model, conceptualizing maximization as "high standards" leads individuals to experience lower levels of negative wellbeing ($\beta_{MTS} = -0.34$, $p < .01$). This supports H_{3b}. These hypotheses are also corroborated when MTS is set as the reference category (ref. to Table 6b, column I). It is important to observe that, unlike the positive wellbeing model, the positive relationship between maximization and negative

[7] Only three variables showed relatively high bivariate correlation in the positive state model close to r = 0.700 (Autonomy and GDP, Regret and Trait vs State). Their VIF was lower than 10, with 1.96 for Autonomy, 1.93 for GDP, 1.96 for Trait vs State and 3.70 for Regret.

wellbeing is not reversed when the trait is measured with MTS, since the intercept is larger than the beta coefficient for MTS (*Intercept* = 0.38, p < .01).

Moreover, it is worthwhile observing that autonomy and GDP per capita do not moderate the relationship between maximization and negative wellbeing, whereas the consumer decision context mitigates it (β_{Cons} = -.22, p <.01, ref. to Table 5b). This indicates that in comparison to decisions about career and relationships, maximizers tend to experience lower regret and negative affect when making consumption decisions.

Lastly, even though not hypothesized, we discovered that the positive relationship between maximization and negative wellbeing is stronger when the latter is measured as regret other than clinical wellbeing (β_{Reg} = 0.15, p < .01, ref. to Table 5b) and negative affect (β_{Reg} = 0.26, p < .01, Table 6B, Column II)[8].

[Insert Table 5b and 6b here]

Summary of Negative Wellbeing Results

The conceptualization of maximization as "high standards" captured by the MTS scale weakens the positive relationship between maximization and negative wellbeing indicators. Differently from the positive model, however, autonomy and available choice have no impact on the relationship, whereas maximizers experience less negative wellbeing in consumer decision contexts. Unexpectedly, we also discovered that this effect is stronger for negative affect and clinical wellbeing.

General Discussion and Future Research

Previous research found contrasting evidence regarding the "maximization paradox", according to which maximizers expend considerable effort to enlarge their choice set at the expense of their wellbeing (e.g. Dar Nimrod et al. 2009; Mittal 2016). Our meta-analysis aimed

[8] In order to investigate this effect further and to explain the marginal positive effect of trait on wellbeing (β_{trait} = .07, p <.1, ref. to Table 5b), we ran another model which included the interaction between the operationalization of wellbeing and trait vs state. From the analysis, shown in Appendix F, it is clear that maximization increases negative wellbeing when regret is operationalized as a trait.

to find a unified view on this issue, and specifically test for the common assumption that maximization leads to lower well-being and explore under what conditions maximization positively or negatively affects one's wellbeing.

The results of this research hold insights for scholars and practitioners in marketing, behavioural psychology and public policy, who are increasingly committed to find ways to enhance consumers' quality of life (Davis and Pechman 2013; Ozanne and Saatcioglu 2008; Sirgy and Lee 1996). By conducting two sub-group multi-level meta-analyses, we were able to answer three important questions on this topic, as discussed them in the following paragraphs.

Does maximizing jeopardize wellbeing?

Overall, the answer is yes. In fact, maximizers are victims of a double jeopardy: not only does maximization strengthen the indicators of negative wellbeing, but it also weakens the positive ones. This means that maximizers are generally less satisfied with life, less happy and optimistic, and are much more beset with regret and negative affect. Unlike previous studies, our meta-analysis clearly distinguished between positive and negative dimensions of wellbeing and shows that maximization is detrimental on both fronts. In addition, by examining the grand mean effect sizes of the two models, we were able to determine that maximization has a stronger impact on the indicators of negative wellbeing ($r = 0.48$) than on those of positive wellbeing ($r = -0.10$).

Are there any moderators of this double jeopardy?

Our study identifies moderators of the detrimental relationship between maximizing and wellbeing. We find that conceptualizing maximization as high standards (MTS, Diab et al. 2008) mitigates the negative relationship between the trait and positive wellbeing, as well as its positive relationship with negative wellbeing. Since Diab's scale (2008) is an updated sub-dimension of Schwartz' conceptualization, our study supports the idea that the other two sub-

dimensions that constitute the trait (i.e. decision difficulty and alternative search) drive the negative effect on quality of life. Additionally, our findings indicate that maximization is not detrimental for all the dimensions of wellbeing: we discovered that being a maximizer overall is linked with higher eudaimonic wellbeing. A potential explanation of this finding is that maximizers are able to experience psychological flourishing and self-actualization in their search for the best option (Datu 2016; Kokkoris 2016).

Contrastingly, in the negative wellbeing domain maximization appears to have a much stronger relationship with regret rather than with clinical wellbeing (e.g. depression, anxiety, etc.) and negative affect (e.g. unhappiness, dissatisfaction etc). Actually, previous studies determined that the relationship between maximization and some indicators of clinical wellbeing was weaker than the one between regret and the same indicators (Schepman et al. 2012).

Moreover, we argued that the consumption decision context could represent a moderator of the effect, in that consumption choices are more reversible than choices in other contexts, hence decreasing the tension triggered by cognitive dissonance. The effect of the consumption context was not statistically significant in the positive wellbeing model, but it was in the negative one, indicating that maximizers are able to experience lower regret and negative affect in consumer decision contexts. Overall, we believe that future research should explore whether the proposition that choices are more reversible in consumption than in other contexts (relationships, professional, etc.), and assess mechanism underlying the relationship between maximization and wellbeing in consumption contexts as opposed to other decision contexts.

What is the cause of maximizers' lower quality of life: overchoice or autonomy?

An objective of this study was to explore the common assumption that overchoice is the culprit of maximizers' misery (Schwartz et al 2002). Previous research equated freedom of choice to the abundance of choice options in every life domain, and tested this as the main

cause of maximizers' worsening quality of life. For instance, Roets et al. (2012) showed that Chinese maximizers reported higher positive wellbeing in comparison to their North-European and American counterparts and postulated this may be due to differences in the amount of choice options available across countries. Yet, the amount of choice someone has is only one of the components of freedom of choice, alongside "autonomy" or lack of coercion of one's behaviour. Specifically, our meta-analysis examined the impact of these two components separately to investigate what better accounts for the maximization paradox. We found that overchoice did not have a negative effect in the positive wellbeing model, while autonomy positively moderated the relationship between maximization and positive wellbeing. Therefore, our findings attribute maximizers' lack of positive wellbeing to a "tyranny of autonomy" rather than a "tyranny of choice". Interestingly, however, we were unable to find the same effect in the negative wellbeing model, suggesting that other cultural, macroeconomic or personal characteristics may account for maximizers' worsening of negative wellbeing.

As well as being a novel finding for the literature on maximizers, the negative moderating role of autonomy in the relationship between the trait and positive wellbeing represents an interesting contribution to the literature on self-determination and maximization. Accordingly, everyone who feels autonomous is more likely to experience wellbeing (Chen and Sengupta 2014; Chirkov et al. 2005; Kasser and Ryan 1999), but maximizers seem to be the exception to this rule. A possible explanation could be that social contexts granting individuals higher autonomy may increase the degree of decision difficulty for maximizers and make their decision process more taxing, thus decreasing their happiness and satisfaction. Indeed, based on our findings, decision difficulty is one of the two dimensions that increases the negative impact of the maximization trait on one's quality of life in contrast to high standards. Future research should aim to investigate the psychological process underlying the role of autonomy on this relationship.

Limitations

Our study has some methodological limitations, the first being the measurement of the proxy for overchoice and autonomy. Although GDP per capita was previously acknowledged as predictor of product variety with a correlation coefficient of 0.82 (Douglas 2003), reliable over time and across countries (e.g. Funke and Ruhwedel 2001; Hummels and Kleenow 2005), the choice of this indicator may in fact not be the most precise. The same applies to our choice for the indicator for autonomy, which we operationalized using the personal freedom index devised by the Cato Institute. However, their conceptual definition of the index closely resembled the concept of autonomy as previously outlined in the self-determination literature (Ryan and Deci 2006; Martin and Hill 2012). In addition, our approach consisted in averaging the values of the publication/data collection year and of the two years prior to it. Yet, the studies included in a journal article may have been conducted many years before the year of publication.

Second, despite including samples from fifteen different countries, it is still possible that maximizing, happiness and other wellbeing indicators may have different meanings across cultures and languages (Cheek and Schwartz 2016; Oishi, Graham, Kesebir and Costa Galinha 2013).

Third, the literature has seen the rise of different operationalizations of the maximizing trait in the past years. In comparison to the measurement scales used in this meta-analysis, these new alternative approaches have disaggregated maximization into different components and treated them as independent traits (Lai 2010; Misuraca, Farci, Faraci et al. 2015; Turner, Rim, Betz and Nygren 2012). Due to the limited number of studies in which these were used, we were not able to include them in the current work, yet when enough effect sizes are available future research could explore whether, and for which of these traits, our results apply.

Practical Implications and Recommendations for Further Research

Our meta-analysis has relevant implications for public policy, marketing practice and research. We suggest maximization has an overall negative impact on life quality especially in countries reporting high autonomy scores (e.g. the UK, the US and the Netherlands). Thus, public policy and marketing practitioners should provide tools to inhibit its effects. For example, public policy makers could promote the use of a no-action default option in choice sets, i.e. a choice alternative an individual receives when they fail to make a decision (Brown and Krishna 2004; Johnson and Goldstein 2003; Thaler and Sunstein 2008). Moreover, marketers could promote customer service policies aimed to advise consumers what to choose (e.g. Netflix movie suggestions, "the chef's picks" in a restaurant menu etc.). These strategies would diminish maximizers' sense of autonomy and increase their level of positive wellbeing. In addition, public policy and marketing practitioners should find ways to educate consumers about the drawbacks of constantly searching for the best without discouraging them from high standards. In particular, they should be made aware of the impossibility of thoroughly assessing the quality of their choice alternatives due to an incomplete knowledge of a situation, the so-called "information gap" (Carmel and Ben-Haim 2005; Simon 1955). We believe that further research in consumer and social psychology could provide tools to address this issue.

Since inducing a certain decision-making mindset is possible as recently shown by Ma and Rose (2014), Mao (2016) and Goldsmith et al. (2018), we further suggest that consumers should be induced into a "robust satisficing" mindset to offset the negative effects of maximization and at the same time achieve better outcomes than satisficing. Robust satisficing is a decision-making strategy that involves both selecting an adequate or a satisfactory outcome and, out of the options that will produce this outcome, choosing the one that will do so in the widest range of possible future states of the world (Schwartz et al. 2010; Zeelenberg 2015). This strategy represents a good compromise between maximizing and satisficing, as it leads to

higher wellbeing than maximizing and, at the same time, enables individuals to achieve higher choice quality than a satisficing strategy would. Given the current relevance of mindsets in transformative consumer research (e.g. Price et al. 2017), we believe devising such intervention could be a valuable avenue for future investigation in the field.

Furthermore, we propose some methodological recommendations for researchers looking into the effects of maximization on wellbeing. As observed in both models, the conceptualization and measurement of maximization matters in terms of the overall impact on wellbeing dimensions. Precisely, we found that maximizing conceptualised as having high standards (Diab et al. 2008) leads to a higher reported level of wellbeing in comparison to the tridimensional trait, measured with the Maximization Scale (Schwartz et al. 2002) and the Short Form of the Maximization Scale (Nenkov et al. 2008). Therefore, scholars should keep this in mind when choosing the most appropriate scale to measure maximization in their research.

In conclusion, our study reminds other researchers in social-psychology and marketing of how complex the inter-relationships between decision-making and wellbeing are. Because the direction of the effect of maximization and the moderators depend on the dimension (hedonic, eudaimonic and clinical) and valence (positive and negative) of wellbeing considered, we advocate the importance of analysing different facets of wellbeing separately in their work. This is because previous research has established positive and negative wellbeing are separate constructs (Lomas and Ivtzan 2015) and they can coexist in consumers (Ramanathan and Williams 2007). In support of this, our meta-analysis discovered that several moderators are different between positive and negative wellbeing model, such as the amount of choice available, autonomy and decision-making context. Importantly, we advise disaggregating the positive and negative dimensions of wellbeing instead of treating them all encompassing constructs.

Conclusions

For the past few decades, the literature on maximization has provided contradicting evidence about the relationship between the maximization trait and wellbeing. This meta-analysis has attempted to settle this ongoing debate and has provided a set of unique contributions to the current decision-making literature. Does maximization compromise one's wellbeing? Under what conditions is maximization detrimental or beneficial for wellbeing? We determined that maximization is a double jeopardy for wellbeing. We found evidence that the conceptualization of maximization as "high standards" and of wellbeing as eudaimonic mitigate the double jeopardy on a trait level, whereas the consumption decision context decreases the negative impact of maximization on wellbeing. Besides, a new account of the maximization paradox was found, whereby maximizers' lower level of positive wellbeing can be attributed to the autonomy granted by their environment rather than overchoice per se. Overall, we offered insightful theoretical, methodological and public policy recommendations based on our findings, as well as outlining some promising avenues for future research in consumer behaviour and psychology.

To conclude, we can finally answer the question posed at the beginning of the article. Which one of the twin brothers is more at peace with themselves: Julius or Vincent? If you answered Julius, you are right but do not despair if you identify yourself in him. Just remember to keep aiming high but not to compare your choices too much with their alternatives. And remember to engage in consumer choices to minimize your regret, and to let others make decisions on your behalf in order to maximize your happiness.

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List of Figures and Tables

Figure 1a and 1b
Funnel Plots of the Positive and Negative Wellbeing Meta-regression Models

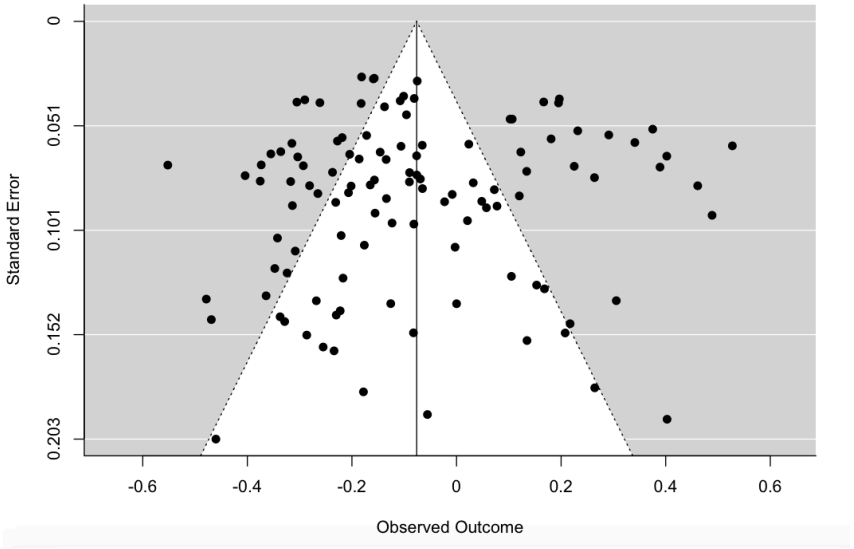


Figure 1a. Positive Wellbeing Model

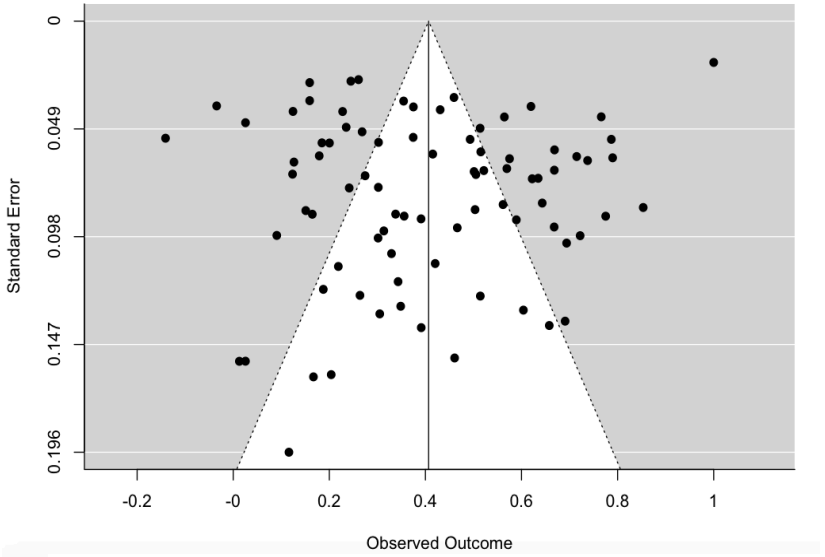


Figure 1b. Negative Wellbeing Model

Table 1
Examples of Scales and Indicators of Wellbeing included in the Meta-analysis, divided by Valence and Wellbeing Dimension

	Positive		Negative	
Hedonic Wellbeing	**Life Satisfaction**	*Satisfaction with Life Scale* (Diener et al. 1985)	**Negative Affect**	*PANAS* (Watson et al. 1988)
	Happiness	*Subjective Happiness Scale* (Lyubomirsky and Lepper 1997)	**Regret**	*Regret Scale* (Schwartz et al. 2002)
	Positive Affect	*PANAS* (Watson et al. 1988)		
	Optimism	*Life Orientation Test*, *Optimism Scale* (Scheier et al. 1994)		
	Self-esteem	*Self-esteem Scale* (Rosenberg 1965)		
Eudaimonic Wellbeing	**Presence of Meaning of Life**	*Meaning in Life Questionnaire* (Steger et al. 2006)		
	Eudaimonic Wellbeing	*Questionnaire for Eudaimonic Wellbeing* (Waterman et al. 2010)		
	Self-fulfilment	*Low Personal accomplishment* (reversed; Gold et al. 1989)		
Clinical Wellbeing			**Distress**	*General Health Questionnaire* (Goldberg & Williams 1988)
			Attention and Hyperactivity	*Adult Rating Scale* (Weyandt et al. 1995); *Internal Restlessness Scale* (Weyandt et al. 2006)
			Anxiety	*State-Trait Anxiety Inventory* (Spielberger 1989)
			Depression	*Centre for Epidomiologic Studies Depression Scale* (Radloff 1977); *Beck Depression Inventory* (Beck and Beck 1972)

Table 2
Coding Scheme of Moderating Variables in the Meta-analysis

Variable	Conceptual definition	Moderator Levels
Maximization Measurement	Categorical variable representing the measure of maximisation trait reported in the study.	1 = MTS, Maximization Tendency Trait by Diab et al. (2008) 1 = SFMS = Short form of Maximization Scale by Nenkov et al. (2008) Reference Category = Maximization Trait by Schwartz et al (2002)
Precision	Continuous variable calculated as the inverse of the standard error of the Fisher z-transformed correlations. The values were mean-centered.	
GDP per capita (Purchase Parity Power)	Continuous variable representing the average GDP per capita of the year of publication (or actual data collection) and of the two years prior to that. The values were retrieved from the electronic dataset World Bank Open Data, 2017. The resulting value was mean-centred.	
Autonomy	Continuous variable representing the personal freedom index of the year of publication (or actual data collection) and of the two years prior to that. The values were retrieved from www.cato.org/human-freedom-index. The values were mean-centred.	
Wellbeing Operationalization	Categorical variable representing the operationalization of the dependent variable as reported by the studies. For examples of scales included in each dimension divided by indicator valence, please refer to table 1.	**Positive Wellbeing Model** 1 = Eudaimonic Wellbeing, or else 0 1 = Happiness, or else 0 1 = Optimism, or else 0 1 = Satisfaction, or else 0 1 = Self-Esteem, or else 0 1 = Composite Index of Wellbeing, or else 0 Reference Category = Affect
		Negative Wellbeing Model 1 = Affect, or else 0 1 = Regret, or else 0 Reference Category = Clinical
Wellbeing Level	Categorical variable representing whether the wellbeing dimension included was operationalized as a trait or as a state, according to the definition provided by Watson (1988).	0 = State; 1 = Trait.
Decision Context	Categorical variable representing the decision context to which the indicator of wellbeing referred to.	0 = Other decision contexts (e.g. Career, Relationship, Life etc. – reference category); 1 = Consumption decision context
Publication Status	Categorical variable which indicates the publication status of the study from which the effect sizes were retrieved.	0 = Unpublished; 1 = Published.

Note: Dummy coding was used for all the categorical moderators. The level 0 in the column "Moderator Levels" represents the reference category of each categorical variable.

Table 3
Univariate Meta-analyses

	k	Mean ES_r	95% CI	Credibility Intervals	Q-Statistic	τ^2	I^2	Trim & Fill Test	Rosenthal Fail Safe N	Rosenberg Fail Safe N	Eggers Regression Test
Positive Wellbeing	114	-0.10	[-.15; -.05]	[-.47; .27]	1,221.10 (df=113) p < .01	.05	91.83%	Missing studies on the left: 14	4,851	4,355	z = -0.90 p = .37
Negative Wellbeing	83	0.48	[.39; .57]	[.06; .90]	2,163.90 (df=82) p < .01	.05	93.90%	Missing studies on the left: 10	104,975	104,350	z = -0.63 p = .53

Table 4a
Correlation Matrix of the Variables included in the Positive Wellbeing Meta-regression Model

	Max Meas.: MS	Max Meas.: MTS	Max Meas.: SFMS	WB Oper: Affect	WB Oper: Eudaimonic Wellbeing	WB Oper: Happiness	WB Oper: Optimism	WB Oper: Satisfaction	WB Oper: Self-esteem	WB Oper: Composite Index	Publication Status: Published	Context: Consumer Decision	Wellbeing Level: Trait	Precision	GDP per Capita	Autonomy
Max Meas.: MS	1															
Max Meas.: MTS	-.617**	1														
Max Meas.: SFMS	-.617**	-.239*	1													
WB Oper: Affect	.077	-.134	.040	1												
WB Oper: Eudaimonic Wellbeing	-.055	.084	-.016	-.065	1											
WB Oper: Happiness	-.008	-.021	.031	-.157	-.134	1										
WB Oper: Optimism	-.009	.006	.006	-.085	-.073	-.177	1									
WB Oper: Satisfaction	-.028	.017	.017	-.265**	-.228*	-.551**	-.299**	1								
WB Oper: Self-esteem	-.045	.148	-.093	-.052	-.045	-.109	-.059	-.184*	1							
WB Oper: Composite Index	.130	-.080	-.080	-.045	-.039	-.094	-.051	-.159	-.031	1						
Publication Status: Published	.321**	-.041	-.355**	-.089	.131	-.066	.027	-.040	.106	.092	1					
Context: Consumer Decision	-.043	-.134	.186*	-.111	-.095	-.231*	-.125	.418**	-.077	-.066	-.131	1				
Wellbeing Level: Trait	.176	.176	-.392**	-.242**	-.048	.136	.177	-.142	.109	.094	.257**	-.649**	1			
Precision	-.024	.069	-.039	.130	-.040	.017	-.058	.000	-.069	-.017	.063	-.121	.017	1		
GDP per Capita	.357	.267**	-.159	-.136	.019	-.042	-.105	.176	.086	-.161	-.227*	.008	.066	.005	1	
Autonomy	.257	.081	-.397**	-.049	-.110	.064	-.004	.092	.037	-.263**	.006	.054	.054	-.048.	.593**	1

*p<.05, **p< .01

Table 4b
Correlation Matrix of the Variables included in the Negative Wellbeing Meta-regression Model

	Max Meas.: MS	Max Meas.: MTS	Max Meas.: SFMS	WB Oper: Affect	WB Oper: Clinical	WB Oper: Regret	Publication Status: Published	Context: Consumer Decision	Wellbeing Level: Trait	Precision	GDP per Capita	Autonomy
Max Meas.: MS	1											
Max Meas.: MTS	-.481**	1										
Max Meas.: SFMS	-.739**	-.235*	1									
WB Oper: Affect	.011	-.168	.117	1								
WB Oper: Clinical	-.015	.242*	-.170	-.219*	1							
WB Oper: Regret	.004	-.076	.054	-.573**	-.675**	1						
Publication Status: Published	.354**	.034	-.418**	-.138	.150	-.021	1					
Context: Consumer Decision	-.249*	-.109	.359**	-.120	-.142	.210	-.213	1				
Wellbeing Level: Trait	.267*	-.128	-.197	-.204**	-.457**	.538**	.159	-.352**	1			
Precision	-.021	.036	-.051	-.002	.112	-.093	.048	.143	-.188	1		
GDP per Capita	-.184	.273*	-.006	.077	.029	-.083	-.162	-.100	-.084	.022	1	
Autonomy	.267*	.068	-.348**	-.048	.021	.019	.046	-.110	.035	.026.	.570**	1

*p<.05, **p< .01

Table 5a

Moderators of the Relationship between Maximization and Positive Wellbeing (k=114)

	k	N	ES_a	SE_a	CI_a	ES_d	SE_d	CI_d
Intercept			-.06	.04	-.15 – .02	-.08	.05	-.19 – .03
GDP per capita			.03	.02	-.01 – .07	.04	.03	-.01 – .09
Autonomy			-.04^	.02	-.08 – .00	-.05*	.02	-.08 – -.00
Precision			-.00	.02	-.03 – .03	-.00	.02	-.04 – .04
Measurement Scale: MTS	22	8,585	.25***	.02	.22 – .28	.30***	.02	.26 – .34
Measurement Scale: SFMS	22	6,685	.05	.04	-.02 – .13	.06	.05	-.04 – .15
Wellbeing Operationalization: Eudaimonic Wellbeing	6	1,491	.12**	.04	.04 – .20	.17***	.05	.08 – 27
Wellbeing Operationalisation: Happiness	28	10,680	-.00	.02	-.05 – .04	-.00	.03	-.06 – .05
Wellbeing Operationalization: Optimism	10	2,723	-.06	.03	-.12 – .01	-.07^	.04	-.16 – .01
Wellbeing Operationalization: Satisfaction	55	19,633	-.02	.02	-.07 – .03	-.02	.03	-.08 – .04
Wellbeing Operationalization: Self-Esteem	4	1,163	-.10	.08	-.26 – .07	-.13	.11	-.33 – .08
Wellbeing Operationalization: Composite Wellbeing Index	3	788	-.19*	.08	-.36 – -.03	-.23*	.10	-.43 – .02
Publication Status: Published	87	33,842	-.06^	.03	-.13 – .00	-.10*	.04	-.18 – -.01
Context: Consumer Decision	16	4,079	.03	.03	-.03 –.10	.05	.04	-.08 – .10
Wellbeing Level: Trait	86	31,726	.01	.04	-.07 –.08	.01	.05	-.08 – .10
							Q(df =81)	341.75 (p < .01)
							τ^2	0.02
							I^2	80.8%

^ p< .1, *p< .05, **p< .01, *** p< .001

1. k = number of effect sizes; N= aggregated sample size; ES = Effect size; CI = Confidence interval.
2. The subscripts “a” and “d” respectively indicate whether the values reported refer to the model calculated with the attenuated or disattenuated values of the effect sizes.
3. Reference categories: Measurement Scale = MS (k=70); Wellbeing Operationalization = Affect (k=8); Publication Status: Unpublished (k=27); Context: Other Decision Contexts (k=98); Wellbeing Level: State (k=28).

Table 5b
Moderators of the Relationship between Maximization and Negative Wellbeing (k=83)

	k	N	ES_a	SE_a	CI_a	ES_d	SE_d	CI_d
Intercept			.28***	.04	.21 – .36	.38***	.05	.28 – .48
GDP per capita			.00	.02	-.03 – .04	-.00	.02	-.05 – .04
Autonomy			-.01	.02	-.04 – .02	-.00	.02	-.04 – .04
Precision			-.01	.01	-.04 – .01	-.02	.02	-.05 – .02
Measurement Scale: MTS	11	4,684	-.26***	.02	-.30 – -.22	-.34***	.02	-.39 – -.29
Measurement Scale: SFMS	22	8,406	-.05	.03	-.11 – .01	-.05	.04	-.13 – .03
Wellbeing Operationalization: Affect	13	6,184	-.08**	.03	-.14 – -.02	-.11*	.04	-.19 – -.02
Wellbeing Operationalization: Regret	53	19,541	.10**	.03	.03 – .16	.15**	.05	.06 – .24
Publication Status: Published	57	23,946	.03	.03	-.03 – .10	.03	.05	-.06 – .15
Decision Context: Consumer Decision	6	727	-.14**	.05	-.24 – -.05	-.22**	.07	-.35 – -.09
Wellbeing Level: Trait	51	17,064	.06	.03	-.00 – .12	.07^	.04	-.01 –.15
						Q(df =72)	664.65 (p < .01)	
						τ^2	0.02	
						I^2	81.01%	

^ p< .1*p< .05, **p< .01, *** p< .001
1. k = number of effect sizes; N= aggregated sample size; ES = Effect size; CI = Confidence interval.
2. The subscripts “a” and “d” indicate respectively whether the values reported refer to the model calculated with the attenuated and disattenuated values of the effect sizes.
3. Reference categories: Measurement Scale = MS (k=50); Wellbeing Operationalization = Clinical (k=17); Type of publication: Unpublished (k=26); Decision Context: Other Decision Contexts (k=77); Wellbeing Level: State (k=32).

Table 6a
Beta values of the Positive Wellbeing meta-regression model with alternative reference categories (k=114)

	Column I: **Ref. Category "MTS"**		*Column II:* **Ref. Category "Eudaimonic Wellbeing"**		*Column III:* **No Experimental Studies (k=94)**	
	Att.	Dis.	Att.	Dis.	Att	Dis.
Intercept	.18***	.22**	.06	.10	-.03	-.02
GDP per capita	.03	.04	.03	.04	.04^	.05^
Autonomy	-.04^	-.05*	-.04^	-.05*	-.05**	-.07**
Precision	-.00	-.00	-.00	-.00	-.00	-.00
Measurement Scale: MS	-	-.30***	-	-	-	-
Measurement Scale: MTS	-.25***	-	.25***	.30***	.25***	.31***
Measurement Scale: SFMS	-.19***	-.24***	.05	.06	.05	.05
Wellbeing Operationalization: Affect	-	-	-.12**	-.17***	-	-
Wellbeing Operationalization: Eudaimonic Wellbeing	.12**	.17***	-	-	.12**	.17***
Wellbeing Operationalization: Happiness	-.00	-.00	-.12**	-.18***	-.01	-.01
Wellbeing Operationalization: Optimism	-.06	-.07^	-.18***	-.25***	-.06	-.08^
Wellbeing Operationalization: Satisfaction	-.02	-.02	-.14***	-.19***	-.02	-.02
Wellbeing Operationalization: Self-esteem	-.10	-.13	-.22*	-.30**	-.04	-.07
Wellbeing Operationalization: Wellbeing Composite Index	-.19*	-.23*	-.31***	-.40***	-.20	-.24**
Publication Status: Published	-.06^	-.10*	-.06^	-.10*	-.10	-.15**
Decision Context: Consumer Decision	.03	.05	.03	.05	.18**	.22**
Wellbeing Level: Trait	.01	.01	.01	.01	.00	-.00

^ p< .1*p< .05, **p< .01, *** p< .001

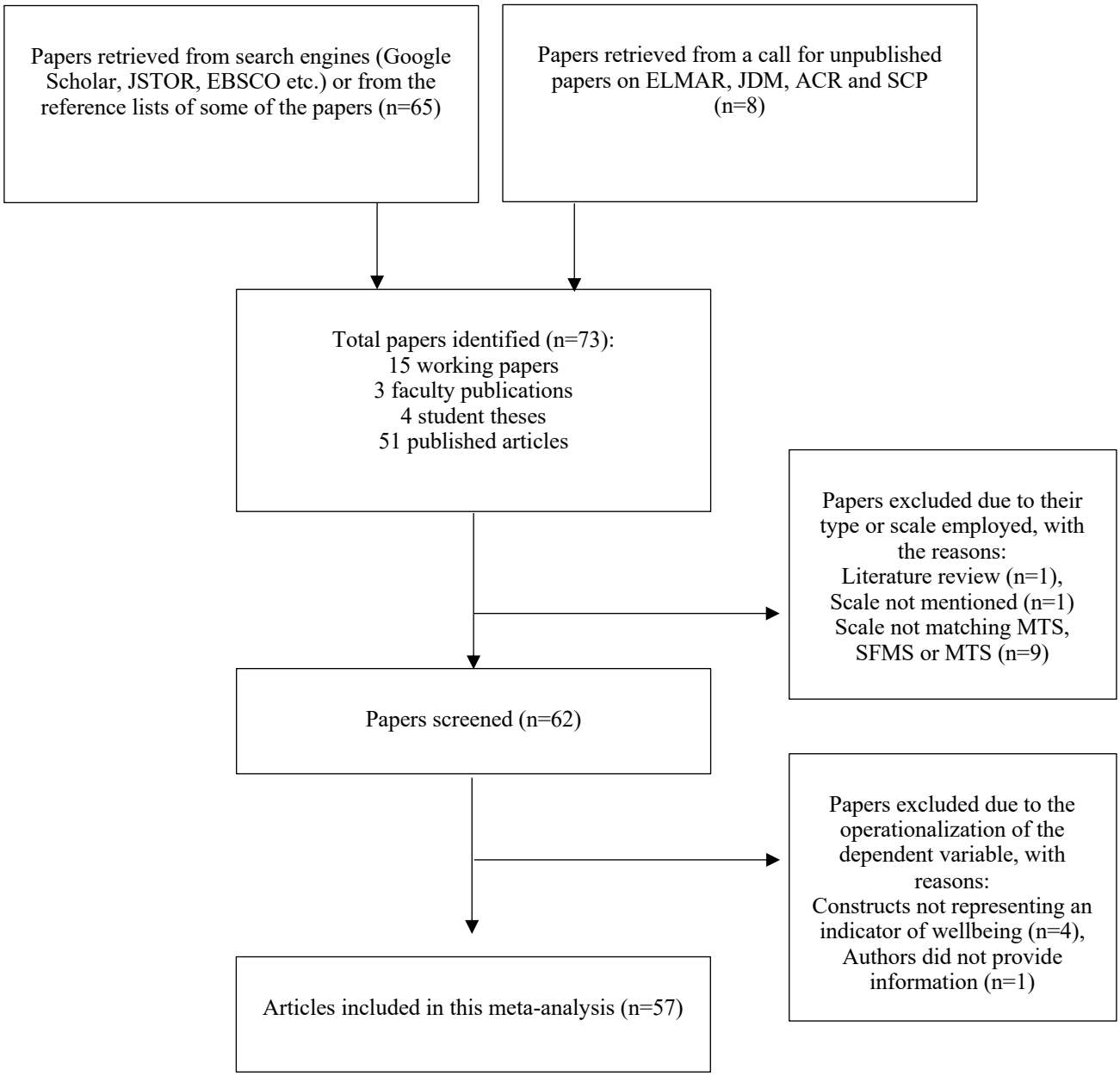
Table 6b
Beta values of the negative wellbeing trait meta-regression model with alternative reference categories (k=83)

	Column I: **Ref. Category "MTS"**		*Column II:* **Ref. Category "Affect"**		*Column III:* **No Experimental Studies (k=60)**	
	Att.	Dis.	Att.	Dis.	Att.	Dis.
Intercept	.02	.04	.20**	.27***	.26***	.34***
GDP per capita	.00	-.00	.00	-.00	.02	.01
Autonomy	-.01	-.00	-.01	-.00	-.01	-.01
Precision	-.01	-.02	-.01	-.02	-.01	-.02
Measurement Scale: MS	.26**	.34***	-	-	-	-
Measurement Scale: MTS	-	-	-.26***	-.34***	-.26***	-.34***
Measurement Scale: SFMS	.21**	.29***	-.05^	-.05	-.06^	-.07
Wellbeing Operationalization: Affect	-.08**	-.11*	-	-	-.10*	-.12^
Wellbeing Operationalization: Clinical	-	-	.08**	.11*	-	-
Wellbeing Operationalization: Regret	.10**	.15**	.18***	.26***	.15**	.21***
Publication Status: Published	.03	.03	.03	.03	.05	.07
Decision Context: Consumer Decision	-.14**	-.22**	-.14**	-.22**	-.16	-.20
Wellbeing Level: Trait	.06^	.07^	06^	.07^	.03	.03

^ p< .1*p< .05, **p< .01, *** p< .001

Appendix

Appendix A
Flow Diagram for Inclusion of Papers in the Meta-analysis.



Appendix B

Summary of Studies included in the Positive Wellbeing Meta-analysis

Authors	Year	Study	Country	n	r	v_r	r_D	v_{rD}	Precision	Max Measurement	Wellbeing Operationalization	Decision Context	Pub. Status	Wellbeing Level
Schwartz et al	2002	1	USA	82	-0.21	0.011	-0.27	0.018	8.89	MS	Happiness	0	1	T
Schwartz et al	2002	1	USA	82	-0.28	0.010	-0.36	0.018	8.89	MS	Optimism	0	1	T
Schwartz et al	2002	1	USA	72	-0.34	0.011	-0.47	0.021	8.31	MS	Happiness	0	1	T
Schwartz et al	2002	1	USA	100	-0.17	0.010	-0.22	0.016	9.85	MS	Happiness	0	1	T
Schwartz et al	2002	1	USA	100	-0.25	0.009	-0.32	0.015	9.85	MS	Optimism	0	1	T
Schwartz et al	2002	1	USA	100	-0.27	0.009	-0.35	0.014	9.85	MS	Satisfaction	0	1	T
Schwartz et al	2002	1	Canada	401	-0.10	0.002	-0.13	0.004	19.95	MS	Happiness	0	1	T
Greifender & Bertsch	2006	1	Germany	315	-0.29	0.003	-0.37	0.005	17.66	MS	Happiness	0	1	T
Greifender & Bertsch	2006	1	Germany	315	-0.18	0.003	-0.24	0.005	17.66	MS	Optimism	0	1	T
Greifender & Bertsch	2006	1	Germany	315	-0.23	0.003	-0.29	0.005	17.66	MS	Affect	0	1	T
Iyengar et al	2006	1	USA	548	-0.17	0.002	-0.23	0.003	23.35	MS	Satisfaction	0	1	T
Diab et al	2008	1	USA	191	-0.24	0.005	-0.31	0.008	13.71	MS	Satisfaction	0	1	T
Diab et al	2008	1	USA	191	0.04	0.005	0.05	0.008	13.71	MTS	Satisfaction	0	1	T
Huber et al	2008	1	Germany	473	-0.17	0.002	-0.22	0.003	21.68	MS	Satisfaction	1	1	T
Larsen & McKibban	2008	2	USA	119	-0.24	0.008	-0.31	0.012	10.77	MS	Satisfaction	0	1	T
Nenkov et al	2008	4	USA	61	-0.20	0.015	-0.23	0.020	7.62	MS	Satisfaction	0	1	T
Nenkov et al	2008	4	USA	61	-0.07	0.017	-0.08	0.023	7.62	MS	Happiness	0	1	T
Nenkov et al	2008	4	USA	61	-0.28	0.014	-0.34	0.021	7.62	MS	Optimism	0	1	T

Nenkov et al	2008	4	USA	61	-0.27	0.014	-0.33	0.021	7.62	SFMS	Satisfaction	0	1	T
Nenkov et al	2008	4	USA	61	-0.23	0.015	-0.29	0.023	7.62	SFMS	Happiness	0	1	T
Nenkov et al	2008	4	USA	61	-0.20	0.015	-0.26	0.025	7.62	SFMS	Optimism	0	1	T
Paivandy	2008	1	USA	126	-0.27	0.007	-0.34	0.011	11.09	MS	Satisfaction	0	1	T
Dar-Nimrod et al	2009	3	Canada	73	-0.39	0.012	-0.48	0.018	8.37	MS	Satisfaction	1	1	T
Dar-Nimrod et al	2009	3	Canada	48	-0.14	0.021	-0.18	0.032	6.71	MS	Satisfaction	1	1	T
Dar-Nimrod et al	2009	2	Canada	31	-0.39	0.029	-0.46	0.041	5.29	MS	Satisfaction	1	1	T
Dar-Nimrod et al	2009	2	Canada	65	0.18	0.015	0.22	0.022	7.87	MS	Satisfaction	1	1	T
Lewer	2009	1	USA	240	-0.05	0.004	-0.07	0.007	15.39	MS	Happiness	0	1	T
Polman	2010	1	USA	78	-0.29	0.011	-0.40	0.006	8.66	MS	Affect	0	1	T
Carrillat et al	2011	1	USA	492	0.19	0.002	0.23	0.003	22.11	MS	Satisfaction	1	1	T
Chang et al	2011	1	USA	331	-0.28	0.003	-0.36	0.004	18.11	MS	Satisfaction	0	1	T
Chang et al	2011	1	USA	331	-0.15	0.003	-0.19	0.004	18.11	MS	Eudaimonic wellbeing	0	1	T
Purvis et al	2011	1	USA	1858	-0.13	0.001	-0.16	0.001	43.07	MS	Satisfaction	0	1	T
Purvis et al	2011	1	USA	1858	-0.13	0.001	-0.16	0.001	43.07	MS	Affect	0	1	T
Purvis et al	2011	1	USA	1858	-0.06	0.001	-0.08	0.001	43.07	MS	Happiness	0	1	T
Purvis et al	2011	2	USA	1065	-0.09	0.001	-0.11	0.001	32.59	MS	Satisfaction	0	1	T
Rim et al	2011	2	USA	428	-0.11	0.002	-0.15	0.004	20.62	MS	Optimism	0	1	T
Rim et al	2011	2	USA	428	0.15	0.002	0.18	0.003	20.62	MTS	Optimism	0	1	T
Rim et al	2011	2	USA	112	0.08	0.009	0.10	0.015	10.44	MS	Happiness	0	1	T
Rim et al	2011	2	USA	112	0.41	0.006	0.49	0.009	10.44	MTS	Happiness	0	1	T
Roets et al	2012	1	Netherlands	263	-0.44	0.003	-0.55	0.005	16.12	MS	Wellbeing	0	1	T

Roets et al	2012	1	China	218	-0.14	0.005	-0.16	0.006	14.66	MS	Wellbeing	0	1	T
Roets et al	2012	1	USA	307	-0.28	0.003	-0.34	0.004	17.44	MS	Wellbeing	0	1	T
Sparks et al	2012	2	USA	41	0.30	0.021	0.40	0.037	6.16	MS	Satisfaction	1	1	T
Weinhardt et al	2012	1	USA	474	-0.05	0.002	-0.07	0.004	21.70	MS	Satisfaction	0	1	T
Weinhardt et al	2012	1	USA	474	-0.08	0.002	-0.11	0.004	21.70	MS	Happiness	0	0	T
Weinhardt et al	2012	1	USA	474	-0.14	0.002	-0.17	0.003	21.70	MS	Optimism	0	0	T
Weinhardt et al	2012	1	USA	474	0.30	0.002	0.38	0.003	21.70	MTS	Satisfaction	0	0	T
Weinhardt et al	2012	1	USA	474	0.23	0.002	0.29	0.003	21.70	MTS	Happiness	0	0	T
Weinhardt et al	2012	1	USA	474	0.25	0.002	0.34	0.003	21.70	MTS	Optimism	0	0	T
Zaveri	2012	1	Spain	55	0.20	0.018	0.26	0.032	7.21	MS	Happiness	0	0	T
Zaveri	2012	1	Spain	55	-0.04	0.019	-0.06	0.036	7.21	MS	Affect	0	0	T
Zaveri	2012	1	USA	94	0.00	0.011	0.00	0.019	9.54	MS	Happiness	0	0	T
Zaveri	2012	1	USA	94	-0.16	0.010	-0.22	0.020	9.54	MS	Affect	0	0	S
Dahling & Thompson	2013	1	USA	126	-0.14	0.008	-0.18	0.012	11.09	MS	Satisfaction	0	1	S
Dahling & Thompson	2013	2	USA	139	-0.22	0.007	-0.27	0.007	11.66	MS	Satisfaction	0	1	T
Giacopelli et al	2013	1	USA	237	-0.16	0.004	-0.20	0.006	15.30	MS	Satisfaction	0	1	T
Giacopelli et al	2013	1	USA	237	0.20	0.004	0.23	0.005	15.30	MTS	Satisfaction	0	1	T
Kay Leach & Patall	2013	1	USA	378	-0.06	0.003	-0.08	0.004	19.36	MS	Satisfaction	0	1	S
Mikkelson & Pauley	2013	1	USA	275	-0.26	0.003	-0.30	0.004	16.49	MS	Satisfaction	0	1	T
Moyano-Diaz	2013	1	Chile	211	-0.18	0.005	-0.23	0.008	14.42	MS	Satisfaction	0	1	T
Moyano-Diaz	2013	1	Chile	211	-0.12	0.005	-0.16	0.009	14.42	MS	Happiness	0	1	T
Foster	2014	1	USA	117	-0.19	0.008	-0.22	0.011	10.68	MTS	Satisfaction	0	0	T

Oishi et al	2014	1	Japan	952	-0.24	0.001	-0.29	0.001	30.81	MS	Happiness	0	1	T
Oishi et al	2014	1	Japan	952	-0.21	0.001	-0.26	0.002	30.81	MS	Satisfaction	0	1	T
Oishi et al	2014	1	Japan	952	-0.09	0.001	-0.10	0.001	30.81	MTS	Happiness	0	1	T
Oishi et al	2014	1	Japan	952	-0.07	0.001	-0.08	0.001	30.81	MTS	Satisfaction	0	1	T
Oishi et al	2014	1	USA	891	-0.15	0.001	-0.18	0.002	29.80	MS	Happiness	0	1	T
Oishi et al	2014	1	USA	891	-0.11	0.001	-0.14	0.002	29.80	MS	Satisfaction	0	1	T
Oishi et al	2014	1	USA	891	0.17	0.001	0.20	0.001	29.80	MTS	Happiness	0	1	T
Oishi et al	2014	1	USA	891	0.14	0.001	0.17	0.002	29.80	MTS	Satisfaction	0	1	T
Akin & Ugur	2015	1	Turkey	300	-0.20	0.003	-0.28	0.006	17.23	SFMS	Optimism	0	1	T
Akin & Ugur	2015	1	Turkey	300	-0.27	0.003	-0.38	0.006	17.23	SFMS	Satisfaction	0	1	T
Akin & Ugur	2015	1	Turkey	300	-0.23	0.003	-0.32	0.006	17.23	SFMS	Happiness	0	1	T
Dalal et al	2015	2	USA	902	-0.07	0.001	-0.10	0.002	29.98	MS	Satisfaction	0	1	T
Dalal et al	2015	2	USA	902	0.16	0.001	0.20	0.002	29.98	MTS	Satisfaction	0	1	T
Dalal et al	2015	3	USA	71	-0.17	0.013	-0.23	0.026	8.25	MS	Self-esteem	0	1	T
Dalal et al	2015	3	USA	71	0.16	0.014	0.21	0.023	8.25	MTS	Self-esteem	0	1	S
Faure et al	2015	1	France	470	-0.22	0.002	-0.31	0.004	21.61	MS	Satisfaction	0	1	S
Faure et al	2015	1	France	470	-0.13	0.002	-0.20	0.004	19.29	SFMS	Satisfaction	0	1	T
Liu & al	2015	1	USA	140	-0.07	0.007	-0.08	0.010	11.70	SFMS	Satisfaction	0	1	S
Osiurak et al	2015	1	France	952	-0.22	0.001	-0.31	0.002	30.81	MS	Self-esteem	0	1	S
Patalano et al	2015	3	USA	69	-0.11	0.014	-0.13	0.019	8.12	MTS	Self-esteem	0	1	S
Shiner	2015	1	USA	60	0.11	0.017	0.13	0.024	7.55	MS	Satisfaction	1	1	S
Sisso	2015	1	USA	100	0.22	0.010	0.31	0.018	9.85	SFMS	Satisfaction	0	0	S
Sisso	2015	1	USA	100	0.12	0.010	0.15	0.016	9.85	SFMS	Happiness	0	0	T

Sisso	2015	2	USA	160	0.00	0.006	0.00	0.012	12.53	SFMS	Happiness	0	0	T
Datu	2016	1	Philippinnes	384	0.30	0.002	0.40	0.004	19.52	SFMS	Affect	0	1	S
Datu	2016	1	Philippinnes	384	0.09	0.002	0.12	0.004	19.52	SFMS	Eudaimonic wellbeing	0	1	S
de Bruin et al	2016	1	USA	2221	-0.14	0.000	-0.18	0.001	47.10	MS	Affect	0	1	S
Kokkoris	2016	1	USA	197	0.48	0.003	0.53	0.004	13.93	MTS	Eudaimonic wellbeing	0	1	T
Kokkoris	2016	1	USA	197	-0.11	0.005	-0.13	0.007	13.93	MS	Eudaimonic wellbeing	0	1	S
Kokkoris	2016	2	USA	191	-0.08	0.005	-0.09	0.006	13.71	MTS	Satisfaction	0	1	T
Kokkoris	2016	2	USA	191	-0.07	0.005	-0.07	0.006	13.71	MTS	Happiness	0	1	S
Kokkoris	2016	2	USA	191	0.35	0.004	0.39	0.005	13.71	MTS	Eudaimonic wellbeing	0	1	S
Kokkoris	2016	2	USA	191	-0.02	0.005	-0.02	0.008	13.71	MS	Satisfaction	0	1	T
Kokkoris	2016	2	USA	191	-0.18	0.005	-0.21	0.007	13.71	MS	Happiness	0	1	T
Kokkoris	2016	2	USA	191	0.06	0.005	0.08	0.008	13.71	MS	Eudaimonic wellbeing	0	1	T
Kokkoris	2016	1	USA	193	0.10	0.005	0.12	0.007	13.78	MTS	Satisfaction	0	0	T
Kokkoris	2016	1	USA	193	-0.15	0.005	-0.16	0.006	13.78	MS	Satisfaction	0	0	T
Kokkoris	2016	1	USA	200	0.24	0.005	0.26	0.006	14.04	MS	Satisfaction	0	0	S
Kokkoris	2016	1	USA	200	0.38	0.004	0.46	0.006	14.04	MTS	Satisfaction	0	0	S
Mittal	2016	1	USA	163	-0.10	0.006	-0.12	0.010	12.65	MS	Happiness	0	1	S
Mittal	2016	1	USA	163	0.02	0.006	0.02	0.009	12.65	MS	Satisfaction	1	1	S
Riddle	2016	1	USA	97	0.13	0.010	0.17	0.017	9.70	MS	Satisfaction	0	0	S
Sisso	2016	1	USA	784	0.08	0.001	0.11	0.002	27.95	SFMS	Happiness	0	0	S
Sisso	2016	1	USA	784	0.08	0.001	0.10	0.002	27.95	SFMS	Satisfaction	1	0	S
Sisso	2016	2	USA	251	0.04	0.004	0.06	0.008	15.75	SFMS	Affect	0	0	S
Sisso	2016	2	USA	251	0.06	0.004	0.07	0.007	15.75	SFMS	Satisfaction	1	0	S

Sisso	2016	3	Israel	324	-0.07	0.003	-0.09	0.005	17.92	SFMS	Satisfaction	1	0	S
Sisso	2016	4	Israel	271	-0.06	0.004	-0.08	0.006	16.37	SFMS	Satisfaction	1	0	S
Sisso & Ritov	2016	1	USA	383	-0.01	0.003	-0.01	0.007	19.49	SFMS	Satisfaction	1	0	T
Sisso & Ritov	2016	1	USA	383	0.09	0.003	0.13	0.005	19.49	SFMS	Happiness	0	0	T
Kokkoris	2017	2	USA	187	0.03	0.005	0.03	0.006	13.56	MTS	Satisfaction	1	1	T
Sisso	2017	1	Israel	433	0.02	0.002	0.02	0.004	20.74	SFMS	Satisfaction	1	0	S

Notes:
A) While r and vr represent the attenuated values of the effect size and its relative variance, r_D and v_{rD} represent their disattenuated values.
B) In the Maximization measurement variable, MS = Maximization Scale (Schwartz); MTS =Maximizing Tendency Scale (Diab et al); SFMS = Short form of the Maximisation Scale (Nenkov et al)
C) In the Decision Context variable, 1 = Consumer Decision; 0 = Others (e.g. career, relationship etc.).
D) In the Publication Status, 1 = Published; 0 = Unpublished
E) In the Publication Wellbeing Level, T = Trait; S = State

Appendix C
Summary of Studies included in the Negative Wellbeing Meta-analysis

Authors	Year	Study	Country	n	r	v_r	r_D	v_{rD}	Precision	Max Measurement	Wellbeing Operationalization	Decision Context	Pub. Status	Wellbeing Level
Schwartz et al	2002	1	USA	82	0.61	0.005	0.78	0.008	8.89	MS	Regret	0	1	T
Schwartz et al	2002	1	USA	72	0.45	0.009	0.66	0.019	8.31	MS	Regret	0	1	T
Schwartz et al	2002	1	USA	100	0.36	0.008	0.51	0.016	9.85	MS	Regret	0	1	T
Schwartz et al	2002	1	Canada	401	0.39	0.002	0.58	0.004	19.95	MS	Regret	0	1	T
Schwartz et al	2002	1	USA	752	0.46	0.001	0.62	0.002	27.37	MS	Regret	0	1	T
Schwartz et al	2002	1	USA	220	0.50	0.003	0.67	0.005	14.73	MS	Regret	0	1	T
Schwartz et al	2002	1	USA	82	0.24	0.011	0.30	0.018	8.89	MS	Clinical	0	1	S
Schwartz et al	2002	1	USA	72	0.44	0.009	0.60	0.017	8.31	MS	Clinical	0	1	S
Schwartz et al	2002	1	USA	100	0.27	0.009	0.34	0.014	9.85	MS	Clinical	0	1	S
Iyengar et al	2006	1	USA	548	0.18	0.001	0.27	0.003	23.35	MS	Affect	0	1	S
Iyengar et al	2006	1	USA	548	0.12	0.002	0.18	0.004	23.35	MS	Regret	0	1	S
Greifender & Bertsch	2006	1	Germany	315	0.36	0.002	0.50	0.005	17.66	MS	Regret	0	1	T
Greifender & Bertsch	2006	2	Germany	219	0.55	0.002	0.74	0.004	14.70	MS	Regret	0	1	T
Parker et al	2007	1	USA	360	0.47	0.002	0.67	0.003	18.89	MS	Regret	0	1	T
Diab et al	2008	1	USA	191	0.45	0.003	0.64	0.007	13.71	MS	Regret	0	1	T
Diab et al	2008	1	USA	191	0.27	0.005	0.36	0.008	13.71	MTS	Regret	0	1	T
Nenkov et al	2008	4	USA	176	0.07	0.006	0.09	0.009	13.15	MS	Clinical	0	1	S
Nenkov et al	2008	4	USA	176	0.22	0.005	0.30	0.010	13.15	SFMS	Clinical	0	1	S
Nenkov et al	2008	4	USA	176	0.27	0.005	0.34	0.008	13.15	MS	Regret	0	1	T

Nenkov et al	2008	4	USA	176	0.38	0.004	0.50	0.007	13.15	SFMS	Regret	0	1	T
Buechner Love	2009	1	Italy	1004	0.28	0.001	0.37	0.002	31.64	MS	Regret	0	0	T
Buechner Love	2009	1	Italy	1004	0.17	0.001	0.23	0.002	31.64	MS	Clinical	0	0	S
Scheibehenne et al	2009	5	USA	87	0.11	0.011	0.17	0.026	9.17	MS	Regret	0	1	T
Scheibehenne et al	2009	5	Germany	80	0.14	0.012	0.20	0.026	8.77	MS	Regret	0	1	T
Spunt et al	2009	1	Netherlands	131	0.47	0.005	0.69	0.010	11.31	MS	Regret	0	1	T
Spunt et al	2009	2	USA	261	0.55	0.002	0.79	0.004	16.06	MS	Regret	0	1	T
Polman	2010	1	USA	78	0.31	0.011	0.46	0.023	8.66	MS	Affect	0	1	S
Purvis et al	2011	1	USA	1858	0.13	0.001	0.16	0.001	43.07	MS	Affect	0	1	T
Purvis et al	2011	2	USA	1065	0.74	0.000	1.00	0.000	32.59	MS	Regret	0	1	T
Purvis et al	2011	1	USA	1858	0.20	0.000	0.24	0.001	43.07	MS	Clinical	0	1	S
Reed et al.	2011	1	USA	144	0.44	0.005	0.59	0.008	11.87	MS	Regret	0	1	T
Rim et al	2011	2	USA	428	0.38	0.002	0.49	0.003	20.62	MS	Regret	0	1	T
Rim et al	2011	2	USA	428	0.17	0.002	0.20	0.003	20.62	MTS	Regret	0	1	T
Roets et al	2012	1	USA	307	0.62	0.001	0.77	0.002	17.44	MS	Regret	0	1	T
Roets et al	2012	1	Netherlands	263	0.59	0.002	0.79	0.003	16.12	MS	Regret	0	1	T
Roets et al	2012	1	China	218	0.55	0.002	0.71	0.004	14.66	MS	Regret	0	1	T
Schepman et al	2012	1	USA	126	0.36	0.005	0.47	0.009	11.09	MS	Clinical	0	1	T
Schepman et al	2012	1	USA	126	0.50	0.005	0.72	0.010	11.09	MS	Regret	0	1	T
Weinhardt et al	2012	1	USA	474	0.35	0.002	0.52	0.004	21.70	MS	Regret	0	0	T
Weinhardt et al	2012	1	USA	474	0.09	0.002	0.13	0.004	21.70	MTS	Regret	0	0	T
Weinhardt et al	2012	1	USA	474	0.15	0.002	0.18	0.003	21.70	MS	Clinical	0	0	S

Weinhardt et al	2012	1	USA	474	-0.12	0.002	-0.14	0.003	21.70	MTS	Clinical	0	0	S
Zaveri	2012	1	USA	94	0.63	0.004	0.85	0.007	9.54	MS	Regret	0	0	T
Zaveri	2012	1	Spain	55	0.51	0.010	0.69	0.019	7.21	MS	Regret	0	0	T
Zaveri	2012	1	Spain	55	0.08	0.018	0.12	0.038	7.21	MS	Affect	0	0	T
Zaveri	2012	1	USA	94	0.27	0.009	0.39	0.019	9.54	MS	Affect	0	0	T
Correia	2013	1	USA	218	0.47	0.003	0.63	0.005	14.66	MS	Regret	0	0	T
Dahling & Thompson	2013	1	USA	126	0.26	0.007	0.33	0.011	11.09	MS	Affect	0	1	T
Dahling & Thompson	2013	2	USA	139	0.33	0.006	0.39	0.008	11.66	MS	Affect	0	1	T
Moyano-Diaz	2013	1	Chile	211	0.39	0.003	0.56	0.007	14.42	MS	Regret	0	1	T
Besharat et al	2014	1	USA	552	0.22	0.002	0.30	0.003	23.43	SFMS	Regret	1	1	S
Foster	2014	1	USA	117	0.14	0.008	0.19	0.015	10.68	MTS	Regret	0	0	S
Oishi et al	2014	1	Japan	952	0.29	0.001	0.35	0.001	30.81	MS	Clinical	0	1	S
Oishi et al	2014	1	Japan	952	0.14	0.001	0.16	0.001	30.81	MTS	Clinical	0	1	S
Oishi et al	2014	1	USA	891	0.38	0.001	0.46	0.001	29.80	MS	Clinical	0	1	S
Oishi et al	2014	1	USA	891	-0.03	0.001	-0.03	0.001	29.80	MTS	Clinical	0	1	S
Akin & Ugur	2015	1	Turkey	300	0.22	0.003	0.30	0.006	17.23	SFMS	Clinical	0	1	T
Akin & Ugur	2015	1	Turkey	300	0.38	0.002	0.52	0.005	17.23	SFMS	Regret	0	1	T
Dalal et al	2015	1	USA	902	0.32	0.001	0.43	0.002	29.98	MS	Regret	0	1	T
Dalal et al	2015	1	USA	902	0.10	0.001	0.12	0.002	29.98	MTS	Regret	0	1	T
Datu	2015	1	Philippinnes	384	0.09	0.003	0.12	0.005	19.52	SFMS	Affect	0	1	S
Faure et al	2015	1	France	470	0.47	0.001	0.51	0.002	21.61	MS	Regret	0	1	T
Faure et al	2015	1	France	470	0.39	0.001	0.42	0.004	21.61	SFMS	Regret	0	1	T

Liu & al	2015	1	USA	140	0.26	0.006	0.31	0.009	11.70	SFMS	Regret	0	1	T
Patalano et al	2015	3	USA	69	0.01	0.015	0.01	0.024	8.12	MTS	Clinical	0	1	T
Patalano et al	2015	3	USA	69	0.02	0.015	0.03	0.024	8.12	MTS	Clinical	0	1	S
Sisso	2015	1	USA	100	0.25	0.009	0.35	0.017	9.85	SFMS	Regret	0	0	S
Sisso	2015	1	USA	110	0.20	0.008	0.26	0.016	10.34	SFMS	Affect	0	0	S
Sisso	2015	2	USA	160	0.45	0.004	0.67	0.009	12.53	SFMS	Regret	0	0	T
Sisso	2015	2	USA	160	0.28	0.005	0.42	0.012	12.53	SFMS	Affect	0	0	S
Sisso	2015	2	USA	160	0.15	0.006	0.22	0.012	12.53	SFMS	Affect	0	0	S
Foster & Diab	2016	2	USA	117	0.14	0.006	0.15	0.007	10.68	MTS	Regret	0	1	S
Huber et al	2016	1	Germany	473	0.29	0.002	0.37	0.003	21.68	MS	Regret	1	1	S
Sisso	2016	1	USA	784	0.39	0.001	0.56	0.002	27.95	SFMS	Regret	0	0	T
Sisso	2016	2	USA	251	0.44	0.003	0.62	0.005	15.75	SFMS	Regret	0	0	T
Sisso	2016	2	USA	251	0.12	0.004	0.16	0.008	15.75	SFMS	Affect	0	0	S
Sisso	2016	3	Israel	271	0.38	0.003	0.51	0.005	16.06	SFMS	Regret	0	0	T
Sisso	2016	3	Israel	271	0.19	0.003	0.24	0.006	16.06	SFMS	Regret	1	0	S
Sisso	2016	4	Israel	324	0.40	0.002	0.57	0.004	17.92	SFMS	Regret	0	0	T
Sisso	2016	4	Israel	324	0.21	0.003	0.27	0.005	17.92	SFMS	Regret	1	0	S
Sisso & Shayo	2016	1	UK	2309	0.02	0.000	0.03	0.002	34.57	SFMS	Regret	1	0	S
De Bruin et al	2016	1	USA	2221	0.20	0.000	0.26	0.001	47.10	MS	Affect	0	1	S
Sisso & Ritov	2017	1	Israel	433	0.19	0.002	0.24	0.002	20.74	SFMS	Regret	1	0	S

Notes:
A) While r and vr represent the attenuated values of the effect size and its relative variance, r_D and v_{rD} represent their disattenuated values.
B) In the Maximization measurement variable, MS = Maximization Scale (Schwartz); MTS =Maximizing Tendency Scale (Diab et al); SFMS = Short form of the Maximisation Scale (Nenkov et al)
C) In the Decision Context variable, 1 = Consumer Decision; 0 = Others (e.g. career, relationship etc.).
D) In the Publication Status, 1 = Published; 0 = Unpublished
E) In the Publication Wellbeing Level, T = Trait; S = State

Appendix D
Beta values of the Positive Wellbeing meta-regression model with alternative reference categories for Wellbeing operationalization (k=83)

	Ref. Category "Happiness"		**Ref. Category "Optimism"**		**Ref. Category "Satisfaction"**		**Ref. Category "Self-esteem"**		**Ref. Category "Composite WB Index"**	
	Att.	Dis.	Att.	Dis.	Att.	Dis.	Att.	Dis.	Att.	Dis.
Intercept	-.07	-.08	-.12*	-.15*	-.08	-.10^	-.16^	-.20^	-.26**	-.31**
GDP per capita	.03	.04	.03	.04	.03	.04	.03	.04	.03	.04
Autonomy	-.04^	-.05*	-.04^	-.05*	-.04^	-.05*	-.04^	-.05*	-.04^	-.05*
Precision	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00	-.00
Measurement Scale: MS	-	-	-	-	-	-	-	-	-	-
Measurement Scale: MTS	.25***	.30***	.25***	.30***	.25***	.30***	.25***	.30***	.25***	.30***
Measurement Scale: SFMS	.05	.06	.05	.06	.05	.06	.05	.06	.05	.06
Wellbeing Operationalization: Affect	.00	.00	.06	.07^	.02	.02	.10	.13	.19^	.23*
Wellbeing Operationalization: Eudaimonic Wellbeing	.12**	.18***	.18***	.25***	.14***	.19***	.22*	.30**	.31***	.40***
Wellbeing Operationalization: Happiness	-	-	.05*	.07	.01	.01	.09	.12	.19*	.22*
Wellbeing Operationalization: Optimism	-.05*	-.07*	-	-	-.04	-.06	.04	.05	.14^	.15
Wellbeing Operationalization: Satisfaction	-.01	-.01	.04	.06	-	-	.08	.11	.18*	.21*
Wellbeing Operationalization: Self-esteem	-.09	-.12	-.04	-.05	-.08	-.11	-	-	.10	.10
Wellbeing Operationalization: Composite Index	-.19*	-.22*	-.14^	-.15	-.18*	-.21*	-.10^	-.10	-	-
Publication Status: Published	-.06^	-.10*	-.06^	-.10*	-.06^	-.10*	-.06^	-.10*	-.06^	-.10*
Decision Context: Consumer Decision	.03	.05	.03	.05	.03	.05	.03	.05	.03	.05
Wellbeing Level: Trait	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01

^ p< .1*p< .05, **p< .01, *** p< .001

Appendix E

Beta values of the Positive Wellbeing Operationalizations from the intercept-free meta-regression (k=83)

	ES	SE	CI
Wellbeing Operationalization: Affect	-.08*	.04	-.16 – -.01
Wellbeing Operationalization: Eudaimonic Wellbeing	.11*	.05	.01 – .21
Wellbeing Operationalisation: Happiness	-.08**	.03	-.14 – -.03
Wellbeing Operationalization: Optimism	-.16***	.04	-.24 – -.08
Wellbeing Operationalization: Satisfaction	-.09***	.03	-.14 – -.04
Wellbeing Operationalization: Self-Esteem	-.16	.12	-.39 – .07
Wellbeing Operationalization: Composite Wellbeing Index	-.35**	.11	-.57 – -.14

^ p< .1*p< .05, **p< .01, *** p< .001

Appendix F

Moderators of the Relationship between Maximization and Negative Wellbeing with interaction between Wellbeing Level and Wellbeing Operationalization (k=83)

	ES_a	SE_a	CI_a
Intercept	.33***	.05	.23 – .43
Precision	-.03	.02	-.06 – .01
Measurement Scale: MTS	-.33***	.02	-.38 – -.28
Measurement Scale: SFMS	-.07^	.04	-.14 – .00
Wellbeing Operationalization: Clinical	.06	.05	-.04 – .17
Wellbeing Operationalisation: Regret	.01	.05	-.09 – .10
Wellbeing Level: Trait	-.03	.06	-.15 – .09
Interaction: Trait x Clinical	.05	.10	-.15 – .25
Interaction: Trait x Regret	.34***	.07	.21 –.46

^ p< .1*p< .05, **p< .01, *** p< .001

Essay 2

Is Time Pressure a Risky Business? A Meta-analysis

Abstract

Decades of research on decision making suggest that time pressure can promote either risk-aversion or risk-seeking. In the present research, we explain this inconsistency by drawing on an egocentric bias framework. Specifically, we focus on two characteristics of risky decisions. First, since individuals tend to be more unrealistically optimistic about the future under time pressure, they are more risk-seeking when outcome probabilities are ambiguous rather than explicit because the former can be interpreted to one's advantage. Second, because time pressure hampers the adoption of others' view, decision-makers take more risks when acting on others' behalf as they downplay their anxiety response to risk. Three multilevel multivariate meta-analyses (k=102) support our predictions derived from the egocentric bias. Furthermore, results show that the contingencies previously identified by primary studies (gains/losses frames and outcome probabilities) do not account for the inconsistent influence of time pressure on risky decisions. Importantly, findings are robust across primary studies' methodological characteristics. Our research provides insights for organizations and public policy practitioners concerned by safeguarding the best interests of both harassed decision-makers and the bearers of the consequences of their decisions.

Key words: *time pressure; risk; risk preferences; meta-analysis; decision-making; framing effects.*

Introduction

"This is your last chance. After this, there is no turning back. You take the blue pill - the story ends, you wake up in your bed and believe whatever you want to believe. You take the red pill - you stay in Wonderland and I show you how deep the rabbit-hole goes"

For sci-fi movie aficionados, this line should sound familiar.

For the others, you should consider watching "The Matrix" by the Wachowski siblings. The movie is about a hacker, Neo, who learns that the reality he perceives is nothing more than a simulated reality ("the matrix") generated by intelligent machines that enslaved mankind. The line reported above is probably from the most memorable moment of the entire film. When Neo meets Morpheus, the leader of the humans fighting against the machines, he is offered two mutually exclusive choice options: he could either take the blue pill and stay in the matrix (the safe alternative), or he could take the red pill and awaken from his subdued state as a human (the risky alternative). The time Neo has to decide which pill to ingest is very limited, so what is he going to do?

Decade-long research in behavioral economics and psychology has established that under normal circumstances, i.e. when there is enough time to ponder a decision, people facing the same choice as Neo would be risk-averse and choose the blue pill (Hanoch 1977; Holt and Laury 2002). However, there is no such clear understanding regarding which of the two pills people would take under time pressure. Time pressure manifests itself as a feeling of urgency or of being time-scarce (Benson III, Groth and Beach 1998). Due to the pervasiveness of time pressure in day-to-day life, a growing number of scholars have been studying the effects of this mental state on decision-making in a wide array of contexts. For instance, in organizations, consultants, academics and business people alike need to work to strict deadlines to complete

projects. Brokers need to make the best calls for their clients in a very short time span due to the volatility of stock prices. Likewise, consumers often feel time-pressured to decide whether or what to buy when facing limited-time offers and participants in call auctions must decide very quickly how much to bid if they do not want to miss out on a specific item. What would they choose when pressed for time: the blue pill or the red pill?

The answer to this question is at the center of a heated academic debate. One stream of research contends that people are less willing to take risks under time pressure (Ben Zur and Bresnitz 1981; El Haji et al. 2016) whereas another stream shows just the opposite (Madan, Spetch and Ludvig 2015). Our research goal is to investigate if two contingency factors can account for these conflicting results. These factors are whether the risk information is ambiguous or explicit and whether the decision bears consequences for the decision-maker or someone else. To that effect, we develop a conceptual framework according to which time pressure increases (decreases) risk- seeking when the characteristics of the decision context reinforce (weaken) the egocentric bias (Gilovich, Medvec and Savitsky 2000; Ross et al. 1977). A stronger egocentric bias fosters individuals' belief that future events will be favorable to them (Klein and Helweg-Larsen 2002)─a tendency to unrealistic optimism (Weinstein 1980) that is more likely to remain unbridled when risk information is ambiguous rather than explicit. Egocentrism also makes it more difficult to accurately anticipate others' emotional states (Van Boven et al. 2013)─an interpersonal empathy gap (Loewenstein 1996) that leads to discount the anxiety others would feel if they faced risky prospects.

We test our predictions by meta-analyzing 102 effect sizes retrieved from 30 published and unpublished papers reflecting the impact of time pressure on risk-taking. To the best of our knowledge, our study is the first to leverage the available evidence in order to examine the relationship between time pressure and risk-taking. In doing so, our research addresses two main questions: 1) does the type of risk information about choice outcomes (ambiguous or explicit) moderate the relationship between time pressure and risk-taking? 2) Does the bearer

of the consequences of the risky decision (self or others) moderate this relationship? Crucially, neither of these contingency factors has been investigated before. We also examine if two alternative contingency factors proposed by primary studies—whether the choice is framed as gains or losses and the probabilities associated with the possible outcomes—account for the effect of time pressure on risk-taking.

In addressing these issues, our research contributes to the time pressure and risk-taking literature in several ways. First, it demonstrates that the inconsistency in findings is not due to an absence of effect of time pressure on risk-taking but rather to the contingent nature of this relationship. This conclusion is based on evidence of systematic between-effect size variance, despite a null overall effect. Second, results support the egocentric bias as a conceptual framework to account for the contingency of this relationship. We find evidence that people are more daring under time pressure if the risk is ambiguous rather than explicit, consistent with our view that harassed decision-makers are unrealistically optimistic about the outcome of their decisions (Weinstein 1980). In addition, decision makers who are pressed for time take more risk for others than for themselves, in line with the notion that they experience a wider interpersonal empathy gap (Loewenstein 1996). Third, our results rule out the framing of the decision as gains versus losses (Saqib and Chan 2015) as well as the probabilities of the decision outcomes (Eilersten 2014) as alternative accounts for the inconsistencies among primary studies. Importantly, our meta-analytic approach shows that these findings are robust across the different primary studies' methodological characteristics such as the nature of the consequences of the decision (hypothetical or real) and the type of task (monetary or non-monetary).

Overall, our findings are relevant for organizations and public policy makers, who are increasingly committed to minimize the consequences of risk (Stewart 2015). In addition, our findings inform behavioral researchers about methodological characteristics that do not affect the generalizability of results in the time pressure and risk-taking domain. The remainder of

this paper is organized as follows. After discussing the conceptual background and our hypotheses, we outline the methodology employed, present the results before providing insights for managers, public policy and researchers.

Conceptual Framework and Hypotheses

Time pressure refers to the perception that the time available to carry out a specific task—that the individual is motivated to perform in the first place—is too short (Ordoñez and Benson 1997). According to a dual processing system, decision-making under conditions of no time pressure allows for more elaboration and use of logic, hence involving the processes of system 2, while the presence of time pressure is likely to trigger system 1 processing according to which decision-making is automatic and open to the influence of heuristics and biases (Capraro and Cococcioni 2016; Evans and Stanovich 2013; Finucane, Alhakami, Slovic and Johnson 2000). Aligned with this view, we develop a conceptual framework according to which time pressure increases risk- seeking when the characteristics of the decision context reinforce an egocentric bias, that is, the tendency to favor one's ego and perspective (Gilovich et al. 2000; Ross et al. 1977; Savitsky 2007). Specifically, we focus on two contingency factors. First, the egocentric bias drives unrealistic optimism — the expectations that the future state of the world will be aligned with one's desires (Klein and Helweg-Larsen 2002; Weinstein 1980). Unrealistic optimism comes from individuals' motivation to reduce the anxiety triggered by risky choices (Hether et al. 2002; Weinstein and Lachendro 1982). Second, the egocentric bias is also responsible for the difficulty in adopting others' perspectives. Here the egocentric bias leads people to anchor on their own perspective and fail to fully adjust to others' (Epley et al. 2004; Rubio-Fernández 2008).

Ambiguous risk information and unrealistic optimism

Unrealistically optimistic people believe that they will experience more favorable outcomes than what is suggested by quantitative standards such as base rate or historical data (Kruger and Burrus 2004; Shepperd, Water, Weinstein and Klein 2015). A reliable empirical manifestation of unrealistic optimism is that people make overly favorable personal predictions compared with their actual outcomes regarding both positive events, such as economic forecast (Calderon 1993), and negative ones, such as contracting a sexually transmitted disease (Rothman, Klein and Weinstein 1996). Crucially, unrealistic optimism is more likely when individuals' predictions are not constrained by objective information about the frequency of occurrence of the possible outcomes (Rothman, Klein & Weinstein, 1996; Shepperd, Water, Weinstein, & Klein 2015). As a consequence, decision makers should be more likely to display unrealistic optimism when the risk information is not explicit ─ that is, when it is ambiguous. Some risky decisions (e.g. purchase of a new product, financial investments, stock trading, gambling, etc.) involved known probabilities for the possible outcomes whereas for others these probabilities are unknown (ambiguous) and must be subjectively estimated (Maafi 2011; Maule, Hockey and Bdzola 2000).

In a probabilistic choice environment if risk information is ambiguous (e.g. a chance of either winning or losing 100$) rather than explicit (e.g. a 50% chance of winning 100$ or a 50% chance of losing 100$), decision-makers estimate the odds of the possible outcomes on the basis of the available information (Maafi 2011; Maule, Hockey and Bdzola 2000). In this case, studies show that decision-makers display unrealistic optimism by minimizing the odds of the unfavorable outcome (Hether et al. 2002; Weinstein and Klein 1996). For example, Goldsmith and Amir (2010) found that when respondents were told they would receive either a superior or inferior reward if they purchased a product ─ with no mention of the specific probabilities associated with the rewards ─ their likelihood to purchase it was comparable to respondents who were told they would receive a superior reward for certain. Since the

probabilities of getting or not getting the reward were ambiguous, respondents could interpret them in a way that was more favorable to them.

Time pressure is a source of anxiety and psychological stress for decision-makers (Ariely and Zakai 2001; Haynes 2009; Maule et al. 2000). In addition, as stated above, risk, in and of itself, also induces anxiety; hence, decision-makers facing risky choices should be subjected to greater anxiety under time pressure than in the absence of time pressure. Since unrealistic optimism is a response to the anxiety triggered by risky decisions (Hether et al. 2002; Weinstein and Lachendro 1982) it should be strengthened by time pressure. As a consequence, time pressure should increase risk-seeking as decision-makers would expect to be less (more) likely to experience the negative (positive) outcome than under no time pressure. However, the nature of the risk information should moderate this relationship. Specifically, when the odds of the negative and positive outcomes are explicit, there is little room for unrealistic optimism to operate (Rothman, Klein and Weinstein 1996; Shepperd, Water, Weinstein and Klein 2015) whereas unrealistic optimism is enabled when the odds are ambiguous, leading decision-makers to take more risk. Thus, we hypothesize the following:

***H_1**: Under time pressure, individuals will be more (less) risk-seeking when the risk is ambiguously (explicitly) defined.*

The Bearer of the Risky Decision and the Interpersonal Empathy Gap

The egocentric bias is also at play when the decision-maker and the bearer of the consequences of the risky decision are different (Van Boven, Dunning and Loewenstein 2000). Individuals making decisions that affect others first start by projecting how they would feel in a situation different from their current one ─ they imagine what their emotional response would be if the outcomes from the decision applied to them. In a second step, they use this estimate to predict how others would feel in that situation (Van Boven et al. 2013). This perspective taking is not perfectly accurate as the anchoring and adjustment process does not completely

overcome the initial egocentric viewpoint (Epley et al. 2004). Specifically, for situations that are emotionally charged, decision-makers underestimate the intensity of others' response in comparison with theirs, which creates an "interpersonal empathy gap" (Loewenstein 1996; Sayette et al. 2008; Van Boven et al. 2013). Hence, individuals making a risky choice on behalf of others should discount the anxiety others would experience were they making the decision. As a consequence, decision makers should be more risk-seeking for others than what they would be for themselves. Empirical evidence supports the notion that individuals have an inflated view of how much risk others would be willing to take. For instance, Van Boven, Lowenstein, and Dunning (2005) found that people overestimate others' willingness to engage in socially risky situations. More generally, Faro and Rottensteich (2006) demonstrate that, on average, people think of others as being more risk-seeking than what they actually are.

As discussed, when making risky decisions on behalf of others, individuals anchor on their own emotional response before progressively adjusting to others' perspectives. Importantly, this process is more likely to be fully accomplished without time pressure (Epley et al. 2004; Van Boven and Lowenstein 2003). Hence, individuals are more likely to underestimate the intensity of others' anxiety response to risky choices when they do not believe they have the opportunity to adjust their perspective to others' (Epley et al. 2004). For example, in critical medical contexts the necessity to make decisions as fast possible reduces nurses' likelihood to consider clinical risk assessments to intervene on patients (Thompson et al. 2008) ─ they are willing to take more risk when their decisions affect others. Hence, the interpersonal empathy gap should be wider with time pressure, leading to our second hypothesis:

***H_2**: Under time pressure, individuals will be more (less) risk-seeking when the decision outcome will affect others (themselves).*

Alternative contingencies of the time pressure risk-taking relationship

So far, we have advanced two novel contingency effects to explain the conflicting findings about the relationship between time pressure and risk-taking, however other scholars have previously proposed other contingencies. These are: (1) whether the possible outcomes linked with the decision are framed as gains or losses (e.g., Saqib & Chan, 2015), and (2) the specific probabilities associated with the possible outcomes (e.g., Busemeyer 1985; Eilersten 2014).

Saqib and Chan (2015) proposed the "preference risk reversal" effect, according to which individuals' tendency to seek or avoid risks under time pressure depends on how the decision is framed. They discovered that time pressure makes people risk-averse over losses but risk-seeking over gains. In this sense, time pressure would reverse the effect predicted by prospect theory, whereby people tend to be risk-averse over gains but risk-seeking over losses (Kahneman and Tversky 1973). According to Saqib and Chan (2015) people under time pressure focus on obtaining the best possible outcome when they are in a gain frame but focus on incurring the worst possible outcome when they are in a loss frame. We note however that empirical support for the preference reversal effect is mixed with recent evidence suggesting that it is not robust across all decision contexts (El Haji et al. 2016; Guo et al. 2017; Kocher et al. 2013; Young et al. 2015).

There are two main findings related to the contingency effect of the probabilities of the different decision outcomes. First, Busemeyer and colleagues (1985; Busemeyer and Towsend 1993; Dror, Busemeyer and Basola 1999) found support for the notion that time pressure leads to more risk-seeking when the expected value of a decision, i.e. the sum of the products between the outcomes and their relative probability, is positive but to less risk-seeking when the expected value is negative. Alternatively, Eilersten (2014) proposed that under time pressure decision-makers simply rely on the probability of the best possible outcome to decide whether to take risks or not ─ the higher that probability, the more likely they are to choose the

risky option. The assumption regarding both of these findings is that individuals have the cognitive capacity to compute and process probabilities accurately. However, the system 2 processing ─ elaborated and thorough ─ required for such operations is known to be impaired in hurried decision making (Whitney et al. 2008), casting doubt over the robustness of this contingency factor.

In sum, due to the lack of converging evidence regarding decision frame and to the questionable assumption that individuals can process complex quantitative information under time pressure, whether these contingency effects would prove to be generalizable across primary studies remains an empirical question. Hence, we ask:

Research Question 1*: Are decision frame and the probability of the decision outcomes reliable moderators of the time pressure and risk-taking relationship?*

Methodology

Choice of Method

In an attempt to test our hypothesis and resolve the inconsistencies found in previous studies, we ran a series of subgroup meta-analyses. This method is considered an appropriate and rigorous method to settle debates in the literature stemming from conflicting results. Specifically, meta-analysis is able to provide a summary estimate by combining all the effects sizes available in the literature, to improve the power of small or inconclusive studies and to detect biases (Ioannidis and Lau 1999).

Data collection

We established several criteria to collect eligible articles for inclusion in the meta-analysis. We were only interested in experiments manipulating time pressure and measuring risk-taking in order to assess their causal link. To that effect, studies using within- between- or

mixed-subject designs, hypothetical scenarios or incentive compatible tasks, a control group or different treatment levels of time pressure were considered; however, we did not search for correlational studies. Importantly, time pressure could be manipulated by imposing either a time constraint on the task or the speed at which the task had to be carried out. In either case, studies had to report a statistically significant manipulation check measuring either the perception of time pressure or how quickly the response was given relatively to a response time benchmark. Alternatively, reporting a pre-test demonstrating the effectiveness of the time pressure manipulation was also suitable.

Based on the above criteria we first performed an extensive search for both published and unpublished experimental papers across the disciplines of management, economics, finance, marketing and psychology in order to retrieve effect sizes of the relationship between time pressure and risk-taking. We used online journal aggregators such as Google Scholar, EBSCO and JSTOR while we also searched more specifically by targeting specific journals in behavioral disciplines (e.g. Econometrica, Journal of Consumer Research, Journal of Marketing Research, Journal of Consumer Psychology and Organizational Behavior and Human Decision Processes). The keywords used included "time pressure", "time constraint", "time limit", "risk", "risky decision", "risk taking", "risk seeking", "risk averse" and "risk aversion." Additional papers were found by screening through the reference lists of the first set of papers collected. A call for published and unpublished manuscripts was also made through the listserv of the Society for Judgment and Decision Making that yielded four additional published papers. Data collection was concluded at the end of March 2018; in total 61 published and unpublished papers were retrieved.

Inclusion criteria

The eligible papers were then examined for inclusion in the study. We first verified that only empirical papers written in English were included. This led to the exclusion of 3 literature reviews and theoretical frameworks. Furthermore, we included studies reporting either an

objective (i.e. determined by a clear deadline, "you only have 30 seconds to make the decision") or a subjective (i.e. determined by a general guideline, "you have to make a decision as soon as possible") manipulation of time pressure. However, 4 papers that did not manipulate time pressure were excluded, yielding 54 papers at this stage. In addition, we included studies that measured risk-taking in one of the following ways: (1) The proportion of participants who decided to make a risky choice (risk-seeking) over those who did not (risk-averse) or vice versa (e.g. Maule et al. 2000); (2) whether participants chose to engage in a risky behavior, such as reckless driving, gambling larger amounts of money, etc. or chose not to engage in the behaviour or to postpone their decision (Kopylov 2009; Verstraten 2014); (3) participants' preferences for risk, as measured by how attractive the risky option was to them (Kocher et al. 2013) or by their attitudes towards engaging in risky behaviors (e.g. a financial auditor's intention to reduce audit quality) (Coram and Woodliff 2004). 20 papers that did not report any of the above risk measures were excluded, leaving 34 papers in the sample at this point. Among these, for instance, Kerstholt (1994) measured the speed of information processing rather than risk-seeking per se and was therefore discarded. Other articles that neither reported the effect of time pressure on risk-taking nor provided the necessary information to compute it were discarded after the authors did not reply to a request for further information (N=4). Hence, out of the initial set of 61 papers, 30 met the eligibility criteria for inclusion.

We also performed an outlier analysis to investigate if some effect sizes could have an undue influence on the results (Viechtbauer and Cheung 2010). We identified one effect size with a standardized residual greater than 2.57 and a parameter change index[10] greater than 1 as an outlier, however we did not eliminate it from the analyses as it was imputable to a low sample size (n=32) (Carrillat, Legoux and Hadida 2018). The total number of effect sizes from the 30 included articles was 102 of which 5% were from unpublished manuscripts.

[10] This value indicates by how many standard deviations the estimated coefficient changes after excluding the *i*th study from the model fitting (Viechtbauer and Cheung, 2010).

Effect size measurement

Once the articles were shortlisted, we created a database listing all the effect sizes, their variance and moderators (see Appendices A, B and C for the complete summary of studies included in the meta-analysis). The effect size indicator examined was Hedges' *g*, which measures the standardized difference in means between the experimental and the control group, i.e. between the group in the high time pressure condition and the group in the low or no time pressure condition. In comparison to Cohen's *d* (Cohen, 1989), Hedges' *g* corrects the effect size estimate using the pooled weighted standard deviations rather than the pooled standard deviations thus correcting for biases due to small samples (Hedges & Olkin, 1985).[11]

The effect sizes were converted so they would all represent a measure of risk-seeking (rather than risk-aversion). Hence, a positive Hedges' *g* indicated a higher propensity to risk for the experimental group in comparison to the control group, whereas a negative value indicated a lower propensity to risk for the experimental group. The vast majority of the effect sizes (approximately 72%) compared time pressure against a no time pressure condition, and 28% compared high time pressure to medium or low time pressure. Next, we converted all Cohen's *d*s into Hedges' *g*s.[12] We succeeded in obtaining information regarding the number of respondents per condition from an author for one of the nine articles that did not report it. We assumed an even distribution of respondents across conditions for the other eight articles.

[11] Hedges' g was computed from Cohen's d. We extracted Cohen's *d* either directly from the manuscripts that reported it or by calculating it from statistics reported in the papers, such as means, standard deviations and proportions. The formulas used to calculate the effect sizes were from Borenstein et al. (2009). To obtain the Cohen's *d* and the variance of *d* (*Vd*) from proportions we used the following formulas: $d = LogOddsRatio\ x\ \frac{\sqrt{3}}{\pi}$; $V_d = V_{LogOddsRatio}\ x\ \frac{3}{\pi}$, where $LogOddsRatio = \ln\left(\frac{AD}{BC}\right)$ and $V_{LogOddsRatio} = \frac{1}{A} + \frac{1}{B} + \frac{1}{C} + \frac{1}{D}$. *A*, *B*, *C* and *D* represent the number of exposed cases, exposed non-cases, unexposed cases and unexposed non-cases, respectively (Szumilas, 2010). To calculate Cohen's *d* and the variance of *d* (*Vd*) from a Beta coefficient we used the following formulas: $t = \frac{\beta}{Standard\ Error}$; $r = \frac{t}{\sqrt{t^2 + sample\ size - 2}}$; $d = \frac{2r}{\sqrt{1-r^2}}$; $V_d = \frac{4V_r}{(1-r^2)^3}$.

[12] Hedges' *g* was calculated by multiplying Cohen's *d* by a correction factor $J = 1 - \frac{3}{4df-1}$ (Borenstein et al., 2009; Hedges, 1981).

Moderators

A set of moderators were coded for the three models (refer to Table 1 for the full list of moderators used in each model, their descriptions and operationalizations). The moderators are classified into three groups: substantive, methodological, and control. Whereas substantive moderators were included to test our hypotheses, methodological moderators were used to analyse the effect of methodological characteristics of the study on the variance between effect sizes, and controls were used to check for result stability. All categorical variables were dummy coded while continuous variables were mean-centred before data analysis. The authors recruited one external researcher who re-coded the articles for effect sizes and moderators based on the guidelines described in Table 1. The intercoder reliability was 96.3%, disagreements were settled through discussion.

[Insert Table 1 here]

Substantive moderators

In order to test our hypotheses, we coded for the risk information given to the respondent as being either explicit or ambiguous (Hypothesis 1). For example, if the study mentioned "a chance of 25% to receive $100", the effect size qualified as "explicit"; conversely, if it only reported "there is a chance to receive $100", this was coded as "ambiguous." When the risk probabilities were partially known, the risk information was coded as "ambiguous" (Maafi 2011; Maule, Hockey and Bdzola, 2000).[13] In addition, we coded the focus of the risky decision by recording who bears the consequences of the decision: the decision maker only ("self", him-/herself and others ("self and others"), or others only ("others") (Hypothesis 2).

[13] An example of partially known probabilities is found in Maule et al. (2000): "You are having a relaxing day out and arrive at the station early/late to find that you can catch an earlier/later train, which will give you more/less time to enjoy yourself. There are two trains now available. One is an express train from this station that runs on a line that undergoing maintenance, and occasionally subject to long delays. The other train is also an express but runs from a different station that will require a 30-min drive. This train is extremely reliable'." Participants can easily infer that the second train is on schedule 100% of the time but it is unknown how often the first train is delayed.

To explore our research question regarding the alternative contingency factors we coded for whether the decision was framed as a gain (e.g. "you will receive or win…"), a loss (e.g. "you will lose…") or was undefined, when the study did not report enough information. We also coded for the expected values linked to the decision as the probability-weighted average of all possible values of the outcomes (Saqib and Chan 2015).[14] Alongside these, we coded for the probability of the best possible outcome of the risky option using two variables, one categorical and one continuous. We employed the former as a control variable in Model 1, whilst the latter was used as a substantive moderator in Model 3 (ref. to the Data Analysis and Model Specification section for further details). For Model 1, our purpose was to maximize the number of effect sizes to which we could assign a level of probability for the best possible outcome in order to control for this variable when testing the hypotheses. Hence, in this model, the categorical moderator classified the probability as either high, medium or low. When numerical probabilities were provided, they were recoded as follows: if they were higher than 70% (non-inclusive), we coded them as high; if they were between 40% and 70% (inclusive), we coded them as medium; if they were lower than 40% (non-inclusive), we coded them as low. When numerical probabilities were not provided, we used authors' verbal classifications at "face value", i.e. as labelled in their studies (e.g. "high", "medium", "low"). The probability was "unspecified" if it was not specified either numerically or verbally. In contrast, for Model 3 we used a continuous variable to code for this moderator in order to perform a more rigorous investigation of the effect of this contingency factor (i.e., the focal element of Model 3); hence, we recorded the numerical probability of the best possible outcome as provided to the respondents (e.g. 25%, 50% etc.).

[14] The formula we used to calculate expected values is $E[X] = x_1p_1+x_2p_2+\ldots+ x_kp_k$, where X is a random variable with a finite number of finite outcomes $x_1, x_2 \ldots x_k$, and $p_1, p_2 \ldots p_k$ are the probabilities attached to each outcome. For example, the expected value of winning \$100 with 50% probability or else nothing (from Saqib & Chan, 2015) is E[X] = 100*0.5 + 0*0.5 = \$50.

Methodological moderators

These moderators included the type of the risky task, distinguishing between monetary decisions (e.g. an investment or a gamble) or non-monetary decisions (e.g. a human resources, medical or legal decision). In addition, we recorded the nature of the consequences of the task as whether they were real or hypothetical.

Moderators as control variables

Moderators aimed at controlling for primary study heterogeneity included the type of manipulation, which distinguished effect sizes based on whether they represented a comparison between a time pressure condition and a control condition or between different levels of time pressure. Furthermore, we coded for the different operationalizations of risk, such as making a risk-seeking rather than a risk-averse choice ("choice"), making a risky choice versus not making a choice at all ("no choice", e.g. choosing to gamble or not, deciding to make a choice or to defer choice), and showing a preference for risk ("risk preference" e.g., the likelihood to engage in a risky behaviour, showing a favourable attitude towards a safe/risky option). We also included a "time pressure induction" moderator that indicated whether the manipulation of time pressure was done subjectively (e.g. instructing participants to carry out a task very quickly) or objectively (e.g. giving an actual time constraint to participants).

Overview of Models 1, 2, and 3

Since not every included study reported frames, expected values and the explicit risk probabilities of the best possible outcome of the risky decision, we divided our final sample of effect sizes into three subsamples that we used to estimate three different models for more specific empirical testing.

The first subsample (Model 1) included all the effect sizes available in order to test for hypotheses 1 and 2 ($k = 94$) and for the moderating effects of primary studies' methodological

characteristics.[15] The second subsample (Model 2) contained all the effect sizes for which either a gain or a loss frame was reported in order to investigate our first research question (k = 48); it also controlled for the operationalization of risk-taking and for precision. The third subsample (Model 3) included only the effect sizes for which the numerical probabilities of the best possible outcome of the risky option were provided and expected values could be computed to test for the research question as well (k = 17); it also controlled for precision. We note that the same effect sizes that allow computing the expected values as moderators also provide information about the numerical probability of the best possible outcome; making it possible to test for these two factors on the same subsample.

Publication bias

We relied on a range of indicators to diagnose publication bias, and specifically Rosenthal and Rosenberg's fail-safe n (Rosenthal 1979; Rosenberg 2005), the trim-and-fill analysis (Duval and Tweedie 2000) as well as Egger's test (Egger, Smith and Minder 1997). Beyond diagnosis, we also controlled for publication bias by including a proxy for study precision into the meta-regressions, calculated as the inverse of each effect size standard errors, as suggested by Sterne and Egger (2001). This proxy was included since studies with small samples tend to be published only if their effect sizes are large enough (Carrillat, Legoux and Hadida 2018). The meta-regressions also controlled for the publication status of the articles from which the effect size was retrieved (published or unpublished). We detail the outcome of the measure taken to assuage publication bias in the results section.

[15] Since this model did not include framing as a moderator, the effect sizes were averaged in case the same sample was allocated to both a loss and gain condition, hence the total number of effect sizes is 94 rather than 102. In doing so, we were able to conduct specific subgroup meta-analyses for each of these moderators separately, and avoided including variables with high bivariate correlation, such as unspecified frame and the "ambiguous" risk information (r = .92, p < .001). The formulas used to combine two effect sizes are $\bar{Y} = \frac{1}{2}(Y_1 + Y_2)$ and $V_{\bar{Y}} = \frac{1}{4}(V_{Y1} + V_{Y2} + 2r\sqrt{V_{Y1}}\sqrt{V_{Y2}})$, where Y and V denote the two effect size values and their variance, and, respectively, r represents the correlation value between the two dependent variables. In case r was not reported, it was assumed as 0.5 based on previous literature (Malle, 2006). To combine 3 or more effect sizes, the formulas used were $\bar{Y} = \frac{1}{m}(Y_1 + \cdots + Y_m)$ and $V_{\bar{Y}} = \left(\frac{1}{m}\right)^2 \left(\sum_{i=1}^{m} V_i + (\sum_{i \neq i}(r_{ij}\sqrt{V_i}\sqrt{V_j}\right)$, where m is the number of effect sizes, and r_{ij} is the correlation between pairs of effect sizes (Hedges et al., 2009). We also carried out robustness checks with r = 0.25 and r = 0.75 and the findings were unchanged (refer to Table 5b).

Data analysis and model specification

Data analysis was conducted with Metafor, the meta-analytical package for R developed by Viechtbauer (2010). We first ran the three models without moderators to check the grand mean estimate of Hedges' *g* and the between-study variance; the moderators were then entered into meta-regression models. In all three cases, we performed a multivariate multi-level meta-regression accounting for three levels of nesting: effect sizes within studies within articles. This analysis controls for interdependencies or correlations among effect sizes retrieved from the same study and article (Aarts et al. 2014). We estimated the between-study variance with restricted maximum likelihood (REML). The random effect model employed to estimate the summary Hedges' *g* for the three univariate meta-analyses was as follows:

$$ES_{ijz} = \beta_0 + \upsilon_{ijz} + \psi_{ijz} + e_{ijz},$$

where ES_{ijz} is the effect size measure, the subscript *i* denotes the effect size within a study, subscript *j* indicates the study within the article and subscript *z* represents the article. In addition, β_0 represents the summary effect size without moderators, υ_{ijz} is an estimation of the within-study correlation of the effect sizes, ψ_{ijz} indicates between-effect size variance, and e_{ijz} is the sampling error. Based on these specifications we derived the following meta-regression equations for the three models:

Model 1

$$ES_{ijz} = \beta_0 + \beta_1 PRECISION_{ijz} + \beta_2 TIME.PRESSURE.MANIPULATION_{ijz} + \beta_3 PROB.POSITIVE.OUTCOME_{ijz} + \beta_4 RISK.INFORMATION_{ijz} + \beta_5 RISK.OPERATIONALIZATION_{ijz} + \beta_6 NATURE.OF.CONSEQUENCES_{ijz} + \beta_7 TYPE.OF.TASKijz + \beta_8 FOCUS_{ijz} + \beta_9 TIME.PRESSURE.INDUCTION_{ijz} + \beta_{10} PUBLICATION.STATUS_{ijz} + \beta_{11} CONSEQUENCES_{ijz} x SCENARIO.TASK_{ijz} + \upsilon_{ijz} + \psi_{ijz} + e_{ijz},$$

Model 2

$$ES_{ijz} = \beta_0 + \beta_1 FRAMING_{ijz} + \beta_2 PRECISION_{ijz} + \beta_3 RISK.OPERATIONALIZATION_{ijz} + \upsilon_{ijz} + \psi_{ijz} + e_{ijz},$$

Model 3

$$ES_{ijz} = \beta_0 + \beta_1 EXPECTED.VALUES_{ijz} + \beta_2 EXPLICIT.PROB.POSITIVE.OUTCOME_{ijz} + \beta_3 PRECISION_{ijz} + \upsilon_{ijz} + \psi_{ijz} + e_{ijz}$$

Note that in the third model we included the interaction term between the nature of consequences (hypothetical vs real) and the scenario task (monetary vs non-monetary) into the meta-regression to test whether the combination of specific study characteristics affect the effect sizes.

Results

Univariate analyses

Univariate results for the three subsample meta-analyses are provided in Table 2. We first discuss results for the publication bias analysis before turning to the grand mean effect sizes as well as effect size distribution heterogeneity.

Publication bias analysis

Several measures were taken to diagnose and control for publication bias. We followed Ferguson and Brannick's (2012) tandem procedure according to which a diagnosis of publication bias must rest on at least two converging indicators since they are prone to type-I errors when used individually. As well as adding precision to the meta-regression models as indicated previously, we calculated both Rosenberg and Rosenthal's fail-safe n, which

represents the number of studies that could not be retrieved with statistically insignificant effects that would nullify the grand mean effect size (Aguinis et al. 2011; Carson et al. 1990). As displayed in Table 2, the Rosenthal's fail-safe n for subsample 2 was 413 (Rosenberg's = 455), which is above the value recommended by Rosenthal (1979) to identify a robust meta-analysis (5k + 10 = 250 effect sizes). As for subsample 3, Rosenthal and Rosenberg's fail-safe n were 29 and 118, respectively, compared with a value of 5k + 10 = 95.[16] Since Rosenthal's fail-safe n indicates that the significance of the mean effect size could be threatened by file drawer studies, we undertook further analyses to estimate this bias more precisely. We visually inspected the subsamples' funnel plots (see Figure 1) and observed asymmetry for subsample 3 only. Furthermore, as a formal assessment the funnel plots' level of asymmetry, Egger's regression test (Egger, Smith and Minder 1997) was marginally significant for subsample 1 ($z = 1.64$, $p = .10$) and subsample 2 ($z = 1.96$, $p = .05$) but significant for subsample 3 ($z = 3.27$, $p < .01$). Based on Ferguson and Brannick's (2012) recommendation, we conclude that publication bias is likely for subsample 3 (three converging indicators) but is unlikely for subsample 1 (no indicator) and subsample 2 (one indicator). In a subsequent analysis, we compare the unadjusted and the adjusted (debiased) grand mean effect sizes for subsample 3 to better estimate the extent to which publication bias affects the results.

[Insert Figure 1 here]

Grand mean effect sizes

The first subsample meta-analysis based on 94 effect sizes reveals a non-significant grand mean effect size as the 95% confidence interval spans zero (Hedges' $g = -0.00$; CI_{95}[-0.22; 0.18]). The second subsample shows a significant negative grand mean effect size with $g = -0.11$ (CI_{95}[-0.21;-0.02]) showing that, across all studies for which gains or losses frames could be identified, participants under time pressure are more risk-averse than those with no

[16] Since the overall grand mean effect size for Model 1 is insignificant, we did not compute its fail-safe n.

time pressure (k = 48). The third subsample yields a *g* of -0.21 (CI_{95}[-0.22; -0.18]) indicating that, among studies reporting numerical risk probabilities and expected values, time pressure leads to risk-aversion. Since publication bias could not be ruled out for subsample 3 we conducted a trim-and-fill analysis to estimate how the missing studies may have produced a different grand mean effect size (Duval and Tweedie 2000). This analysis revealed that the findings are unaffected with the addition of the three potential missing studies, with a corrected grand mean g = -0.22 (CI_{95}[-0.30; -0.15]). This suggests that results from the third subsample are robust to potential publication bias.

Heterogeneity of effect size distributions

We use three indicators in order to assess the heterogeneity of the effect sizes in the subsamples. We first relied on the Cochran's Q-statistic, which represents the weighted sum of squared differences between individual effect sizes and the pooled effects sizes (Borenstein et al. 2009). We also computed τ^2, which indicates the variance of the effect sizes that is not imputable to sampling error, and I^2, which represents the proportion of "true" effect size heterogeneity─not due imputable to sampling error─to total variance across the observed effect estimates (Higgins & Thompson 2002; Huedo-Medina et al. 2006). Both subsamples 1 and 2 show high effect size heterogeneity with a significant Cochran's Q (subsample 1: 608.5, df = 93, $p < .00$; subsample 2: 164.55, df = 47, $p < .01$) as well as high τ^2 and I^2 (subsample 1: τ^2 = 0.18, I^2 = 88.7%; subsample 2: τ^2 = 0.08, I^2 = 81.05%). Conversely, subsample 3 shows little to no heterogeneity with Q(df = 16) = 26.6, p = .05, τ^2 = 0.00 and I^2 = 0.01%. As a consequence, while a random effect model is appropriate for subsamples 1 and 2, a fixed effect model would be more appropriate for subsample 3 due to the lack of between-effect size heterogeneity. The fixed effect model yields a grand mean estimate *g* equals to -0.21 (CI_{95}[-0.28;-0.13]), similarly to the random effect model (see third row of Table 2). In sum, this analysis suggests that, beyond sampling error, moderating variables may explain effect sizes variance for subsamples

1 and 2. However, for subsample 3 a moderator analysis is no warranted due to the lack of between- effect size variance. Hence, the expected value and the probability of the best outcome can be ruled out as contingency factors of the time pressure risk-taking relationship. In our next analysis we estimate Models 1 and 2 to determine whether the proposed egocentric bias framework or decision framing account for the heterogeneity in effect size distributions.

[Insert Table 2 here]

Multivariate analysis

Summary Meta-analyses

A series of univariate meta-regressions were run in order to establish the mean effect size for each level of the categorical moderators for subsamples 1 and 2. For each summary effect size, we computed several heterogeneity indicators (Cochran's Q, τ^2 and I^2) as well as publication bias indicators (Rosenberg and Rosenthal's fail safe N, the estimate of missing studies from the trim and fill procedure, and Egger's regression test). The results are shown in Tables 3a and 3b.

Among the categorical levels of subsample 1 the only significant mean effect sizes are "low" probability of best possible outcome with Hedge's g = -0.16 (CI_{95}[-0.27; -0.05]), "self & others" with Hedge's g = 0.47 (CI_{95}[0.15; 0.78]), and "unpublished" paper status with Hedge's g = -0.23 (CI_{95}[-0.32; -0.13]). Note that "explicit" risk information is significant at the 90% confidence level (g = -0.10 (CI_{95}[-0.20; 0.00]). However, publication bias is likely for these categorical levels due to low fail safe n's and significant Eggers' tests, according to the specifications of Ferguson and Brannick (2012) (see Table 3a).

As for subsample 2, the level "loss" of the categorical moderator "framing" is significant at the 90% confidence level with Hedge's g = -0.25 (CI_{95}[-0.52; 0.02]), whereas both operationalizations of risk-seeking as "preference" and "no choice" are significant,

respectively with *Hedge's g* = -0.26 (CI_{95}[-0.38; -0.15]) and Hedge's g = -0.18 (CI_{95}[-0.33; -0.04]) (see Table 3b).

[Insert Tables 3a and 3b here]

Alongside these analyses, we also carried out a series of Wald-type comparisons as a preliminary test of our hypotheses with unadjusted mean effect sizes. These analyses revealed no significant difference between explicit and ambiguous risk information (z-value = -0.82, p>.1), self vs others (z-value = -0.52, p>.1) and gain vs loss framing (z-value = -0.17, p>.1). The only significant difference found was between self and self+others (z-value = -2.7, p<.05), in that time pressure leads people to be less risk-taking for decisions affecting only themselves in comparison to those affecting others too.

In addition, to investigate whether findings are insensitive to effect size distribution asymmetry, we conducted a series of Wald-type tests on the trim-and-fill-adjusted mean effect sizes and their standard errors in case the tandem procedure of Ferguson and Brannick (2012) suggested potential publication bias. Based on the publication bias indicators of Table 3a and 3b, the categorical level "explicit risk information" of subsample 1 and both levels of framing (loss and gain) of subsample 2 revealed potential publication bias: whereas the trim-and-fill adjustment of explicit risk information and gain framing decreased the effect of time pressure on risk-seeking (from $ES_{Exp,UN}$ = -0.10, p < .1, to $ES_{Exp,ADJ}$ = -0.24, p < .001; from $ES_{Gain,UN}$ = -0.01, p > .1, to $ES_{Gain,ADJ}$ = -0.18, p < .05)), the adjustment of loss framing increased it (from $ES_{Loss,UN}$ = -0.25, p < .1, to $ES_{Loss,ADJ}$ = -0.18, p < .01). The adjusted effect size of explicit risk information appeared marginally lower than the unadjusted ambiguous risk information (z-value = -1.68, p<.1). With regards to subsample 2, the adjusted mean effect size of loss framing is not statistically different from that of gains (z-value = -0.01, p>.1).

Is ambiguous risk information conducive to risk-seeking under time pressure?(Model 1)

Model 1 exhibits a high goodness-of-fit as evidenced by the lack of gaps and the minor deviation of the standard error (σ^2) from the asymptote in the profile likelihood plots (see Figure 2), showing that the model is not overparameterized (Kostantopoulos 2011). Bivariate correlations (Table 4a) suggest one potential source of multicollinearity, and specifically the relationship between non-monetary task and ambiguous risk information (r = .766, p <.01; VIF = 3.4). For this reason, additional analyses were carried out without the variable "type of task" in order to test the robustness of our findings.

[Insert Table 4a here]

Model 1 results can be seen in Table 5. Compared with the subsample 1 univariate results (model without moderators), it exhibits lower heterogeneity with Cochran's Q (df = 78) = 336.25 (p < .01), τ^2 = 0.14 (CI_{95} [0.12; 0.30], Δ = 0.04) and I^2 = 81.8% (CI_{95} [79.0%; 90.53%]). The coefficient of determination R^2 indicates that the moderators explain about 23% of the variance among effect sizes.

In order to test Hypothesis 1 we set the "explicit" category as the reference. In support of the hypothesis, time pressure has a stronger impact on risk-seeking when decision-makers have ambiguous rather than explicit risk information ($\beta_{Ambiguous}$ = 0.47, CI_{95}[0.07; 0.88]). Interestingly, the intercept is not significant (β = -0.20, CI_{95}[-0.79; 0.39]) indicating that, for this configuration of reference categories of the moderators, time pressure has no impact on risk-taking when risk information is explicit. These findings are robust to different configurations of the reference categories of the moderators, as shown in Table 6a, Columns I to IV. In addition, in order to further check the robustness of this finding, we re-ran the meta-regression while eliminating the variable "type of task." The results shown in Table 6a, column V are similar, supporting Hypothesis 1.

[Insert Table 5 here]

[Insert Tables 6a here]

Are decision-makers more risk-seeking when choosing for others than for themselves?(Model 1)

To test for Hypothesis 2, we set the "self" category of the focus moderator as the reference. As shown in Table 4, Model 1, the focus of the decision has a significant impact on the effect sizes: precisely, when the outcomes of a risky decision affect others rather than oneself, decision-makers tend to be more risk-seeking (β_{Others} = 0.57, CI_{95}[0.06; 1.08]), in support of Hypothesis 2. Interestingly, there is no statistical difference between the impact of time pressure on risky decisions affecting oneself and both oneself and others ($\beta_{Self+Others}$ = 0.26, CI_{95}[-0.23; 0.75]). Changing the reference category to "self+others" revealed that there is no significant difference between risky decisions affecting only others and those affecting both the self and others (β_{Others} = 0.31, CI_{95}[-0.39; 1.01]), as shown in the first column of Table 6a. Furthermore, these findings are robust to different specifications of the moderators' reference categories (Table 6a, Columns II to IV). It should be noted that the number of effect sizes in the "others" category of focus is 4, meaning that this finding needs further investigation.

Importantly, the methodological moderators in Model 1 do not influence the relationship between time pressure and risk-taking. Neither the nature of the consequences of the choice (β_{Real} = -0.13, CI_{95}[-0.61; 0.35]), the type of task ($\beta_{Non\text{-}mon}$ = -0.27, CI_{95}[-0.67; 0.12]), nor their interaction (β_{Inter} = 0.03, CI_{95}[-0.66; 0.72]) are significant. The same is observed for the control variables. Precision, publication status, operationalization of risk-taking, time pressure manipulation, and time pressure induction, do not influence the effect sizes. These results are robust to modifications of the reference categories of the moderators (Table 6a, Columns I to IV). The only exception is the (marginally significant) influence of a low probability of the positive outcome. When compared to a "medium" probability, respondents tended to be more risk-averse (β_{Low} = -0.48, $p < .10$, ref. to Table 6a, Column II). It should be

noted that since Model 1 does not include framing as a moderator, we collapsed effect sizes from gains and losses conditions that were obtained from the same sample, which required assuming a correlation value between the collapsed effect sizes (see explanations and formulas in footnote 6). The analyses performed so far assumed a 0.5 correlation, Table 6b shows that results for Hypotheses 1 and 2 are robust when assuming either a 0.25 or a 0.75 correlation.

[Insert Table 6b here]

Testing for risk preference reversal (Model 2)

According Saqib and Chan's (2015) results decision-makers tend be risk-seeking over gains but risk-averse over losses under time pressure (i.e. the reversal from what prospect theory predicts). An analysis of bivariate correlations (Table 4b) shows that most of the covariance between the model predictors are insignificant (highest VIF = 2.29 for Operationalization of Risk as "Choice"), excluding multicollinearity as a potential threat.

[Insert Table 4b here]

In comparison to the subsample 2 univariate results (ref. to Table 2, row 2), we first observe that framing, precision and operationalization of risk explain little to no variance among effect sizes, with high residual heterogeneity denoted by Q(df=43) = 152.7 (p<. 01), τ^2 = 0.09 (CI_{95} [0.06; 0.23]) and I^2 = 79.30% (CI_{95} [70.65%; 90.39]), yielding an R^2 of 0.00% (see Table 5, Model 2). This indicates that the framing variable does not explain variability among effect sizes. This is corroborated by the insignificant beta coefficient for losses of -0.03 (CI_{95} [-0.11; 0.05]). Further evidence lies in coefficient indicative of the effect in the gains frame (i.e. the intercept, β_{Inter} = -0.24, CI_{95} [-0.20; 0.01]), which, despite being significant at a 90% confidence level, is inconsistent with the risk preference reversal effect since it suggests, if anything, less risk-seeking under time pressure for gains. Hence, framing does not reverse risk

preferences under time pressure. We note that the two methodological moderators acting as controls are insignificant ($\beta_{Precision}$= -0.03, CI_{95} [-0.14; 0.07]; β_{Choice}= 0.15, CI_{95} [-0.11; 0.40]; $\beta_{No.Choice}$= 0.01, CI_{95} [-0.45; 0.48]).

When coupled with the absence of significant moderators for the univariate analysis on subsample 3 (i.e., effect sizes with expected values and a numerical probability of the best outcome), these results indicate that the alternative contingency accounts of the time pressure and risk-taking relationship found in prior studies do not generalize across the existing body of evidence.

Discussion

Contributions

Do people under time pressure tend to choose the blue pill (risky option) or the red pill (safe option)? Despite decades of research, there is little understanding of how time pressure impacts risk-taking. Based on 102 effect sizes from 30 published and unpublished papers, the results of our meta-analysis provides robust insights on this relationship. By identifying novel contingency factors and re-examining those found in prior studies, our study makes three main contributions to the literature on risky choices under time pressure.

Determining the nature of the relationship between time pressure and risk-taking

Although the contrasting findings of the literature have been emphasized by scholars before (Saqib and Chan 2015; Guo et al. 2017), whether this is due to an absence of effect or to moderators that have yet to be discovered has never been formally addressed. We found that the grand mean correlation between time pressure and risk-taking─based on 94 effect sizes─is not significantly different from zero, as shown by the univariate result for subsample 1. Crucially however, the high level of variance observed among effect sizes demonstrates that this average null effect hides a more nuanced reality where effect sizes vary systematically

according to moderators. Furthermore, results from the Model 1 meta-regression show that the large heterogeneity among primary study characteristics does not account for effect sizes variance. Whether researchers prioritized internal or external validity─by using hypothetical scenarios or incentive compatible designs and by using monetary or non-monetary stakes─has no impact on the effect sizes. In addition, the effect sizes do not vary as a function of other methodological aspects of primary studies (i.e., precision of the study, how time pressure is manipulated, the level of probability associated with the best outcome, the operationalization of risk-taking, and how time pressure is induced). Instead, we found that moderators that strengthen the tendency of decision-makers to fall prey to the egocentric bias best explain the variance among effect sizes.

Support for the proposed egocentric-bias contingency framework

Our results support the proposed egocentric bias as a framework for the contingency nature of the effect of time pressure on risk-taking, providing the first robust theoretically-based explanations for the contrasted primary study results. The finding that decision-makers are more risk-seeking when information is ambiguous rather than explicit is consistent with unrealistic optimism, a manifestation of the egocentric bias which has been also been observed in many other─time pressure-free─contexts (Weinstein 1980). Importantly, further results also support the proposition that decision-makers' general tendency to unrealistic optimism is deactivated by explicit information because, contrary to the ambiguous case, it puts constraints on the interpretation of the odds of an event's occurrence to one's advantage (Rothman et al. 1996; Shepperd et al. 2015). Across the different specifications of Model 1, the mean effect size associated with explicit risk information is zero whereas it is positive for ambiguous risk. Hence, it is not that ambiguity pushes decision-makers toward risk-seeking even more than explicitness does; this null effect rather suggests that harassed decision-makers have no room for interpreting explicit probabilities optimistically.

Deciding on behalf of others entails anchoring on one's view before progressively adjusting to others'; however, the minimizing of this empathy gap (Loewenstein 1996) is disrupted when sufficient time is not available (Epley et al. 2004) resulting in an underestimation of others' anxiety response to risk (Ariely and Zakai 2001). Hence, the larger is the interpersonal distance, the more are decision-makers likely to seek risk on behalf of others. Our findings that decision-makers take more risk when others only bear the consequences of the decision but that risk-taking is unaffected when comparing decisions made for oneself only with decisions bearing consequences for oneself as well as others—or when comparing decisions impacting others only with decisions impacting oneself as well as others—are aligned with our proposition that risk-seeking is a function of the size of the interpersonal empathy gap. Specifically, time pressure has a stronger influence on risk-seeking when the empathy gap is wide—as is the case when one's perspective must be adjusted to others only—than when it is short—as is the case when the bearers of the decision outcomes across conditions are not mutually exclusive (Faro and Rottenstreich 2006) (i.e., "self" versus "self+others" or "others" versus "self+others").

Ruling out framing and probabilities of the outcomes as contingency factors

Our results did not support the generalizability of Saqib and Chan's (2015) finding that time pressure promotes risk-aversion over losses and risk-seeking over gains. Neither did they support Eilertsen's (2014) claims that risk-taking under time pressure is influenced by the probabilities of the decision outcomes. A few studies have directly focused on investigating these researchers' findings (e.g., Wegier and Spaniol 2015); nevertheless, we contribute by harnessing a larger body of evidence to examine the robustness of these proposed contingency factors. Our meta-analytic approach integrates many effect sizes from primary studies that informed one of the levels of the moderating variables investigated; maximizing the power of the tests.

Theoretical implications

Implications for risk-taking in decision making

Our study informs the debate on what is the most appropriate theoretical approach to risk and decision-making. More specifically, support for the egocentric-bias account is aligned with arguments from the proponents of the "risk as feelings" perspective. According to this view, the assessment of risk and uncertainty is intuitive and dictated by affective states (Finucane et al. 2000; Lowenstein, Weber, Hsee and Welch 2001; Slovic, Finucane, Peter and MacGregor 2004) rather than driven by a probabilistic assessment of the consequences of choice alternatives—the "risk as analysis" perspective (Lowenstein, Weber, Hsee and Welch 2001). Indeed, both unrealistic optimism and the interpersonal empathy gap are driven by anxiety in the face of risk—as a coping mechanism in the former case (Weinstein 1980) and as a misadjustment to others' anxiety response in the latter (Epley et al. 2004). Importantly, ruling out framing and outcome probability as contingency factors further strengthens the primacy of the "risk as feelings" over the "risk as analysis" approach to study risk-taking.

Implications for the egocentric bias

Our research shows that time pressure can accentuate the egocentric bias. Interestingly, the contingency factors evidenced tap into each of the two main manifestations of this bias. First, the egocentric bias is evident when individuals are motivated to protect their ego or self-esteem. For instance, the "better-than-average effect" describes the tendency among low ability individuals to consider their task performance as superior to their peers since they assume their choices and decisions to be optimal (Kruger and Dunning 1999). The unrealistic optimism that drives risk-seeking when information is ambiguous is another manifestation of this brand of egocentrism. Second, the egocentric bias is also at play when individuals are unable to take the necessary distance from their own view. For instance, the "false-consensus effect" stipulates that individuals overestimate how common their behavioural response to a particular situation

is among others (Ross, Greene and House 1977). The greater interpersonal empathy gap that increases the difference between individuals' perceptions of their own tolerance to risk and others' also falls in this category.

Implications for risk-taking on behalf of others

Numerous studies have focused on risky decisions affecting oneself versus others in the absence of time pressure (Polman 2012; Stone, Choi, de Bruin et al. 2013). Findings in this area are mixed with studies pointing alternatively to more risk-seeking for oneself or to more risk for others (Polman 2012). Of late, several contingency factors have been identified such as the different levels of risk that are valued in the decision domains under consideration. For instance, risk-aversion for others is valued with safety decisions whereas risk-seeking for others is valued with romantic relationship decisions (Stone, Choi, de Bruin et al. 2013). We identify a new contingency factor in this emerging stream: time pressure is shown to promote risk-seeking for others compared to oneself.

Methodological implications

Besides theoretical contributions, our meta-analysis casts light on some methodological issues relative to experimental designs in the social sciences. We found that the relationship between time pressure and risk-taking is unaffected by the nature of the choice outcomes (real or hypothetical). This result is relevant as scholars have been questioning the ecological validity of scenario-based experiments due to their oversimplicity (Wiseman and Levin 1996; Lamberton and Hill 2018) and their tendency to make the focal aspects of a treatment more salient (Pham 2013), and, as a result, have advocated employing more realistic experimental designs (Morales, Amir and Lee 2017). In this respect, our meta-analysis shows that conclusions from investigating risky decision-making under conditions of time shortage are unlikely to be affected by whether or not the experiment is incentive compatible. This is

important since hypothetical designs often allow testing new hypotheses faster at a lower cost and are thus key to knowledge advancement. Nevertheless, we do not advocate the abandonment of incentive compatible experiment in this domain altogether, rather, we note that hypothetical scenarios can play a role; for instance, in delineating a psychological process in the controlled setting of a lab after evidencing a main effect in a more ecologically valid setting. Moreover, our findings are also robust across other methodological characteristics, including the nature of the task (either monetary or non-monetary), the manipulations of time pressure (either objective or subjective), and of risk-taking (e.g. choosing, not choosing, or preference). Again, this suggests that researchers' methodological choices regarding these characteristics are unlikely to influence study outcomes.

Organizational and public policy implications

Findings from our meta-analysis could be useful for managers and public policy professionals. Organizational decision-makers as well as investors and shareholders, who make financial decisions on a daily basis, are usually affected by time pressure. Beyond these, consumers often need to make decisions under time pressure, from ordering food at restaurants to buying products online or negotiating and accepting the terms and conditions of a contract.

People tend to be more risk-seeking when the level of risk is ambiguous rather than explicit. These findings could be useful for the training of front-office employees and salespeople, who often need to close deals in a very limited timeframe. It is suggested that corporate training programs should educate their contact personnel that reporting the levels of risk of a specific deal or product explicitly or ambiguously may lead to different responses from a consumer. For instance, under time pressure consumers would be more likely to purchase a new product, which is understandably riskier than an established one, if its risk probabilities are defined ambiguously rather than explicitly.

Furthermore, public policy makers could implement some measures based on our findings. For instance, they could consider creating laws and regulations able to safeguard consumers' interests for decisions made under time pressure when risk is ambiguous (e.g. flexible return policies, cooling-off periods, etc.). For instance, some online platforms selling admission tickets for sport, arts and music events allow consumers between 3 to 5 minutes to make a purchase and reserve a specific seat. Hence, such policies could be relevant for online purchases, as e-commerce websites usually only provide a narrow time-window to complete transactions.

Moreover, the role of risky decisions affecting others under time pressure would apply to contexts other than consumption. For instance, in financial markets, stockbrokers are regularly pressed for time to make investment decisions on behalf of their clients and, based on our findings, it is clear that under these circumstances they are more likely to take higher risks for them. Hence, some corporate policies should be enforced to better align the broker's actions with their client's interests.

Furthermore, in the healthcare industry, medical practitioners are often faced with risky decisions affecting their patients in conditions of time pressure. As Botti, Orfali and Iyengar (2009) explain, in the last 30 years most Western countries have moved from a "paternalistic" model of medical decision-making, based on the doctor's discretion, to a "mandatory" one, based on an autonomous informed decision of the patient. Our findings suggest that public policy makers of countries not employing the mandatory model of decision-making could think of legislations that entitle patients to appeal to treatments decided by medical practitioners in conditions of time pressure, if considered too risky. Conversely, for those countries already employing a mandatory model of medical decision-making, public policy should consider adding decisions under time pressure to the list of contexts in which patients can refuse medical treatments or appeal to the practitioner's decision (Humphreys 2014).

Limitations and further research

A first limitation of the current meta-analysis is the large bivariate correlation between several moderator levels (e.g. unspecified frame and ambiguity, monetary and ambiguity), which, in some cases, prevented us from including all the moderators in the same model. Yet, we did run a sub-group meta-analysis solely for frame that allowed us to reliably test the preference reversal effect. A second limitation concerns the limited number of effect sizes included in Model 3. It would beneficial to re-conduct this sub-group meta-analysis to ascertain whether the finding still holds when more studies reporting the probability of the positive outcome and expected values are available in the future. However, as shown by the trim-and-fill analysis, the outcome of the univariate analysis is unaffected when we account for the potential missing studies, showing that the overall grand mean Hedges' *g* is robust.

A third limitation is that our meta-analysis did not have many effect sizes that qualified as "decision affecting others" (k = 4); hence more evidence is needed to test the robustness of this finding.

Our meta-analysis did not find that the risk preference reversal proposed by Saqib and Chan (2015) generalizes across existing primary studies. Even though the other predictors in Model 2 did not reach significance either (i.e., precision, and the operationalizations of risk-taking), the high between-effect size variance observed indicates that there are moderators to be found; thus, there may conditions under which preference reversal holds. For instance, Wegier and Spaniol (2015) suggested that this effect may occur only for description-based decisions (i.e. when the risk probability is described) but not for experience-based decisions (i.e. when the risk probability is learnt through experience), which is consistent with Saqib and Chan (2015)' study characteristics. Unfortunately, we could not test this hypothesis due to the low number of effect sizes using experience-based decisions in gains or losses frames and we encourage further studies to inform this question.

Conclusions

Given the conflicting findings in the literature, our meta-analysis set out to clarify the effect of time pressure on risk-taking. To this effect we conducted three univariate and multivariate meta-analyses and addressed three important questions in the field: is relationship between time pressure and risk-taking contingent in nature? If yes, does an egocentric bias framework account for the contingency factors at play? Are contingency factors previously identified by researchers generalizable across all primary studies?

Using an overall sample of 102 effect sizes, our sub-group meta-analyses showed not only that the grand mean effect of time pressure on risk-taking is insignificant, but also that the distribution of effect sizes is widely heterogeneous thus lending itself to a contingency analysis. Two factors derived from the egocentric bias framework promote risk-seeking: when the level of risk is ambiguous rather than explicit─because it gives rise to unrealistic optimism─and when the outcome of the risky decision affects others rather than oneself─due to the interpersonal empathy gap. In contrast with some prior studies' findings, neither framing of the decision as gains or losses nor the probabilities assigned to the outcomes affect risk-taking, which is further consistent with the egocentric bias framework since it presupposes an intuitive rather than a rationale mode of information processing. Armed with these new insights, we can go back to our opening sequence from the Matrix movie. If Morpheus had explicitly mentioned the probabilities of risk involved to Neo rather than remaining ambiguous, he would have probably chosen a different pill and (spoiler alert) the movie would not have been as exciting.

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List of Tables and Figures

Table 1
Coding Scheme of Moderating Variables in the Meta-analysis.

Variable	Conceptual definition	Moderator Levels
Model 1		
Precision	Continuous variable calculated as the inverse of the standard error of effect size *d*. Mean-centered.	
Time Pressure Manipulation	Categorical variable representing whether the time pressure treatments being compared were different levels of time pressure (e.g. High, Medium, Low) or whether a time pressure group was compared to a control group.	0 = Different Levels of Time Pressure 1 = Time Pressure versus Control
Probability of the Best Possible Outcome of the Risky Option(Categorical)	Categorical variable representing the probability of obtaining the desirable outcome when choosing the risky alternative. This was either represented by a magnitude level (High, Medium, Low), or by a percentage that was recoded as either High, Medium or Low.	1 = Medium, or 40% < prob. < 70%, or else 0 1 = Low, or prob < 40%, or else 0 1 = Unspecified, or else 0 Reference category: High, or prob. > 70%.
Risk Information	Categorical variable representing whether the level of risk is specifically defined (explicit) or ambiguously defined (ambiguous)	0 = Explicit 1 = Ambiguous
Operationalization of Risk	Categorical variable representing how risk-taking was operationalized. This was measured either with a choice (e.g. "accept the sure gain of $2"), a preference scale (e.g. "how attractive is the safe option on a scale from 1 to 7?") or with the choice of not choosing (e.g. "do you choose between the two options or do you defer your choice?").	1 = Choice, or else 0 1 = No choice, or else 0 Reference category: Preference
Nature of the Consequences	Categorical variable representing whether the consequences of the choice made in the study were real or hypothetical for the respondents.	0 = Hypothetical 1 = Real
Type of Task	Categorical variable representing whether the choice made in the study involved money (e.g. gambling) or not (e.g. driving recklessly).	0 = Monetary 1 = Non-monetary
Focus	Categorical variable representing whether the consequences of the risky choice or decision had an impact on the respondent themselves, on the respondent and others, or only on others.	1 = Self and Others, or else 0 1 = Others, or else 0 Reference category = Self
Time Pressure Induction	Categorical variable representing whether time pressure was induced objectively (e.g. by setting a specific deadline) or subjectively (e.g. by asking respondents to respond as quickly as possible).	0 = Objective 1= Subjective
Publication Status	Categorical variable representing whether the article from which the effect size was retrieved had been published on a peer-reviewed journal (published) or not (unpublished). Unpublished papers encompassed theses, faculty publications and working papers.	0 = Unpublished 1 = Published
Model 2		

Frame	Categorical variable representing the frame of the risk scenario.	0 = Gain 1 = Loss
Precision	Same as model 1.	
Operationalization of Risk	Same as model 1.	
Model 3		
Expected Values	Continuous variable representing the sum of the products between the outcomes and their relative probability for the risky option. For example, if the risky option was framed as "a 40% chance to win $100 and 60% chance to win $0", 40 ($) would have been reported. Mean-centered.	
Probability of the Best Possible Outcome of the Risky Option (Continuous)	Continuous variable representing the probability of the best possible outcome of the risky option. For example, if the risky option was framed as "a 40% chance to win $100 and 60% chance to win $0", 40% would have been reported. Mean-centered.	
Precision	Same as model 1.	

Table 2
Univariate Meta-Analyses.

	k	Mean ES_g	95% CI	Credibility Intervals	Q-Statistic	τ^2	I^2	Trim & Fill Test	Rosenthal's Fail-Safe N	Rosenberg's Fail-Safe N	Eggers' Regression Test
Subsample 1: Egocentric Bias Model	94	-.00	[-.22; .18]	[-.75; .93]	608.5 (df=93) p <.01	.18	88.7%	Missing studies on the left: 15	414	25	z = 1.64 p = .10
Subsample 2: Framing	48	-.11	[-.21;-.02]	[-.644; .433]	164.55 (df=47) p < .01	.09	81.05%	Missing studies on the left: 7	413	455	z = 1.96 p =.05
Subsample 3: Expected Values and Risk Probabilities (random effect)	17	-.21	[-.29;-.12]	[-.28; -.13]	26.6 (df=16) p = .05	.00	0.01%	Missing studies on the left: 3	29	118	z = 3.27 p <.01
Subsample 3: Expected Values and Risk Probabilities (fixed effect)	17	-.21	[-.28; -.13]	[-.28; -.13]	26.6 (df=16) p = .04	-	-	-	-	-	-

Table 3a
Results for the summary meta-analyses (Subsample 1).

	k	Mean ES_r	95% CI	Credibility Intervals	Q-Statistic	τ^2	I^2	Trim & Fill Test; adj. ES	Rosenthal Fail Safe N	Rosenberg Fail Safe N	Eggers Regression Test
Time Pressure Manipulation											
Different Levels	26	.09	[-.10; .28]	[-.74; .92]	200.50 (df=25) p<.01	.22	93.92%	Missing studies on the right: 0	0	0	z = -0.23 p = .81
Time Pressure vs Control	68	.48	[-.21; .22]	[-.88; .89]	385.12 (df=67) p<.00	.17	83.76%	Missing studies on the left: 0	377	192	z = 1.92 p = .06
Probability of Best Possible Outcome											
High	9	-.16	[-.54; .21]	[-1.23; .90]	69.00 (df=8) p<.01	.43	94.48%	Missing studies on the right: 0	72	53	z = -0.91 p = .36
Medium	8	.11	[-.54; .21]	[-.23; .45]	8.42 (df=7) p=.30	.03	18.58%	Missing studies on the left: 0	0	0	z = 0.35 p = .73
Low	7	-.16**	[-.27; -.05]	[-.27; -.05]	10.84 (df=6) p=.09	.00	0.01%	Missing studies on the left: 1	0	8	z = 2.40 p = .02
Unspecified	70	.01	[-.23; .26]	[-.89; .91]	450.14 (df=69) p<.01	.16	88.06%	Missing studies on the left: 0	1,005	475	z = 1.46 p = .14
Risk Information											
Explicit	41	-.10^	[-.20; .00]	[-.56; .36]	114.91 (df=40) p<.01	.06	74.21%	Missing studies on the left: 12; -.24***	285	366	z = 2.02 p = .04
Ambiguous	53	.03	[-.26; .32]	[-.97; 1.03]	353.30 (df=52) p<.01	.21	87.81%	Missing studies on the left: 0	1,594	1,425	z = .60 p = .55
Operationalization of Risk-seeking											
Choice	62	.04	[-.19; .28]	[-.87; 1.03]	446.31 (df=61) p<.01	.23	90.95%	Missing studies on the left: 6	189	71	z = .60 p = .55
No Choice	23	-.01	[-.23; .21]	[-.70; .68]	103.43 (df=22) p<.01	.11	80.44%	Missing studies on the left: 0	0	0	z = 3.59 p < .01

Preference	9	.32	[-.06; .70]	[-.61; 1.25]	46.73 (df=8) p<.01	.18	84.12%	Missing studies on the left: 0	0	z = 6.44 p < .01
Nature of Consequences										
Hypothetical	64	.04	[-.19; .26]	[-.80; .1.09]	412.37 (df=63) p<.01	.23	87.64%	Missing studies on the left: 12	791	799	z = 0.74 p = 0.46
Real	30	-.00	[-.16; .15]	[-.15; .11]	134.51 (df=29) p<.01	.10	83.39%	Missing studies on the left: 0	15	86	z = 1.43 p = 0.15
Type of Task										
Monetary	44	.01	[-.09; .11]	[-.65; .61]	125.82 (df=43) p<.01	.06	74.79%	Missing studies on the left: 2	0	102	z = 2.58 p = 0.01
Non-monetary	50	.04	[-.23; .31]	[-.96; 1.26]	414.35 (df=49) p<.01	.31	91.33%	Missing studies on the left: 7	656	738	z = 0.38 p = 0.71
Focus										
Self	84	-.02	[-.05; .14]	[-.75; .84]	466.75 (df=83) p<.01	.16	87.89%	Missing studies on the left: 11	0	0	z = 1.61 p = .11
Self & Others	6	.47*	[.15; .78]	[-.22; 1.16]	12.91 (df=5) p = .02	.10	64.54%	Missing studies on the left: 0	50	39	z = -1.21 p = .21
Others	4	.29	[-.88; 1.46]	[-1.70; 2.28]	21.78 (df=3) p < .01	.30	87.48%	Missing studies on the left: 1	59	76	z = 0.02 p = .98
Time Pressure Induction										
Objective	77	.04	[-.14; .21]	[-.77; .91]	474.26 (df=76) p<.01	.18	88.38%	Missing studies on the left: 10	99	0	z = 1.46 p = .14
Subjective	17	.08	[-.25; .40]	[-.74; 1.04]	118.61 (df=16) p<.01	.19	89.08%	Missing studies on the left: 0	70	74	z = 0.81 p = 0.42
Publication Status										
Published	88	.01	[-.20; .23]	[-.76; .97]	558.85 (df=87) p<.01	.19	88.34%	Missing studies on the left: 13	746	377	z = 1.14 p = 0.25
Unpublished	6	-.23*	[-.32; -.13]	[-.32; -.13]	4.14 (df=5) p = .53	.00	0.02%	Missing studies on the left: 2	24	29	z = 1.77 p = 0.08

Table 3b
Results for the summary meta-analyses (Subsample 2).

	k	Mean ES_r	95% CI	Credibility Intervals	Q-Statistic	τ^2	I^2	Trim & Fill Test; adj ES	Rosenthal Fail Safe N	Rosenberg Fail Safe N	Eggers Regression Test
Framing											
Gain	28	-.01	[-.21; .19]	[-.52; .32]	75.02 (df=27) p<.01	.04	70.39%	Missing studies on the left: 7; -.18***	82	200	z = 4.18 p < .01
Loss	20	-.25^	[-.52; .02]	[-.92; .55]	88.31 (df=19) p<.01	.13	85.43%	Missing studies on the left: 0; -.18**	101	34	z = -1.87 p = .06
Operationalization of Risk-seeking											
Choice	41	-.10	[-.25; .05]	[-.71; .53]	146.93 (df=40) p<.01	.10	83.63%	Missing studies on the right: 7	164	190	z = 1.72 p = .08
No Choice	2	-.26**	[-.38; -.15]	[-.38; -.15]	0.24 (df=1) p=.62	.00	0.00%	NA	15	10	NA
Preference	5	-.18*	[-.33; -.04]	[-.58; .23]	8.49 (df=4) p=.08	.03	52.86%	Missing studies on the left: 0	6	3	z = 1.14 p = .26

Table 4a
Bivariate Correlations between the Moderators included in the Meta-Regression for Model 1.

	Precision	Comparison: Treatment vs Control	Risk Information: Ambiguous	Prob.: High	Prob.: Medium	Prob.: Low	Prob.: Unspecified	Risk Op.: Choice	Risk Op.: No Choice	Risk Op.: Attitude	Focus: Self	Focus: Self & Others	Focus: Others	Pub. Status: Published	TP Induction: Subjective	Nature of Cons.: Real	Task Type: Non-monetary
Precision	1																
Comparison: Treatment vs Control	-.265**	1															
Risk Information: Ambiguous	-.086	.080	1														
Prob.: High	.049	-.365**	-.224*	1													
Prob.: Medium	-.253*	.103	-.347**	-.099	1												
Prob.: Low	.040	-.278**	-.159	-.092	-.087	1											
Prob.: Unspecified	.104	.347**	.469**	-.556**	-.521**	-.484**	1										
Risk Op.: Choice	-.052	-.143	-.315**	.081	.219*	.033	-.215*	1									
Risk Op.: No Choice	.097	.241*	.401	-.101	-.174	-.067	.220*	-.792**	1								
Risk Op.: Attitude	-.057	-.122	-.078	.017	-.099	.045	.025	-.453**	-.185	1							
Focus: Self	.111	.172	-.164	-.005	.105	-.296**	.114	.043	.196	-.357**	1						
Focus: Self & Others	-.118	-.325**	.230*	.063	-.080	.092	-.047	-.180	-.149	.507**	-.757**	1					
Focus: Others	-.026	.130	-.027	-.069	-.064	.342**	-.118	.151	-.120	-.069	-.611**	-.055	1				
Pub. Status: Published	-.233*	.422**	.121	-.211*	.080	-.257*	.246*	-.004	-.054	.085	.388	.598	.055	1			
TP Induction: Subjective	.064	-.080	.302**	.129	-.143	-.028	.022	-.012	-.139	.223*	-.196	.330**	-.099	.123	1		
Nature of Cons.: Real	.273**	-.393**	-.272**	.087	-.127	.154	-.070	.058	-.284	.320**	.058	.101	-.144	-.195	.153	1	
Task Type: Non-monetary	-.124	.278*	.766**	-.129	-.325**	-.059	..331**	-.269**	.435**	-.202	-.116	-.017	.198	.104	.219*	-.455**	1

*p<.05, **p< .01

Table 4b
Bivariate Correlations between the Moderators Included in the Meta-Regression for Model 2.

	Frame: Loss	Precision	Operationalization of Risk: Choice	Operationalization of Risk: No Choice	Operationalization of Risk: Preference
Frame: Loss	1				
Precision	-.024	1			
Operationalization of Risk: Choice	-.010	-.132	1		
Operationalization of Risk: No Choice	-.176	-.270	-.505**	1	
Operationalization of Risk: Preference	.127	-.024	-.825**	-.071	1

*p<.05, **p< .01
Note: Choice, No Choice and Preference all belong to the same variable "Operationalization of Risk-Taking" (reference category = Preference)

Table 5
Moderators of the Relationship between Time Pressure and Risk-Taking (Models1 and 2).

	k	N	ES_g	SE_g	CI_g
Subsample 1 (k = 94)					
Intercept			-.20	.30	-.79 – .39
Precision			-.00	.05	-.10 – .09
Time Pressure Manipulation: Treatment vs Control	68	6,557	.04	.18	-.31 – .39
Probability of Best Outcome: Medium	8	418	.30	.25	-.20 – .79
Probability of Best Outcome: Low	7	2,336	-.18	.16	-.49 – .12
Probability of Best Outcome: Unspecified	70	6,696	.15	.19	-.23 – .53
Risk Information: Ambiguous	53	4,390	.47*	.21	.07 – .88
Operationalization of Risk-taking: Choice	62	9,101	.07	.13	-.20 – .33
Operationalization of Risk-taking: No Choice	23	3,203	.01	.20	-.38 – .40
Nature of Consequences: Real	30	6,789	-.13	.24	-.61 – .35
Type of Task: Non-monetary	50	4,326	-.27	.20	-.67 – .12
Focus: Others	4	447	.57*	.26	.06 – 1.08
Focus: Self and Others	6	359	.26	.25	-.23 – .75
Time Pressure Induction: Subjective	17	3,206	.01	.16	-.31 – .33
Publication Status: Published	88	10,375	-.15	.23	-.60 – .30
Interaction Real x Non-monetary	6	400	.03	.35	-.66 – .72
Q(df =78) 336.25, p < .01					
τ^2 .14					
I^2 81.8%					
Subsample 2 (k = 48)					
Intercept			-.24^	.06	-.20 – .01
Precision			-.03	.05	-.14 – .07
Frame: Loss	20	2,343	-.03	.04	-.11 – .05
Operationalization of Risk: Choice	41	6,720	.15	.13	-.11 – .40
Operationalization of Risk: No Choice	2	858	.01	.24	-.45 – .48
Q(df =43) 152.32, p <.01					
τ^2 .09					
I^2 79.3%					

^ p< .1, *p< .05, **p< .01, *** p< .001
1. k = number of effect sizes; N= aggregated sample size; ES = Effect size; SE = Standard error; CI = Confidence interval.
2. Reference categories Model 1: Frame - Gain (k = 28); Operationalization of Risk – Attitude (k = 5). Reference categories Model 3: Time Pressure Comparison –Levels of Time Pressure (k = 26); Probability of Best Outcome: High (k = 9); Risk Information: Explicit (k = 41); Operationalization of Risk-taking: Preference (k = 9); Nature of Consequences: Hypothetical (k = 64); Type of Task: Monetary (k = 44); Focus: Self (k = 84); Time Pressure Induction: Objective (k = 77); Interaction Nature of Consequences and Type of Task: Real x Monetary (k = 24), Hypothetical x Monetary (k = 20) and Hypothetical x Non-monetary (k = 44).

Table 6a
Beta Values of Subsample 1 Meta-Regression Models with Alternative Specifications (k = 94).

	Column I: Ref. Category **Focus "Self & Others"**			***Column II:*** Ref. Category **Probability of Best Possible Outcome "Medium"**			***Column II:*** Ref. Category **Probability of Best Possible Outcome "Low"**			***Column IV:*** Ref. Category **Probability of Best Possible Outcome "Unspecified"**			***Column V:*** Model **without** variable **"Type of Task"**		
	ES_g	SE_g	CI_g	ES_g	SE_g	CI_g	ES_g	SE_g	CI_g	ES_g	SE_g	CI_g	ES_g	SE_g	CI_g
Intercept	.06	.37	-.67 - .79	.10	.35	-.58 - .78	-.38	.30	-.98 - .21	-.05	.33	-.70 - .59	-.47	.32	-1.10 - .16
Precision	-.00	.05	-.10 - .09	-.00	.05	-.10 - .09	-.00	.05	-.10 - .09	-.00	.05	-.10 - .09	-.00	.05	-.10 - .09
Time Pressure Manipulation: Treatment vs Control	.04	.18	-.31 - .39	.04	.18	-.31 - .39	.04	.18	-.31 - .39	.04	.18	-.31 - .39	.04	.18	-.31 - .39
Probability of Best Possible Outcome: High	-	-	-	-.30	.25	-.79 - .20	.18	.16	-.12 - .49	-.15	.19	-.53 - .23	-	-	-
Probability of Best Possible Outcome: Medium	.30	.25	-.20 - .79	-	-	-	.48^	.26	-.04 - 1.00	.15	.22	-.28 - .57	.30	.25	-.20 - .79
Probability of Best Possible Outcome: Low	-.18	.16	-.49 - .12	-.48^	.26	-1.00 - .04	-	-	-	-.33	.20	-.73 - .07	-.18	.16	-.49 -.12
Probability of Best Possible Outcome: Unspecified	.15	.19	-.23 - .53	-.15	.22	-.57 - .28	.33	.20	-.07 - .73	-	-	-	.15	.19	-.23 - .53
Risk Information: Ambiguous	.47*	.21	.07 - .88	.47*	.21	.07 - .88	.47*	.21	.07 - .88	.47*	.21	.07 - .88	.47*	.21	.07 - .88
Operationalization of Risk: Choice	.07	.13	-.20 - .33	.07	.13	-.20 - .33	.07	.13	-.20 - .33	.07	.13	-.20 - .33	.07	.13	-.20 - .33
Operationalization of Risk: No Choice	.01	.20	-.38 - .40	.01	.20	-.38 - .40	.01	.20	-.38 - .40	.01	.20	-.38 - .40	.01	.20	-.38 - .40
Nature of Consequences: Real	-.13	.24	-.61 - .35	-.13	.24	-.61 - .35	-.13	.24	-.61 - .35	-.13	.24	-.61 - .35	-.13	.24	-.61 - .35
Type of Task: Non-monetary	-.27	.20	-.67 - .12	-.27	.20	-.67 - .12	-.27	.20	-.67 - .12	-.27	.20	-.67 - .12	-	-	-
Focus: Self	.26	.25	-.75 - .23	-	-	-	-	-	-	-	-	-	-	-	-
Focus: Others	.31	.36	-.39 – 1.01	.57*	.26	.06 - 1.08	.57*	.26	.06 – 1.08	.57*	.26	.06 – 1.08	.57*	.26	.06 – 1.08
Focus: Self and Others	-	-	-	.26	.25	-.23 - .75	.26	.25	-.23 - .75	.26	.25	-.23 - .75	.26	.25	-.23 - .75
Time Pressure Induction: Subjective	.01	.16	-.31 - .33	.01	.16	-.31 - .33	.01	.16	-.31 - .33	.01	.16	-.31 - .33	.01	.16	-.31 - .33
Publication Status: Published	-.15	.23	-.60 - .30	-.15	.23	-.60 - .30	-.15	.23	-.60 - .30	-.15	.23	-.60 - .30	-.15	.23	-.60 - .30
Inter. Real x Non-monetary	-	-	-	-	-	-	-	-	-	-	-	-	.27	.20	-.12 - .67
Inter. Hypothetical x Non-monetary	.03	.35	-.66 - .72	.03	.35	-.66 - .72	.03	.35	-.66 - .72	.03	.35	-.66 - .72	.30	.34	-.37 - .97

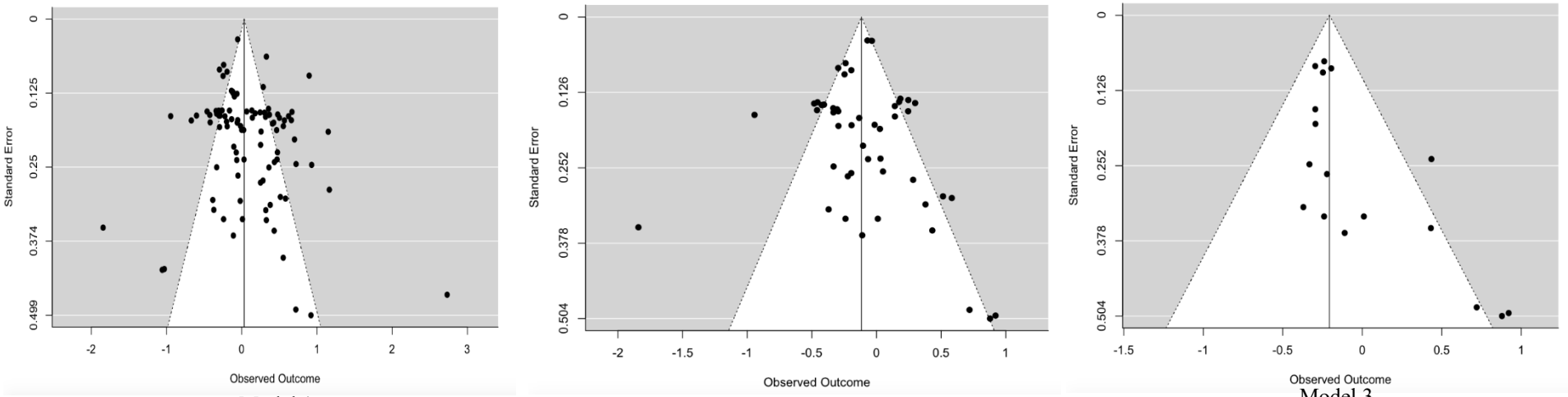
^ p< .1, *p< .05, **p< .01, *** p< .001

Table 6b
Beta Values of Subsample 1 Meta-Regression Model with Alternative Repeated Measures Correlation Coefficients (k = 94).

	Column I: Repeated measures assumed at r = .25			***Column II:*** Repeated measures assumed at r = .75		
	ES_g	SE_g	CI_g	ES_g	SE_g	CI_g
Intercept	-.10	.29	-.68 - .48	-.10	.29	-.67 - .47
Precision	.00	.05	-.09 - .09	.00	.05	-.10 - .10
Time Pressure Comparison: Treatment vs Control	.03	.18	-.32 - .38	.03	.18	-.32 - .38
Probability of Best Possible Outcome: High	-	-	-	-	-	-
Probability of Best Possible Outcome: Medium	.30	.25	-.19 - .79	.30	.25	-.20 - .79
Probability of Best Possible Outcome: Low	-.18	.16	-.49 - .12	-.18	.16	-.49 - .12
Probability of Best Possible Outcome: Unspecified	.14	.19	-.23 - .52	.14	.19	-.23 - .52
Risk Information: Ambiguous	.48*	.21	.08 - .89	.48*	.21	.08 - .89
Operationalization of Risk: Choice	-.02	.13	-.27 - .24	-.02	.13	-.26 - .23
Operationalization of Risk: No Choice	-.07	.20	-.45 - .31	-.07	.19	-.45 - .31
Nature of Consequences: Real	-.13	.19	-.50 - .25	-.13	.19	-.50 - .25
Type of Task: Non-monetary	-.28	.20	-.67 - .11	-.28	.20	-.67 - .11
Focus: Self	-	-	-	-	-	-
Focus: Others	.57*	.26	.06 – 1.08	.57*	.26	.06 – 1.08
Focus: Self and Others	.22	.25	-.26 - .70	.22	.25	-.26 - .70
Time Pressure Induction: Subjective	-.01	.16	-.33 -.31	-.01	.16	-.33 -.31
Publication Status: Published	-.15	.23	-.60 - .29	-.15	.23	-.60 - .29
Inter. Real x Non-monetary	-	-	-	-	-	-
Inter. Hypothetical x Non-monetary	.02	.35	-.67 - .70	.02	.35	-.67 - .70

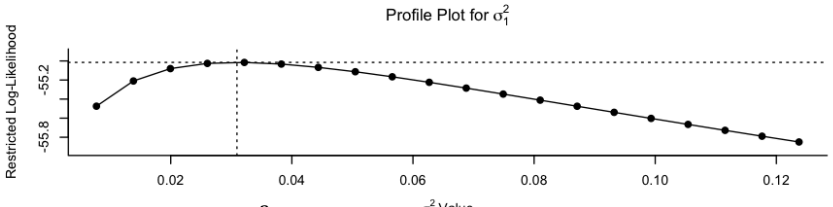
^ p< .1, *p< .05, **p< .01, *** p< .001

Figure 1
Funnel Plots of the Models 1-3.

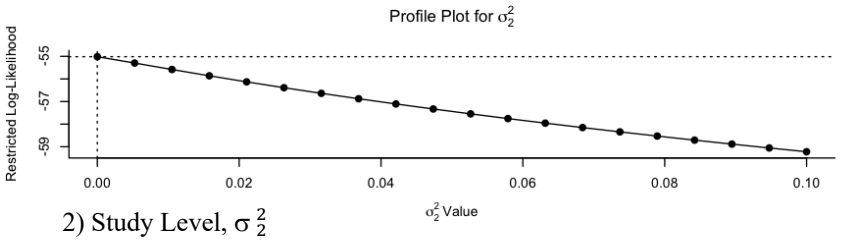


Model 1 Model 2 Model 3

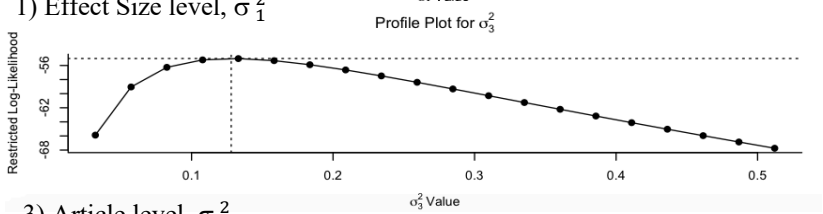
Figure 2
Profile plots of the Multi-level Multivariate Meta-regression Model 1, Divided by Variance Components for Different Levels of Nesting.



1) Effect Size level, σ^2_1



2) Study Level, σ^2_2



3) Article level, σ^2_3

Appendix A

Summary of the Studies Included in Subsample 1 and the Meta-Regression Model 1.

Authors	Year of Pub	Study #	Description	N	ES (Hedges g)	V_{ES}	Risk Information	TP Manip.	Risk Op.	Prob. Best Possible Outcome	Type of Task	Nature of Consequences	Inter. Real* Monet[A]	Focus	Pub. Status[B]	TP Ind*
Saqib & Chan	2015	1		71	0.33	0.11	Explicit	Treatment vs Control	Choice	Medium	Monetary	Hypothetical	0	Self	1	Objective
Saqib & Chan	2015	2		48	0.43	0.13	Explicit	Treatment vs Control	Choice	Medium	Monetary	Hypothetical	0	Self	1	Objective
Saqib & Chan	2015	2		54	-0.37	0.10	Explicit	Treatment vs Control	Choice	Medium	Monetary	Hypothetical	0	Self	1	Objective
Saqib & Chan	2015	3		76	0.92	0.25	Explicit	Treatment vs Control	Choice	Low	Non Monetary	Hypothetical	0	Others	1	Objective
Saqib & Chan	2015	3		90	-0.33	0.06	Explicit	Treatment vs Control	Choice	Low	Non Monetary	Hypothetical	0	Others	1	Objective
Saqib & Chan	2015	4	Gain – Concrete	44	0.72	0.24	Explicit	Treatment vs Control	Choice	Medium	Monetary	Hypothetical	0	Self	1	Objective
Saqib & Chan	2015	4	Loss - Concrete	44	-0.24	0.11	Explicit	Treatment vs Control	Choice	Medium	Monetary	Hypothetical	0	Self	1	Objective
Saqib & Chan	2015	4	Gain – Abstract	44	-0.11	0.13	Explicit	Treatment vs Control	Choice	Medium	Monetary	Hypothetical	0	Self	1	Objective
Saqib & Chan	2015	4	Loss - Abstract	44	0.01	0.11	Explicit	Treatment vs Control	Choice	Medium	Monetary	Hypothetical	0	Self	1	Objective
Young et al	2012	1		45	0.51	0.09	Explicit	Treatment vs Control	Choice	Undefined	Monetary	Hypothetical	0	Self	1	Objective
Young et al	2012	1		53	0.28	0.07	Explicit	Treatment vs Control	Choice	Undefined	Monetary	Hypothetical	0	Self	1	Objective
Young et al	2012	2		40	0.38	0.10	Explicit	Treatment vs Control	Choice	Undefined	Monetary	Hypothetical	0	Self	1	Objective
Young et al	2012	2		44	0.58	0.09	Explicit	Treatment vs Control	Choice	Undefined	Monetary	Hypothetical	0	Self	1	Objective
Young et al	2012	3		85	-0.10	0.05	Explicit	Treatment vs Control	Choice	Undefined	Monetary	Hypothetical	0	Self	1	Objective
Huber & Kunz - Scenario 1 (turtles)	2007	1	Turtle Scenario	40	0.70	0.04	Ambiguous	Treatment vs Control	Choice	Undefined	Non Monetary	Hypothetical	0	Others	1	Objective
Huber & Kunz - Scenario2 (virus)	2007	1	Virus Scenario	40	0.55	0.03	Ambiguous	Treatment vs Control	Choice	Undefined	Non Monetary	Hypothetical	0	Self and Others	1	Objective
Kocher et al	2013	1		146	0.14	0.03	Explicit	Treatment vs Control	Attitude	Undefined	Monetary	Real	1	Self	1	Objective
Kocher et al	2013	1		93	0.03	0.03	Explicit	Treatment vs Control	Choice	Undefined	Monetary	Real	1	Self	1	Objective
Kocher et al	2013	1		83	-0.13	0.03	Explicit	Treatment vs Control	Choice	Undefined	Monetary	Real	1	Self	1	Objective
Kocher et al	2013	1		83	-0.30	0.02	Explicit	Treatment vs Control	Attitude	Undefined	Monetary	Real	1	Self	1	Objective
Kocher et al	2013	1		93	-0.46	0.02	Explicit	Treatment vs Control	Attitude	Undefined	Monetary	Real	1	Self	1	Objective
Kocher et al	2013	2		95	-0.01	0.03	Explicit	Treatment vs Control	Attitude	Undefined	Monetary	Real	1	Self	1	Objective
Kocher et al	2013	2		146	-0.19	0.03	Explicit	Treatment vs Control	Attitude	Undefined	Monetary	Real	1	Self	1	Objective
Hu et al	2014	1	Positive Emotion	24	-1.03	0.18	Ambiguous	Treatment vs Control	Choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective
Hu et al	2014	1	Negative Emotion	24	0.55	0.16	Ambiguous	Treatment vs Control	Choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective
Hu et al	2014	1	Control	24	-1.06	0.18	Ambiguous	Treatment vs Control	Choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective
Ben Zur & Breznitz	1981	1		648	-0.05	0.07	Explicit	More Levels of Treatment	Choice	High	Monetary	Real	1	Self	1	Objective
Ben Zur & Breznitz	1981	1		648	-0.06	0.03	Explicit	More Levels of Treatment	Choice	Low	Monetary	Real	1	Self	1	Objective
Maule et al.	2000	1		52	0.03	0.06	Ambiguous	Treatment vs Control	Choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective
Maule et al.	2000	1		52	-0.07	0.06	Ambiguous	Treatment vs Control	Choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective
Wegier & Spaniol	2015	1	Gain	40	0.25	0.02	Explicit	More Levels of Treatment	Choice	Undefined	Monetary	Real	1	Self	1	Objective
Wegier & Spaniol	2015	1	Loss	40	-0.33	0.03	Explicit	More Levels of Treatment	Choice	Undefined	Monetary	Real	1	Self	1	Objective
Wegier & Spaniol	2015	2	Low time pressure	49	-0.20	0.03	Ambiguous	More Levels of Treatment	Choice	Low	Monetary	Real	1	Self	1	Objective
Wegier & Spaniol	2015	2	High time pressure	49	0.43	0.03	Ambiguous	More Levels of Treatment	Choice	High	Monetary	Real	1	Self	1	Objective
Dhar & Nowlis	1999	1	Equally attractive options	98	0.41	0.03	Ambiguous	Treatment vs Control	No choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective

Dhar & Nowlis	1999	1	Superior choice set	98	<0.01	0.03	Ambiguous	Treatment vs Control	No choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective
Dhar & Nowlis	1999	2	Equally attractive options	120	0.48	0.03	Ambiguous	Treatment vs Control	No choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective
Dhar & Nowlis	1999	2	Superior choice set	120	0.26	0.04	Ambiguous	Treatment vs Control	No choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective
Dhar & Nowlis	1999	3	Common bad features	131.2	0.62	0.03	Ambiguous	Treatment vs Control	No choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective
Dhar & Nowlis	1999	3	Common bad features	131.2	0.07	0.02	Ambiguous	Treatment vs Control	No choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective
Dhar & Nowlis	1999	4		143	0.25	0.08	Ambiguous	Treatment vs Control	No choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective
Dhar & Nowlis	1999	5	Brand choice	83	0.32	0.03	Ambiguous	Treatment vs Control	No choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective
Dhar & Nowlis	1999	5	Store choice	83	-0.05	0.03	Ambiguous	Treatment vs Control	No choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective
El Haji et al	2016	1		903	-0.24	0.01	Explicit	More Levels of Treatment	No choice	Low	Monetary	Real	1	Self	0	Objective
El Haji et al	2016	1		776	-0.30	0.01	Explicit	More Levels of Treatment	No choice	High	Monetary	Real	1	Self	0	Objective
El Haji et al	2016	1		522	-0.20	0.01	Explicit	More Levels of Treatment	Choice	Low	Monetary	Real	1	Self	0	Objective
El Haji et al	2016	1		464	-0.25	0.01	Explicit	More Levels of Treatment	Choice	High	Monetary	Real	1	Self	0	Objective
Godinho et al	2016	1	Price Promotion – Large assortment	47	0.25	0.04	Ambiguous	Treatment vs Control	No choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective
Godinho et al	2016	1	Stock-out threat – Large assortment	47	1.17	0.08	Ambiguous	Treatment vs Control	No choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective
Godinho et al	2016	1	Experimental TP – Large assortment	47	-0.29	0.03	Ambiguous	Treatment vs Control	No choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Subjective
Godinho et al	2016	1	Price Promotion – Small assortment	47	-0.30	0.03	Ambiguous	Treatment vs Control	No choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Subjective
Godinho et al	2016	1	Stock-out threat – Small assortment	47	-0.22	0.03	Ambiguous	Treatment vs Control	No choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective
Godinho et al	2016	1	Experimental TP – Small assortment	47	-0.42	0.03	Ambiguous	Treatment vs Control	No choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective
Godinho et al	2016	2	Price Promotion – Large assortment	39	0.37	0.03	Ambiguous	Treatment vs Control	No choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective
Godinho et al	2016	2	Stock-out threat – Large assortment	39	0.18	0.03	Ambiguous	Treatment vs Control	No choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective
Godinho et al	2016	2	Experimental TP – Large assortment	39	0.50	0.03	Ambiguous	Treatment vs Control	No choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective
Godinho et al	2016	2	Price Promotion – Small assortment	39	-0.34	0.02	Ambiguous	Treatment vs Control	No choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective
Godinho et al	2016	2	Stock-out threat – Small assortment	39	-0.26	0.02	Ambiguous	Treatment vs Control	No choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective
Godinho et al	2016	2	Experimental TP – Small assortment	39	-0.16	0.02	Ambiguous	Treatment vs Control	No choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective
Sutter et al	2003	1		64	-0.38	0.09	Ambiguous	More Levels of Treatment	Choice	Undefined	Monetary	Real	1	Self and Others	1	Objective
Madan et al	2015	1		69	0.44	0.06	Explicit	More Levels of Treatment	Choice	Medium	Monetary	Real	1	Self	1	Objective
Shiv & Fedorikhin	2002	1	Low Cognitive Load	97	-0.60	0.03	Ambiguous	Treatment vs Control	Choice	Undefined	Non Monetary	Real	0	Self	1	Subjective
Shiv & Fedorikhin	2002	1	High Cognitive Load	97	0.30	0.02	Ambiguous	Treatment vs Control	Choice	Undefined	Non Monetary	Real	0	Self	1	Subjective
Shiv & Fedorikhin	2002	2	High exposure – high cognitive load	51	0.66	0.03	Ambiguous	Treatment vs Control	Choice	Undefined	Non Monetary	Real	0	Self	1	Subjective
Shiv & Fedorikhin	2002	2	Low exposure – high cognitive load	51	0.57	0.03	Ambiguous	Treatment vs Control	Choice	Undefined	Non Monetary	Real	0	Self	1	Subjective
Shiv & Fedorikhin	2002	2	High exposure – low cognitive load	51	-0.67	0.03	Ambiguous	Treatment vs Control	Choice	Undefined	Non Monetary	Real	0	Self	1	Subjective
Shiv & Fedorikhin	2002	2	Low exposure – low cognitive load	51	0.13	0.02	Ambiguous	Treatment vs Control	Choice	Undefined	Non Monetary	Real	0	Self	1	Subjective

Fitzpatrick et al	2017	1	Hurried – control	18	0.36	0.02	Ambiguous	More Levels of Treatment	Choice	Undefined	Monetary	Hypothetical	0	Self	1	Objective
Fitzpatrick et al	2017	1	Very hurried – control	18	0.67	0.02	Ambiguous	More Levels of Treatment	Choice	Undefined	Monetary	Hypothetical	0	Self	1	Objective
Coram et al	2004	1		48	0.36	0.06	Ambiguous	More Levels of Treatment	Attitude	Low	Non Monetary	Hypothetical	0	Self and Others	1	Subjective
Coram et al	2004	1		55	0.72	0.06	Ambiguous	More Levels of Treatment	Attitude	High	Non Monetary	Hypothetical	0	Self and Others	1	Subjective
De Dreu	2003	1		72	0.93	0.06	Ambiguous	More Levels of Treatment	Attitude	Undefined	Monetary	Real	1	Self and Others	1	Subjective
De Dreu	2003	2		80	0.48	0.05	Ambiguous	More Levels of Treatment	Attitude	Undefined	Monetary	Real	1	Self and Others	1	Subjective
Thompson	2008	1		241	0.90	0.01	Ambiguous	Treatment vs Control	Choice	Undefined	Non Monetary	Hypothetical	0	Others	1	Objective
Nursimulu et al	2014	1		1161	-0.05	0.00	Explicit	More Levels of Treatment	Choice	Undefined	Monetary	Real	1	Self	1	Objective
Dror et al	1999	1		311	0.29	0.01	Ambiguous	Treatment vs Control	Choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Subjective
Verkplanken	1993	1		120	0.46	0.04	Ambiguous	Treatment vs Control	Choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective
Stone & Kadous	1997	1		255	-0.42	0.03	Ambiguous	Treatment vs Control	Choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective
Wright & Weltz	1977	1	Search– Quick vs Slow Group 1	60	-0.94	0.03	Explicit	More Levels of Treatment	Choice	High	Non Monetary	Hypothetical	0	Self	1	Objective
Wright & Weltz	1977	1	Search – Quick vs Slow Group 2	60	-1.84	0.12	Explicit	More Levels of Treatment	Choice	High	Non Monetary	Hypothetical	0	Self	1	Objective
Coeugnet	2013	1		75	0.47	0.06	Ambiguous	More Levels of Treatment	Choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Subjective
Lallement	2010	1		512	0.33	0.00	Ambiguous	More Levels of Treatment	Choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Subjective
Weenig & Maarleveld	2002	1		128	1.15	0.04	Ambiguous	Treatment vs Control	Choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective
Chu & Spires	2001	1		35	2.73	0.22	Ambiguous	Treatment vs Control	Choice	Undefined	Non Monetary	Hypothetical	0	Self	1	Objective
Duke et al.	2018	2		746	-0.30	0.02	Explicit	Treatment vs Control	Choice	High	Monetary	Hypothetical	0	Self	1	Subjective
Duke et al.	2018	2		813	-0.29	0.03	Explicit	Treatment vs Control	Choice	High	Monetary	Hypothetical	0	Self	1	Subjective
Guo et al.	2017	1	Variation 1	49	-0.06	0.02	Explicit	Treatment vs Control	Choice	Undefined	Monetary	Hypothetical	0	Self	1	Objective
Guo et al.	2017	1	Variation 2	49	-0.12	0.02	Explicit	Treatment vs Control	Choice	Undefined	Monetary	Hypothetical	0	Self	1	Objective
Guo et al.	2017	1	Variation 3	53	-0.14	0.01	Explicit	Treatment vs Control	Choice	Undefined	Monetary	Hypothetical	0	Self	1	Objective
Guo et al.	2017	1	Variation 4	44	-0.10	0.02	Explicit	Treatment vs Control	Choice	Undefined	Monetary	Hypothetical	0	Self	1	Objective
Guo et al.	2017	2		13	-0.07	0.05	Explicit	Treatment vs Control	Choice	Undefined	Monetary	Real	1	Self	1	Objective
Guo et al.	2017	3		52	-0.12	0.02	Explicit	More Levels of Treatment	Choice	Undefined	Monetary	Real	1	Self	1	Objective
Verstraeten et al	2014	1		42	-0.02	0.09	Ambiguous	More Levels of Treatment	Choice	Undefined	Non Monetary	Hypothetical	0	Self	0	Objective
Verstraeten et al	2014	1		39	0.32	0.10	Ambiguous	More Levels of Treatment	Choice	Undefined	Non Monetary	Hypothetical	0	Self	0	Objective

[A] Interaction between real consequences and monetary task (1 = the study presents both a monetary task and has real consequences; 0 = the study does not present either a monetary task or has real consequences)
[B] Publication status (1= published; 0 = unpublished)

Appendix B

Summary of the Studies Included in Subsample 2 and in the Meta-Regression Model 2.

Authors	Study #	Year of Pub	N	ES (Hedges g)	V_{ES}	Framing	Operationalization of Risk
Saqib & Chan	1	2015	71	0.88	0.25	Gain	Choice
Saqib & Chan	1	2015	71	-0.22	0.07	Loss	Choice
Saqib & Chan	2	2015	48	0.43	0.13	Gain	Choice
Saqib & Chan	2	2015	54	-0.37	0.10	Loss	Choice
Saqib & Chan	3	2015	76	0.92	0.25	Gain	Choice
Saqib & Chan	3	2015	90	-0.33	0.06	Loss	Choice
Saqib & Chan	4	2015	44	0.72	0.24	Gain	Choice
Saqib & Chan	4	2015	44	-0.24	0.11	Loss	Choice
Saqib & Chan	4	2015	44	-0.11	0.13	Gain	Choice
Saqib & Chan	4	2015	44	0.01	0.11	Loss	Choice
Young et al	1	2012	45	0.51	0.09	Gain	Choice
Young et al	1	2012	53	0.28	0.07	Gain	Choice
Young et al	2	2012	40	0.38	0.10	Gain	Choice
Young et al	2	2012	44	0.58	0.09	Gain	Choice
Young et al	3	2012	85	-0.10	0.05	Loss	Choice
Kocher et al	1	2013	146	0.14	0.03	Gain	Attitude
Kocher et al	1	2013	93	0.03	0.03	Gain	Choice
Kocher et al	1	2013	83	-0.13	0.03	Gain	Choice
Kocher et al	1	2013	83	-0.30	0.02	Loss	Attitude
Kocher et al	1	2013	93	-0.46	0.02	Loss	Attitude
Kocher et al	2	2013	95	-0.01	0.03	Gain	Attitude
Kocher et al	2	2013	146	-0.19	0.03	Loss	Attitude
Maule et al.	1	2000	52	0.03	0.06	Gain	Choice
Maule et al.	1	2000	52	-0.07	0.06	Loss	Choice
Wegier & Spaniol	1	2015	40	0.25	0.02	Gain	Choice
Wegier & Spaniol	1	2015	40	-0.33	0.03	Loss	Choice
El Haji et al	1	2016	903	-0.24	0.01	Gain	No choice
El Haji et al	1	2016	776	-0.30	0.01	Gain	No choice
El Haji et al	1	2016	522	-0.20	0.01	Gain	Choice
El Haji et al	1	2016	464	-0.25	0.01	Gain	Choice
Nursimulu et al	1	2014	1161	-0.04	0.00	Gain	Choice
Nursimulu et al	1	2014	1161	-0.07	0.00	Loss	Choice
Wright & Weltz	2	1977	60	-0.94	0.03	Loss	Choice
Wright & Weltz	2	1977	60	-1.84	0.12	Loss	Choice
Duke et al.	1	2018	746	-0.30	0.02	Gain	Choice

Duke et al.	1	2018	813	-0.29	0.03	Gain	Choice
Guo et al.	1	2017	49	-0.42	0.02	Gain	Choice
Guo et al.	1	2017	49	0.30	0.02	Loss	Choice
Guo et al.	1	2017	49	-0.41	0.02	Gain	Choice
Guo et al.	1	2017	49	0.18	0.02	Loss	Choice
Guo et al.	1	2017	53	-0.46	0.02	Gain	Choice
Guo et al.	1	2017	53	0.18	0.02	Loss	Choice
Guo et al.	2	2017	44	-0.34	0.02	Gain	Choice
Guo et al.	2	2017	44	0.14	0.02	Loss	Choice
Guo et al.	3	2017	13	-0.20	0.07	Gain	Choice
Guo et al.	3	2017	13	0.05	0.07	Loss	Choice
Guo et al.	1	2017	52	-0.48	0.02	Gain	Choice
Guo et al.	1	2017	52	0.25	0.02	Loss	Choice

Appendix C

Summary of the Studies Included in Subsample 3.

Authors	Study #	Year of Pub	N	ES (Hedges g)	V_{ES}	Probability of Best Possible Outcome Of the Risky Option	Expected Value
Saqib & Chan	1	2015	71	0.88	0.25	50	50
Saqib & Chan	1	2015	71	-0.22	0.07	50	-50
Saqib & Chan	2	2015	48	0.43	0.13	50	50
Saqib & Chan	2	2015	54	-0.37	0.10	50	-50
Saqib & Chan	3	2015	76	0.92	0.25	33	297
Saqib & Chan	3	2015	90	-0.33	0.06	33	-297
Saqib & Chan	4	2015	44	0.72	0.24	50	20
Saqib & Chan	4	2015	44	-0.24	0.11	50	-20
Saqib & Chan	4	2015	44	-0.11	0.13	50	20
Saqib & Chan	4	2015	44	0.01	0.11	50	-20
El Haji et al	1	2016	903	-0.24	0.01	9.1	181.81
El Haji et al	1	2016	776	-0.29	0.01	90.9	181.81
El Haji et al	1	2016	522	-0.19	0.01	9.1	181.81
El Haji et al	1	2016	464	-0.25	0.01	90.9	181.81
Madan et al	1	2015	69	0.43	0.01	50	60
Duke et al.	2	2018	746	-0.29	0.02	89	1390000
Duke et al.	2	2018	813	-0.29	0.03	89	1390000

Essay 3

Beating the Clock: How Time Pressure Triggers Overconsumption

Abstract

Does time pressure increase people's tendency to overconsume? Despite a very rich literature on the effects of time pressure on consumer behaviour, no studies have been able to answer this question. One scenario-based experiment (study 1), an exploratory study (study 2a) and one lab experiment (study 2b) attempt to address this issue. Whereas study 1 (n = 203) discovers that individuals believe they would consume less under time pressure, studies 2a (n = 28) and 2b (n = 91) show that in reality they tend to consume more when their consumption is time-bound than when it is not. Drawing on the theories of affective forecasting, the researcher proposes the relationship between time limitation and consumption is mediated by anticipated regret ("the fear of missing out"). Specifically, time pressure leads to anticipated regret, which in turn triggers a compensatory behaviour aimed to achieve a more positive state. The paper discusses the theoretical, managerial and public implications of our findings along with the avenues for future research.

Key words: *time constraint; time pressure; overconsumption; food; anticipated regret; savouring.*

Introduction

Consumers often identify themselves with the phrase “there are not enough hours in a day”. They are indeed overwhelmed by task deadlines in the private and in the public spheres, and their willingness to fulfil multiple goals contributes to their perceived feeling of time pressure (Etkin, Aaker and Evangelidis 2015). For example, performing well at work, doing a good job as a parent or as a spouse, and allowing enough time for leisure fills up their schedules and increases the perception of busyness and time pressure. The pervasiveness of time pressure in consumers’ lives can be observed in the findings of a recent survey, according to which Americans would be willing to pay over $2,725 to have an extra hour a day (Locker 2014).

Time pressure is defined as a subjective feeling of urgency or of being time scarce (Benson III, Lehman and Beach 1998) and has drawn a lot of attention from scholars in many disciplines. Research has established that this psychological dimension or subjective experience of time shapes consumer phenomena (Hornik 1984; Hornik and Zakay 1996), ranging from the acquisition and evaluation of product information (Suri and Monroe 2003), to the uptake of a promotion (Inman, Peter and Raghubir 1997) and the consumption of those products (Jacoby, Szybillo and Kohn Berning 1976). For example, shoppers under time pressure have been found to be more impulsive in their choices and make more unplanned purchases (Lin and Chen 2013; Park, Iyer and Smith 1989; Wu and Huan 2010). They also tend to rely more on decision heuristics and experiential cues (Johnson, Payne and Bettman 2013; Payne, Bettman and Luce 1996). Time pressure also impacts food choices, in that people tend to resort to ready meals and unhealthy food due to their busy lifestyles (Jabs and Devine 2006; Pelletier and Laska 2012). In addition, empirical findings suggest that when the decision time is low consumers tend to choose vice or hedonic foods, i.e. options that are higher on the affective dimension, instead of virtue or utilitarian ones, which are higher on the cognitive dimension (Shiv and Fedorikhin 2002). Despite this very rich literature, however, little attention has been paid to the relationship between time pressure and actual quantity consumed.

There are many real-life scenarios where consumers are in fact exposed to marketing or public policy strategies based on consumption "deadlines". Aperitivos and happy hours in some bars serve discounted beverages and complementary food in a specific timeframe, especially in Western-European countries. Some restaurants are adopting policies to limit the amount of time patrons spend at the table, while others offer all-you-can-eat buffets only until a specific time. Furthermore, similar strategies are introduced by public policy makers. An example is represented by the "lockout laws", a set of regulations that allow entry to clubs no later than 1:30 am and serving of alcoholic drinks no later than 3 am at clubs as a measure to fight alcohol-related violence (Ménedez, Weatherburn, Kypri and Fitzgerald 2015; New South Wales Government 2014). All of these strategies may, however, increase the feelings of time pressure and have a "boomerang effect" (Ringold 2002), in that it would increase the level of consumption rather than decreasing it. To date, research has been unable to address this issue, and clarify whether time constraints indeed induce overconsumption.

The researchers will attempt to fill this gap in the literature in two ways. First, we show that people hold the lay belief that under time pressure they would not overconsume in comparison to a scenario without time pressure. Second, drawing from the theory of affective forecasting, according to which individuals' decision making is driven by the predicted affective state resulting from a specific decision (MacInnis and Patrick 2006; Wilson and Gilbert 2005), we find that individuals may anticipate the negative affect of the missed opportunity to consume in the future (i.e. anticipated regret) due to a specific time constraint placed on consumption. As a consequence, they adopt a compensatory behaviour to re-establish a positive state (Baumeister, Heatherton and Tice 1993), which leads to higher consumption. By combining the findings of the two studies, we show that people tend overestimate their self-control under time pressure.

The current research contributes to the extant literature in the fields of marketing and psychology in several ways. First, relying on the theory of affective forecasting, it is the first

study to explore how time constraints affect consumption, what the underlying psychological process of this effect is and what could inhibit it. Secondly, it provides relevant implications for public policy makers and marketing practitioners who employ time-limited consumption policies or strategies, as it proposes potential interventions to prevent consumers from overconsuming under such circumstances.

Study 1: Overestimation of Self-control under Time Pressure

Theoretical Background

Research has shown that consumers tend to overestimate their positive personal attributes, such as knowledge and abilities, and that their confidence in their own subjective judgement tends to be greater than the objective accuracy of those judgements (Giardini, Corricelli, Joffili and Sirigu 2008; Pallier, Wilkinson, Danthiir et al 2001). They rely on these positive beliefs about themselves as a coping mechanism which enables them to thrive and enhance their well-being (Taylor and Brown 1998). For example, previous studies have demonstrated that people tend to be overconfident about their driving abilities (Svenson 1981), their basketball skills (McGraw, Mellers and Ritov 2004) and their general knowledge (Harvey 1997). This phenomenon has been previously referred to as overconfidence bias.

Similarly, consumers reportedly tend to overestimate their self-control, i.e. their ability to forego immediate gratification in favour of long-term interests (Sela, Berger and Kim 2017). Studies showed that individuals tend to overestimate the amount of physical activity they do (Schaller, Rudolf, Dejonghe et al. 2016) and the number of times they would attend the gym in the future (Della Vigna and Malmendier 2002). We claim this overconfidence bias would also affect consumers when they are asked to report how much they would consume when their consumption is limited by a time constraint. In order to look more virtuous, in a hypothetical scenario they would report a lower level of consumption under time pressure than in absence thereof, and therefore overestimate their own self-control. This leads to our first hypothesis:

H_1: Individuals will tend to overestimate their level of self-control under time pressure and report a lower level of consumption in such condition in comparison to a control condition.

In order to test this hypothesis, we conducted a two-cell scenario-based experiment in the context of alcohol consumption. The study received ethical approval from the Human Research Ethics Committee at University of Technology Sydney (ETH18-2412).

Methodology

We employed a two-cell between-subject study design, where 203 respondents were randomly assigned to either a time constraint condition or a no time constraint (control) condition. The respondents were from the United States (98 female, M_{age} = 39.3, SD_{age} = 12.5) and were recruited on Amazon Mechanical Turk and assigned to one of the two conditions in exchange for a monetary incentive. In total, 102 respondents were assigned to the time pressure condition, and 101 were assigned to the control condition (refer to Appendix B for the experimental material and questionnaire).

Initially, participants had to answer a few general questions regarding their drinking habits, such as the average amount of drinks consumed, and the number of venues visited on a night out. After these initial questions, respondents in the time pressure condition had to read the following scenario:

"Imagine you have gone out with your friends for a fun night out, and at 11 pm you get into a bar to have something to drink with the intention of staying late that night. As soon as you get into the venue, the waiter tells you that the last drink is served at 12 am sharp due to a new law that is affecting all the bars/pubs of the area."

In contrast, people in the control condition received the following scenario:

"Imagine you have gone out with your friends for a fun night out, and at 11 pm you get into a bar to have something to drink with the intention of staying late that night. As soon as you get into the venue, the waiter tells you to enjoy your stay at the bar."

The time pressure manipulation was implemented by informing the respondents that drinks were only available until 12 am, as one hour was deemed a short enough time span to create a feeling of time pressure based on a preliminary pre-test[18]. After reading the scenario, both groups were asked to indicate the number of drinks they would have by 12 o'clock. The respondents had to enter a number in a box next to each of the following beverage categories, which were chosen to account for different individual preferences:

☐ pint(s) of beer (473 ml)

☐ glass(es) of wine (125 ml)

☐ serving(s) of cocktails (e.g. margarita, mojito,..)

☐ glass(es) or shot(s) of spirit (30/42 ml) – (e.g. whiskey, vodka, gin)

The main dependent variable was measured as the sum of all the self-reported number of drinks consumed. Lastly, we included the manipulation check and some control variables. These included questions relating to the respondent's perception of time pressure based on Roxbourgh (2004), and the self-regulation scale: the former was made up of 2 items ("I would feel pressed for time" and "I would feel rushed to drink"), and the latter consisted in a 9-item scale representing Miller and Brown's (1991) self-regulation questionnaire measured on a 9-point likert scale. This measured one's ability to maintain planned behaviour to reach their goals, and we chose only the "receiving" dimension due to its relevance for the context of the experiment (e.g. "*I'm usually careful not to overdo it when working, eating, drinking*"). All the scales were measured using a 7-point likert scale from 1=strongly disagree to 7= strongly agree. Whereas the perceived time pressure scale yielded a high level of internal consistency with a

[18] Using the same structure and protocol of Study 1, we tested the most appropriate manipulation of time pressure. We ran a 2 (Time Constraint vs No Time Constraint) x 3 (Timeframe= 1, 2 or 3 hours) between-subject experiment on a sample of 193 North-American respondents. Out of the three manipulations, only the 1 hour X Time Constraint condition revealed a significant effect on perceived time pressure at a 90% confidence interval ($\beta = 1.28$, $t(27) = 1.83$, $p = .073$).

significant Pearson's correlation coefficient of 0.81, the self-regulation one did not (Chronbach's $\alpha = 0.57$).

Results

Data analysis was conducted using SPSS. The manipulation had the desired effect on the participants: those under the time constraint condition felt more time pressure than those under no time constraint ($M_{TP} = 5.9$, $SD_{TC} = 2.6$; $M_{NTP} = 3.6$, $SD_{NTP} = 2.1$; $t(201) = 6.85$, $p = .000$). Also, the two groups did not show any significant difference in terms of gender (χ^2 (1, 203) = 1.78, p = .18) and self-regulation level ($M_{TP} = 6.4$, $M_{NTP} = 6.2$, $p = .149$).

We first ran a univariate analysis of covariance where we examined the effect of the time constraint condition on the average number of drinks the respondent reported in the scenario, controlling for their level of self-regulation and the usual number of drinks they have on a night out. Our analyses reveal no significant difference between the two groups on the average number of drinks reported, $F(1, 199) = 1.6$, $p = .20$. Further, after conducting an independent samples t-test, we found that participants in the time pressure condition expected to consume less drinks under time pressure at a 90% confidence level ($M_{TP} = 1.7$, $SD_{TP} = 1.4$; $M_{NTP} = 2.2$, $SD_{NTP} = 3.0$; $t(201) = 6.85$, $p = .09$, Cohen's $d = -0.21$).

Moreover, by analysing the results of the ANCOVA, we discovered that the level of consumption was predicted by a respondent's level of self-regulation, $F(1, 199) = 8.7$, $p = .003$, and their habitual number of drinks, $F(1, 199) = 164.0$, $p < .000$. Specifically, a multiple linear regression revealed that while self-regulation reduces the amount consumed ($\beta_{Self\text{-}Reg} = -0.39$, $t = -2.9$, $p = .003$), the average number of drinks a respondent has on a night out increases it ($\beta_{NDrinks} = 0.81$, $t = 12.8$, $p = .000$).

To conclude, our first experiment demonstrated that under time pressure individuals expect to consume less drinks than those in a control condition. This indicates that people are

adamant that time pressure would somewhat decrease their overall level of consumption. This supports H_1.

Study 2: The Effect on Time Pressure on Overconsumption

Theoretical Background

About Time: an Explanation of Terms

The current work focuses on different concepts related to time, namely time constraints, time windows and time pressure. First, time constraint refers to a limitation on the time available to carry out a task (Benson III et al. 1998). This differs from a time-window, which instead indicates an opening or timeframe of limited duration in which a task can be accomplished. Time constraints usually create time-windows. Last, these two terms differ from time pressure, which is instead a mindset of "*urgency to act based on some real or self-imposed deadline*" (Babin and Harris 2015, p. 219). Therefore, whereas a time constraint or time window are an objective limitation on the time available to carry out an activity or task, time pressure is a subjective feeling of urgency that can be created, among others, by a time constraint or a time window. It is important to observe that time pressure ensues from a deadline placed on a specific activity, and manifests itself when an individual performing a task is motivated to carry it out at a given quality level but a time constraint or deadline may prevent them from reaching this level (Benson, Groth and Beach 1998; Maule and Hockey 1993).

Time Pressure and Affective Forecasting: The Role of Anticipated Regret

Consumers' decision-making processes and behaviours are usually driven not only by their present emotions (Bagozzi and Pieters 1998; Ladhari 2007; Garg, Wansink and Inman 2007; Laros and Steenkamp 2005; Mogliner, Aaker and Kamvar 2012), but also by their predicted future emotions (Wilson and Gilbert 2003). Specifically, the theory of affective forecasting explains that people tend to predict their future emotional states, and they make

decisions based on the affective outcomes ensuing from such decisions (Kurtz 2016; MacInnis 2006). For example, one could decide to gamble money at the casino if they think that the outcome of such action will ensue in happiness.

As previously discussed, time pressure is generated from an objectively or subjectively imposed deadline or time constraint on a specific activity, and occurs when an individual realizes that the time available to carry out this activity is too short (Ordoñez and Benson 1997).

When a time constraint is placed on consumption and creates time pressure, individuals may anticipate regret of the missed opportunity caused by the deadline, and previous studies in purchasing contexts seem to point at this effect. For instance, Mogliner, Aaker and Pennington (2008) found evidence that when a purchasing decision is temporarily near, individuals tend to anticipate the pain deriving from the anticipated potential failure to achieve their purchasing goal, and, as a result, they are more attracted to prevention-framed products. Besides, Abendroth and Diehl (2006) discovered that in case of a restricted time-window after which a choice cannot be reversed, consumers tend to feel much higher regret for inaction rather than for action. This feeling of anticipated pain or regret has been previously referred to as "fear of missing out" (Wiltermouth and Gino 2013).

How does anticipated regret affect actual consumption? The marketing literature indicates that individuals engage in consumption in order to regulate actual and symbolic discrepancies (Hirschman and Holbrook 1982), and that they innately tend to maintain balance and minimize those discrepancies (Lee, Rotman and Perkins 2014). For example, Baumeister, Heatherton and Tice (1993) discovered that people in an aversive state will adopt behaviours aimed to achieve a positive state. Rotman et al. (2017) also explain that the bigger the discrepancy, the greater the desire to consume an object that minimizes that discrepancy. In this sense, the consummatory object becomes a regulatory tool to restore an individual's sense of balance. Based on this rationale, we expect that anticipated regret will lead people to increase their consumption amount in the same timeframe in comparison to the case where a limited

time-window is not present. This results from the willingness of an individual to restore balance and minimize the discrepancy caused by the anticipating regret for a time-limited consumption occasion. Specifically, anticipated regret will trigger a compensatory behaviour in that an individual will compare what they could consume without the time constraint and with time constraint, and therefore consume more without the time to minimize this discrepancy. Some initial evidence of this effect has been recently found by Siddiqui et al. (2017): in a field study about the relationship between time-window length (long vs short) and type of food (vice vs virtue), they reported higher consumption in the short time-window irrespective of the food type. This leads to the first hypothesis:

H_2: Time pressure increases the feeling of anticipated regret, which in turn will increase the level of consumption within a specific timeframe in comparison to the condition without time pressure.

Diagram 1 depicts the mediation model hypothesised.

[Insert Diagram 1 here]

Study 2a: Pilot Study

Methodology

In order to investigate the predicted effect of time pressure on consumption, we conducted a preliminary exploratory survey about a real-world scenario for two weeks in September 2015. The Sydney lockout laws were used as the context. These legislative measures have been in effect since February 2014 and entail 1:30 am lockouts and 3 am last drinks at hotels, registered clubs, nightclubs and other entertainment service providers in the Central Business District (New South Wales Government, 2014; Nicholls 2014). These laws prevent patrons from entering venues in the CBD after 1:30 am and having alcoholic drinks after 3 am. This real-life scenario was thought to be the most relatable one for the chosen sample (university students).

The questionnaire consisted of 10 unstructured and semi-structured questions and was carried out on the topic of the lockout laws and the impact on consumption behaviours (see Appendix A for the list of questions). Some of the questions touched on individual drinking behaviours ("What kind of drinker are you? Please describe your drinking habits.", "Where, when, how much and with whom do you usually drink?", "What drinks do you prefer having?", …); others concerned the impact of the lockout laws on the respondents' consumer behaviour and behavioural patterns ("Has the introduction of the lockout laws affected you? If so, how and to what extent?", "If you still visit venues in the CBD on weekend nights, have you noticed any different behaviours among the people around you in those venues?").

Results

The online questionnaire created on Qualtrics was sent out to 96 students of a major Australian university enrolled in a marketing methodology unit. In order to participate in the survey, the respondent had to have been at least 18 before the introduction of the laws and had to have lived in the Sydney region for the past 3 years. Only 28 respondents (ratio female/male 0.86) voluntarily participated in it and provided usable responses. Half of the respondents belonged to the 21-24 age range, and 46.4% of them lived in the northern suburbs of Sydney. Despite the low response rate (around 29%) some interesting facts emerged.

Firstly, almost half the respondents identified themselves as "social drinkers" (46%), and only 3 people revealed having "heavy drinking habits" (in terms of how many drinks they have when they go out and whether they get intoxicated often).

Secondly, some surprising outcomes emerged in relation to the impact of the laws on the respondents' (and their peers') consumer behaviour. In particular, about 32% of the respondents felt they have not been affected by the laws, while the remaining 68% mentioned that because of the laws they "pretty much stopped going around the CBD unless an event is on (e.g. mates birthday)", they "(…) have just moved where (they) go" or "my friends and I

have adapted to the lockout laws by starting our nights much earlier so we can enjoy different venues before the lockout". In brief, a significant portion of the sample seems to have adapted to the new legislation somehow, either by avoiding the affected areas (6 respondents) or by starting and ending their nights earlier (3 respondents).

Thirdly, in terms of personal observations in the new regulated context, the vast majority of the respondents (about 40%) said they didn't notice anything different. Yet, a few revealed that their peer's drinking behaviour had become more chaotic, as if they felt the urgency to drink more before closing times. The following quotes supported this idea: "people drink heavily earlier on because drinks stop being served at certain times"; "people –seem- to go much harder on alcohol in the limited timeframes they are given, instead of using the entire night to enjoy the experience". Although these quotes only represents a small percentage of the interviewed sample (only 3 people) and the context was very limited to alcohol consumption, this initial exploratory survey provided some evidence in support of the connection between time constraints and increased consumption.

Study 2b: Main Experiment

Methodology

This study consists in a two-cell between-subjects design: 91 participants (43 female, M_{age} = 19.98) were recruited from a foundational marketing course subject pool at a major Australian University and were randomly assigned to either a time constraint condition (n=45) or a no time constraint condition (n=46). The respondents were asked to participate in a 15-20 minute lab study task about decision-making in day-to-day activities in exchange for course credit (refer to Appendix C for the experimental material and questionnaire).

Respondents were first asked to watch a video and were offered a slice of chocolate cake that they could eat while watching the video. Each group had the same amount of time to engage in consumption, i.e. two minutes, however, half of the respondents was told they would

only have a limited time to eat (time constraint condition), whereas the others were not told so (no time constraint condition). The research attempted to keep the size of the cake constant for all the respondents (approximately 7.8 cm x 9.6 cm), however there were some slight variations in terms of size and weight from subject to subject. Further analysis revealed the weight of the piece of cake given did not correlate with the amount of cake eaten ($r = -.133$, $p = .207$). After receiving the cake, the subjects in the time constraint condition read the following on their computer screen:

"Please watch the following video. By the way, you may have noticed that you were served a plate of food. Please feel free to have as much as you like. This is a thank you for participating in the study. Note that the food will be removed to make way for the next part of the study so you only have 2 minutes to eat. Enjoy!"

Instead, the subjects in the no time constraint condition read the following statement:

"Please watch the following video. By the way, you may have noticed that you were served a plate of food. Please feel free to have as much as you like. This is a thank you for participating in the study. Enjoy!"

To make the time constraint condition more salient, a countdown on the screen showed the time they had left to eat. Participants were then asked to express their opinions on both the video and the cake in an open-ended format. These were followed by a series of demographic questions and other scales, such as perceived time pressure (PTP), anticipated regret (AR) and some control variables. PTP was included as a manipulation check and was measured with 2 items ("I felt pressed for time" and "I felt rushed to eat") similar to the one used in study 1 ($\alpha = 0.81$). AR was also measured with 2-item measure ("I was afraid I could miss out" and "I

was afraid I would not have enough time to enjoy the cake"). Its operationalisation was based on the conceptualisation of Wiltermuth and Gino (2013), who equate the concept of anticipated regret to "the fear of missing out". Its level of reliability was acceptable ($\alpha = 0.76$). Both attitudinal scales were measured on a 7-point likert scale, anchored from strongly disagree to strongly agree. The dependent variable in question was the amount of cake consumed, which was measured as the difference between the initial and final weight of each respondent's cake (in grams). We also measured some covariates, such as BMI, measured as the ratio between a person's weight (in kg) and the squared value of their height (in m) (Goolsby and Blackwell 2005). Gender ad BMI were included as they are the most common control variables used in experiments involving actual food consumption (e.g. Garg et al. 2007; Kahn and Wansink 2004; Wansink, Painter and North 2005).

Results

First, our manipulation worked: people in the time constraint condition reported significant higher feelings of time pressure than the people in the no time constraint condition, $t(89)= 3.35$, $p=.001$ ($M_{TimePressure} = 3.9$, $SD_{TimePressure}= 1.8$; $M_{NoTimePressure} = 2.7$, $SD_{NoTimePressure} =1.5$, Cohen's $d = 0.42$).

Second, we analysed the main effect of time pressure on total consumption using SPSS 25. Overall, the total effect of the condition was significant, $t(89)= 2.03$, $p=.04$, and the effect size ($d = 0.42$) was small to medium based on Cohen's interpretation guidelines. As Graph 1 indicates, people in the time constraint condition ate on average 10 grams more (around 34 calories more) than people under no time constraint in the span of two minutes ($M_{TP} = 31.58$, $SD_{TP} =20.63$; $M_{NTP} = 22.83$, $SD_{NTP} = 20.49$).

Mediation analysis by bootstrapping was conducted using SPSS Process (process 4). When BMI, gender and initial weight of the cake, the mediation analysis showed significant paths between the condition and anticipated regret ($\beta =1.07$, $p=.001$), and between anticipated

regret and total consumption (β =2.8, p= .02; see Diagram 2)[19]. BMI, gender and the initial weight of the cake did not have any significant effect on the amount consumed (p > .1). Overall, the indirect pact was significant with β =2.97, CI_{95}[.025; 6.64]. Lastly, the direct path from condition to consumption was insignificant with the introduction of anticipated regret as a mediator (β =5.50, p= .21).

[Insert Graph 1 here]

Discussion

Study 2b provides evidence that time pressure increases the consumption (amount consumed or eaten) as mediated by anticipated regret, hence supporting hypothesis 2. Therefore, by combining the findings of study 1 (hypothetical scenario) and study 2 (real lab experiment), individuals tend to overestimate their self-control under time-pressure.

General Discussion and Managerial Implications

Even though previous research analysed the effects of time pressure on a wide variety of consumer responses, thus far their impact on eating behaviours and actual consumption had not been empirically investigated. The current research has attempted to provide a first exploratory analysis on how time constraints affect consumption, the psychological process thereof and what could inhibit this effect.

In general, we found that people hold a belief that they would consume less if their consumption was time-constrained (study 1). However, study 2 revealed that in reality respondents tend to eat more when their consumption is time-limited than when it is not, and we explained this using anticipated regret as a mediator.

[19] The model without control variables is also significant at the 95% confidence level, with the path between time constraint condition and anticipated regret of β =0.95 (p= .01), and the one between anticipated regret and total consumption of β =2.5 (p= .04).

The findings of the current research are primarily beneficial for marketing practitioners who are either employing or considering employing strategies based on time constraints on consumption. There is indeed an increasing number of examples of such strategies in the market place, such as "happy hours" in bars, "all-you-can-eat" buffets available only within specific time-windows and even restaurants limiting the amount of time people can consume food and beverages at the table. The appeal of such marketing strategies for restaurant and bar managers is undeniable, as they would generate much more revenue in the specific time span employed (e.g. Aggarwal and Vaidyanathan 2006). However, our results indicate that generally there is a misconception between how much people think they would consume and how much they would actually consume when their consumption is time-bound. Specifically, they would consume more, and therefore overindulge, when a time constraint is placed on their consumption. Therefore, marketing managers of restaurants or bars should consider this aspect into account in order to safeguard the well-being of consumers and prevent them from overconsuming. If they intend to use such strategies, we recommend them to "relax" the time windows within which food and beverages can be consumed, in order to diminish their patrons' feelings of anticipated regret and their consumption amount.

The same considerations also apply for public policy practitioners, whose measures to improve consumers' wellbeing and health often have a "boomerang effect" in that they produce effects opposite to those intended (Ringold 2002; e.g. Voas et al. 2002, 2006). In particular, many world cities have implemented regulations that limit the sale of alcoholic drinks up until a specific time in an attempt to decrease the incidence of crime and violence. An example of such regulation is the "lock out laws", which have been adopted in several countries like the US, South Africa, New Zealand and Australia to inhibit the occurrence of alcohol-fuelled violence (ABC News 2016). Research on the effectiveness of the lockout laws has shown that overall the introduction of the laws has contributed to the reduction of assaults (Douglas 1998; Kypri, Jones, McElduff and Barker 2010; Ménedez et al. 2015), crime (Dualibi, Ponicki,

Grube, Pinsky et al 2007) and hospital presentations (Fulde, Smith and Forster 2015). However, all of these studies have failed to tease out potential confounds, and to explain whether factors other than the decrease in alcohol consumption, such as the delocalization of crime or the reduction of people patronizing the areas affected by the laws, may account for these changes. As such, the current research warns public policy makers that a time constraint on consumption may indeed trigger a "boomerang effect", and lead to an overall increase of an individual's level of consumption.

Limitations and Future Developments

We acknowledge our research is not free from limitations, which we were not able to address due to constraints in resources. In Study 1, for example, we test the individuals tend to underestimate their consumption under time pressure only in the drinking context and we assume that the same result will hold in a food context. In order to address this issue, we could run another scenario-based study similar to Study 1 (Study 1b) in which, for example, we can ask respondents to imagine how much they will eat at a banquet either under time pressure or not under time pressure.

As for Study 2, we were not able to rule out alternative explanations of the effect we found. For instance, since they knew how much time they had left to eat, people could have eaten more because they did not want to waste the cake they were given, and not because they were afraid of missing out. In addition, it would have been interesting to see whether the effect is robust even when we only manipulate time pressure subjectively ("you only have limited time to eat") instead of objectively ("you only have two minutes to eat"). This would allow us to determine whether the effect is driven simply by the awareness of having a time constraint or, more generally, by the perceived feeling of time pressure. Finally, the ecological validity of these findings could be strengthened using a field experiment. We could collect alcohol consumption data from local clubs or bars and compare the amount consumed per capita before

the introduction of the lockout laws and after[20]. A method we could adopt to analyse this effect is difference in differences, a quasi-experimental design used to estimate the impact of a specific treatment by comparing the variation in outcomes over time between a population subject to that treatment and a population that is not (Branas, Cheney, MacDonald et al. 2011). Otherwise, we could run an actual field experiment in a local restaurant and compare the effects of the amount of food consumed in a time constraint condition with that in a no time pressure condition.

With regards to future developments of the current paper, we could potentially find a way to reduce the effect of time pressure on overconsumption through a savouring mindset. Savouring has been defined as the cognitive process individuals partake in so as to cherish and enhance the positive experiences in their lives (Bryant and Veroff 2007; Jose, Lim and Bryant 2012). Specifically, it involves the "awareness of current pleasure from a target-specific consumption experience" (Chun, Diehl and MacInnis 2017), and can relate to a past experience, as well as an ongoing or future experience (Bryant and Veroff 2007).

Previous research has focused on the effect of mindsets on individuals' decision-making and behavioural change (e.g. Keinan and Kivetz 2008; Ma and Rose 2014; Price et al. 2017). We claim that savouring could inhibit the impact of time pressure on the fear of missing out, and subsequently on consumption intake for several theoretical and empirical reasons. First, savouring should be able to change our perception of time. As Quoidbach and colleagues (2010) observe, one of the several approaches to savouring includes being present by focusing on the present current experience ("be present"). By being aware of the present moment, a savouring individual could limit their perceptions of time being transient or fleeting, and completely direct the attention to their present actions (Jose et al. 2012). As well as increasing happiness (Jose et al. 2012), savouring the present reduces the levels of depression and negative

[20] This was the original methodology we aimed to adopt for the current paper, however we were not able to find local bars or clubs willing to share their data with us. In future, we may consider leveraging the local councils, the department of health or the government to support our study and data collection.

affect (Hurley and Kwon 2012), hence it could inhibit the feelings of anticipated regret. Second, previous research seems to hint at the idea that savouring would slow down the level of consumption. Indeed, savouring is related to the concept of mindfulness (Chun 2008), which has been found to lower consumption (Jordan et al. 2014; Van De Veer et al. 2016). Further, previous empirical research has shown anticipatory savouring, i.e. psychologically looking forward to a consumption experience, stimulates satiation and reduces consumption intake (Black and Areni 2016).

Priming savouring can be easily achieved by public policy makers by demanding bar and clubs managers to leave savouring-related messages in the venue in the form of advertisements or other cues in the servicescape. Future research should therefore attempt to test whether a savouring mindset could represent a boundary condition of the effect we discovered.

Lastly, future other interventions could be tested to both decrease the level of anticipated regret and the compensatory behaviour we hypothesize. For example, we could manipulate portion sizes of the cake. This is because individuals tend to find gratification in completing a unit of a given task, phenomenon called unit bias (Geier, Rozin and Doros 2006). Based on previous research, for example, if we cut a piece of cake into smaller pieces rather than giving them a full piece, it is possible that respondents would eat less (Zlatevska, Dubelaar and Holden 2014), and this effect could hold even when consumption has a time constraint: indeed, respondents may experience less time pressure and less anticipated regret as their task would be smaller than before (i.e. the smaller piece rather than the full piece), and this could therefore mitigate the overall compensatory eating behaviour previously discussed.

Conclusions

Although previous research had looked at the effects of time pressure on food choices, no studies had investigated the relationship between time pressure and consumption amount.

The present research has attempted to fill this gap in the literature by investigating whether time pressure leads to overconsumption within a specific timeframe. Our findings suggested that even though people think they will not consume more under time pressure, in reality they tend to consume more, and explained this behaviour as driven by anticipated regret. Based on our findings we proposed recommendations for marketing practitioners and public policy makers who are considering implementing strategies based on time constraints on consumption, and avenues for further research in this field to scholars.

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List of Diagrams, Tables and Graphs

Diagram 1
Proposed mediation and moderated mediation model

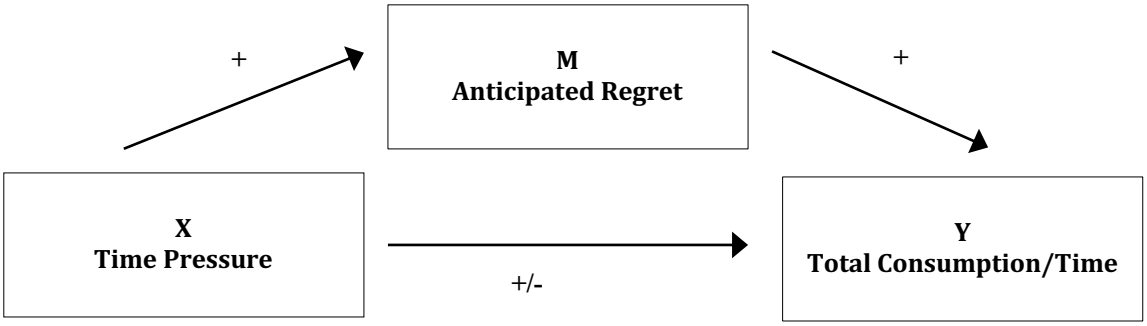


Table 1a

Results of ANCOVA for Study 1

	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	575.379[a]	3	191.793	64.876	.000
Intercept	33.844	1	33.844	11.448	.001
Self-Regulation	25.957	1	25.957	8.780	.003
Habitual Number of Drinks	484.882	1	484.882	164.016	.000
Time Constraint Condition	4.979	1	4.979	1.684	.196
Error	588.306	199	2.956		
Total	1944.000	203			
Corrected Total	1163.685	202			

a. R Squared = .494 (Adjusted R Squared = .487)

Table 1b

Results of multiple linear regression for Study 1

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Intercept	3.109	.871		3.571	.000
Self-Regulation	-.392	.132	-.152	-2.963	.003
Time Constraint Condition	-.315	.243	-.066	-1.298	.196
Habitual Number of Drinks	.809	.063	.654	12.807	.000

Graph 1
Results from Study 2

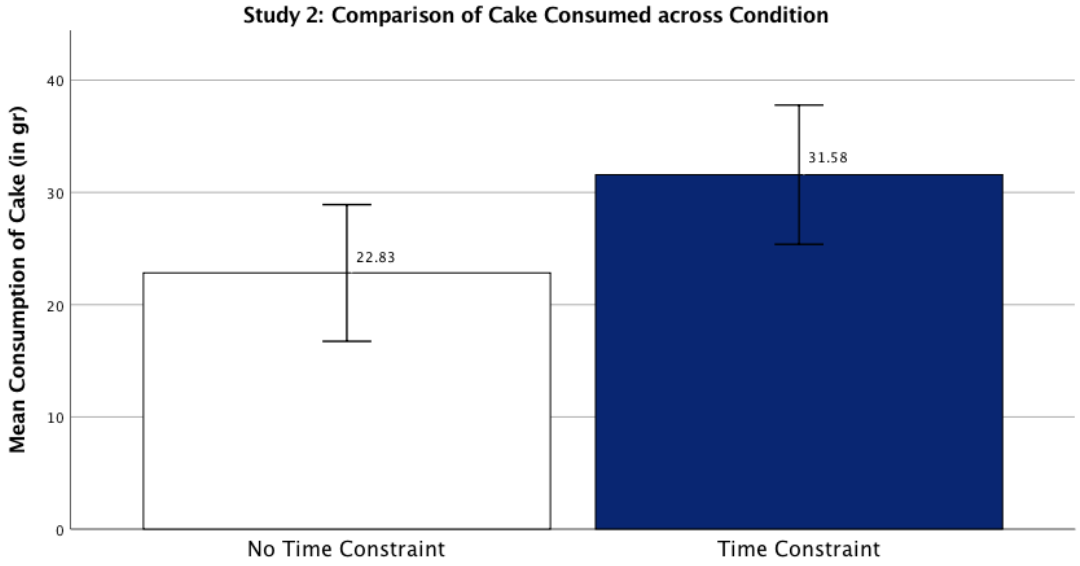
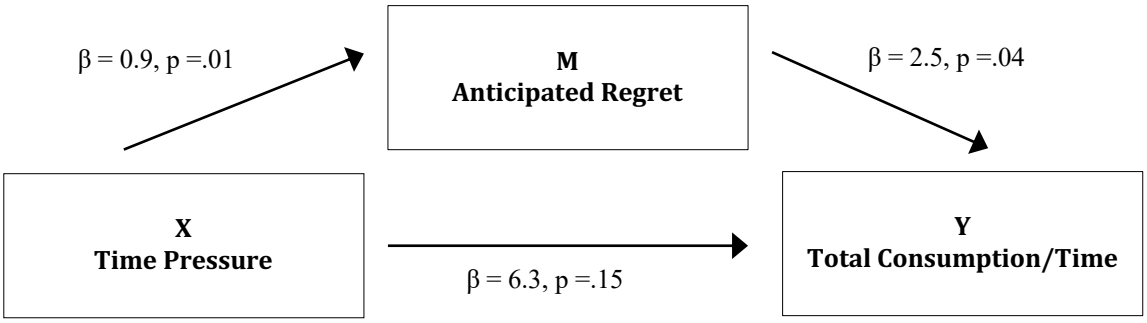


Diagram 2
Results of the mediation model



Appendix

Appendix A
Exploratory pilot study on the Effects of the Lockout Laws on Consumption

My name is Alex Belli and I'm a student at UTS. My supervisor is Ass. Prof. François A. Carillat. The purpose of this research is to find out about your impression and opinions of the lockout laws. The current questionnaire will take you approximately 5 minutes. Your task will simply consist in answering a few questions in full sentences.
You can change your mind at any time and stop completing the survey without consequences. If you agree to be part of the research and to research data gathered from this survey to be published in a form that does not identify you, please continue with answering the survey questions. If you have concerns about the research that you think I or my supervisor can help you with, please feel free to contact us on the following email addresses:

- Alex Belli: (02) 9514 4029/ Alex.Belli@student.uts.edu.au
- François Carrillat: (02) 9514 3530/ Francois.Carrillat@uts.edu.au

Drinking Behaviours and the Lockout Laws

1. What kind of drinker are you? Please describe your drinking habits.

2. Where, when, how much and with whom do you usually drink?

3. What types of drinks do you prefer having?

4. Do you usually go out on a weekend (Friday-Sunday)? If so, what venues do you go to? Where are they located?

5. Has the introduction of the lockout laws affected you? If so, how and to what extent?

6. How have you adapted to the lockout laws? For example, have you changed your way of drinking or have you stopped patronising the CBD?

7. If you still visit venues around the CBD on weekend nights, have you noticed any different behaviours among the people around you (your friends included) in those venues?

Demographics

Age:

Gender:

Occupation:

Do you currently live in Sydney or around Sydney? – **filter question**

In what suburb do you reside?

Appendix B
Experimental Material Study 1

COVER SHEET

ETH18-2412

BEATING THE CLOCK: HOW IMPOSED TIME CONSTRAINTS LEAD TO OVERCONSUMPTION

My name is Alex Belli and I'm a student at UTS. My supervisor is Ass. Prof. François A. Carillat.

The purpose of this research is to find out about people's decision-making styles.

I will ask you to complete a paper-based questionnaire, and it will take you approximately 5 minutes. Your task will simply consist in answering a few questions by ticking a box or by selecting a number on a scale.

You can change your mind at any time and stop completing the survey without consequences.

If you agree to be part of the research and to research data gathered from this survey to be published in a form that does not identify you, please continue with answering the survey questions.

If you have concerns about the research that you think I or my supervisor can help you with, please feel free to contact us on the following email addresses:

- Alex Belli: (02) 9514 4029/ Alex.Belli@student.uts.edu.au
- François Carrillat: (02) 9514 3530/ Francois.Carrillat@uts.edu.au

If you would like to talk to someone who is not connected with the research, you may contact the Research Ethics Officer on 02 9514 9772 or Research.ethics@uts.edu.au and quote this number **ETH18-2412**.

INFORMATION SHEET

WHO IS DOING THE RESEARCH?

My name is Alex Belli and I'm a student at UTS. My supervisor is Ass. Prof. François A. Carillat.

WHAT IS THIS RESEARCH ABOUT?

This research examines different decision-making styles.

IF I SAY YES, WHAT WILL IT INVOLVE?

Should you agree to take part in this project, you will be asked to answer a series of questions regarding to your decision-making style in a specific scenario. The survey should take about 5-10 minutes to complete. For the purpose of this research, not all details will be disclosed but full disclosure will be provided some time after data collection.

ARE THERE ANY RISKS/INCONVENIENCE?

No, there are no risks involved in this study.

WHY HAVE I BEEN ASKED?

You are older than 18 and you are able to give me the information I need to find out about different decision-making styles.

DO I HAVE TO SAY YES?

You don't have to say yes.

WHAT WILL HAPPEN IF I SAY NO?

Nothing. I will thank you for your time so far and won't contact you about this research again.

IF I SAY YES, CAN I CHANGE MY MIND LATER?

You can change your mind at any time and you don't have to say why. I will thank you for your time so far and won't contact you about this research again.

WHAT IF I HAVE CONCERNS OR A COMPLAINT?

If you have concerns about the research that you think I or my supervisor can help you with, please feel free to contact us on the following email addresses/phone numbers:

- Alex Belli: (02) 9514 4029/ Alex.Belli@student.uts.edu.au
- François Carrillat: 02) 9514 3530/ Francois.Carrillat@uts.edu.au,

If you would like to talk to someone who is not connected with the research, you may contact the Research Ethics Officer via Research.Ethics@uts.edu.au, and quote this number ***ETH 18-2412.***

INFORMED CONSENT FORM

I _____ (participant s name) agree to participate in a research project on decision making (HREC15-0156) being conducted by Alex Belli (Alex.Belli@student.uts.edu.au, (02) 9514 4029) and Ass. Prof. François Carrillat (Francois.Carrillat@uts.edu.au, (02) 9514 3530).
I understand that the purpose of this study is to examine different decision-making styles.

I understand that I have been asked to participate in this research because I am older than 18 and that my participation in this research will involve answering a series of questions regarding to your decision-making style in a specific scenario, and it will take about 5-10 minutes to complete.

I agree to keep confidential all information including all conversations and discussions, materials and methods provided to me by the UTS research team.

I agree that the research data gathered from this project may be published in a form that:
☐ Does not identify me in any way

I am aware that I can contact Alex Belli if I have any concerns about the research. I also understand that I am free to withdraw my participation from this research project at any time I wish, without consequences, and without giving a reason.

I agree that Alex Belli has answered all my questions fully and clearly.

_____ ____/____/____
Name and Signature (participant) Date

_____ ____/____/____
Alex Belli (researcher or delegate) Date

NOTE:
This study has been approved by the University of Technology Sydney Human Research Ethics Committee (UTS HREC). If you have any concerns or complaints about any aspect of the conduct of this research, please contact the Ethics Secretariat on ph.: +61 2 9514 2478 or email: Research.Ethics@uts.edu.au, and quote the UTS HREC reference number. Any matter raised will be treated confidentially, investigated and you will be informed of the outcome.

Questionnaire

General Questions on Drinking Behaviours

1. **How many drinks on average do you usually have on a night out?**
   (slide bar 0-30)
2. **How many venues do you visit on a night out?**
   (slide bar 1-20)
3. **How long on average do you spend in each venue on a night out?**
   (slide bar: 30 minutes – 1 hour – 1 hour 30 minutes – 2 hours – 2 hours 30 minutes – 3 hours and over)

Scenarios

4. In the following page, you will read about a hypothetical scenario.
   - **Condition 1 (experimental group):**
     Imagine you have gone out with your friends for a fun night out, and at 11 pm you get into a bar to have something to drink with the intention of staying late that night. As soon as you get into the venue, the waiter tells you that the last drink is served at 12 am sharp due to a new law that is affecting all the bars/pubs of the area.

   - **Condition 2 (control group):**
     Imagine you have gone out with your friends for a fun night out, and at 11 pm you get into a bar to have something to drink with the intention of staying late that night. As soon as you get into the venue, the waiter tells you to enjoy your stay at the bar.

5. Assuming you haven't had any drinks before getting to the bar, please describe how many and what type of drinks you would have by 12 am.

   i. Pint(s) of beer (473 ml): _____
   ii. Glass(es) of wine (125 ml):_____
   iii. Cocktail(s) – e.g. margarita, mojito, cosmopolitan etc.: _____
   iv. Glass(es) or shot(s) of spirits (30/42 ml) – e.g. whiskey, vodka, gin etc.:_____

6. **How likely would you be to recommend this bar to other friends or relatives on a scale from 1 (=highly unlikely) to 7 (=highly likely)?**

1 Highly unlikely	2	3	4 Neutral	5	6	7 Highly Likely

7. **How likely would you be to return to this bar on a scale from 1 (=highly unlikely) to 7 (=highly likely)?**

1 Highly unlikely	2	3	4 Neutral	5	6	7 Highly Likely

8. **Now, imagine that the following week you decide to go out again with the same group of friends. Please select how likely you are to engage in the following behaviours on a scale from 1(=very unlikely) to 9 (= very likely).**

- I would go out earlier.

1 Highly unlikely	2	3	4 Neutral	5	6	7 Highly Likely

- I would pre-drink.

1 Highly unlikely	2	3	4 Neutral	5	6	7 Highly Likely

- I would go to another venue of the area.

1 Highly unlikely	2	3	4 Neutral	5	6	7 Highly Likely

- I would not go to a venue in a different area.

1 Highly unlikely	2	3	4 Neutral	5	6	7 Highly Likely

9. **For the following statements please tick the answer that best reflects your perception about the first venue you visited from 1 (strongly disagree) to 7 (strongly agree).**

- "I was pressed for time "

1 Strongly disagree	2	3	4 Neutral	5	6	7 Strongly agree

- "I felt rushed to eat"

1 Strongly disagree	2	3	4 Neutral	5	6	7 Strongly agree

10. **For the following statements please tick the answer that best reflects your habits from 1 (Strongly Disagree) to 7 (Strongly Agree).**

	1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree
I am good at resisting temptation.							
I have a hard time breaking bad habits.							
I am lazy.							

I say inappropriate things.							
I do certain things that are bad for me, if they are fun.							
I refuse things that are bad for me.							
People would say that I have iron self-discipline.							
Pleasure and fun sometimes keep me from getting work done.							
I have trouble concentrating.							
I am able to work effectively toward long-term goals.							
Sometimes I can't stop myself from doing something, even if I know it is wrong.							
I often act without thinking through the alternatives.							
I wish I had more self-discipline.							

11. **What is your gender?**

1. Male (1)
2. Female (2)
3. Other (3)

12. **How old are you?**

- 18 – 30
- 31 – 40
- 41 – 50
- 51 – 60
- 61 +

Appendix C
Experimental Material Study 2

COVER SHEET

ETH 18-2412

FACTORS INFLUENCING DECISION-MAKING IN DAY-TO-DAY ACTIVITIES

My name is Alex Belli and I'm a student at UTS. My supervisor is Ass. Prof. François A. Carillat.

The purpose of this research is to find out about people's opinions of a video and some food which are going to be served.

I will ask you to participate in an online questionnaire, during which you will have to watch a video, and then you will be asked to answer a few questions. The study will take you approximately 20-30 minutes to complete. Your task will simply consist in answering a few questions by ticking a box/number or by writing a few statements. During the activity, you will also be served some food that you can eat.

You can change your mind at any time and stop completing the survey without consequences. If you agree to be part of the research and to research data gathered from this survey to be published in a form that does not identify you, please continue with answering the survey questions.

If you have concerns about the research that you think I or my supervisor can help you with, please feel free to contact us on the following email addresses:

- Alex Belli: Alex.Belli@student.uts.edu.au
- François Carrillat: Francois.Carrillat@uts.edu.au

If you would like to talk to someone who is not connected with the research, you may contact the Research Ethics Officer on 02 9514 9772 or Research.ethics@uts.edu.au and quote this number ***ETH 18-2412***.

INFORMATION SHEET

WHO IS DOING THE RESEARCH?

My name is Alex Belli and I'm a student at UTS. My supervisor is Ass. Prof. François A. Carillat.

WHAT IS THIS RESEARCH ABOUT?

This research examines opinions of a video you will watch and of some food you will be served.

IF I SAY YES, WHAT WILL IT INVOLVE?

Should you agree to take part in this project, you will be asked to watch a video, eat some food and answer a series of open-ended question and multiple choice questions about them. The survey should take about 20-30 minutes to complete. For the purpose of this research, not all details will be disclosed now but full disclosure will be provided some time after data collection Please be aware you may decide not to take part in the project without any disadvantage to yourself of any kind. I will thank you for your time thus far and won't contact you about this research again.

ARE THERE ANY RISKS/INCONVENIENCE?

Yes, you may experience feelings of embarrassment during the activity and the completion of the question. If you experience such feelings, you can decide to withdraw from this study at any time.
In addition, the food served contains the following ingredients: milk, eggs, soy and nuts.
If you are aware of being allergic to any of these ingredients, please inform the researchers as soon as possible. If you experience any allergic reaction during the study, please inform the researchers and contact the following services:

- UTS Medical and Counselling services: (02) 9514 1177
- LifeLine: (02) 6215 9400

WHY HAVE I BEEN ASKED?

You are a current UTS student and you are older than 18 years of age.

DO I HAVE TO SAY YES?

You don't have to say yes.

WHAT WILL HAPPEN IF I SAY NO?

Nothing. I will thank you for your time so far and won't contact you about this research again.

IF I SAY YES, CAN I CHANGE MY MIND LATER?

You can change your mind at any time and you don't have to say why. I will thank you for your time so far and won't contact you about this research again.

WHAT IF I HAVE CONCERNS OR A COMPLAINT?

If you have concerns about the research that you think I or my supervisor can help you with, please feel free to contact us on the following email addresses/phone numbers:

- Alex Belli: (02) 9514 4029/ Alex.Belli@student.uts.edu.au
- François Carrillat: (02) 9514 3530/ Francois.Carrillat@uts.edu.au

If you would like to talk to someone who is not connected with the research, you may contact the Research Ethics Officer via Research.Ethics@uts.edu.au, and quote this number ***ETH 18-2412*.**

INFORMED CONSENT FORM

I _____ (participant s name) agree to participate in a research project about food being conducted by Alex Belli (Alex.Belli@student.uts.edu.au, (02) 9514 4029) and Ass. Prof. François Carrillat (Francois.Carrillat@uts.edu.au, (02) 9514 3530).
I understand that the purpose of this study is to examine decision-making styles in day-to-day situations.
I understand that I will also be served food, and I have to inform the researcher of any food intolerances and allergies as soon as possible, as this could potentially preclude my participation in the study.

I understand that I have been asked to participate in this research because I am a current UTS student ,I am older than 18 and that my participation in this research will involve answering a questionnaire, watching a video and trying some food, and answering questions about them, and it will take about 20-30 minutes to complete.

I also understand that for the purpose of this research not all details have been disclosed to me but I will be provided with full disclosure after data collection has taken place.

I agree to keep confidential all information including all conversations and discussions, materials and methods provided to me by the UTS research team.

I agree that the research data gathered from this project may be published in a form that:
☐ Does not identify me in any way

I am aware that I can contact Alex Belli if I have any concerns about the research. I also understand that I am free to withdraw my participation from this research project at any time I wish, without consequences, and without giving a reason.

I confirm I do not have any food intolerances or allergies that may prevent me from participating in this study.

I agree that Alex Belli has answered all my questions fully and clearly.

_____ ____/____/____
Name and Signature (participant) Date

_____ ____/____/____
Alex Belli (researcher or delegate) Date

NOTE:
This study has been approved by the University of Technology Sydney Human Research Ethics Committee (UTS HREC). If you have any concerns or complaints about any aspect of the conduct of this research, please contact the Ethics Secretariat on ph.: +61 2 9514 2478 or email: Research.Ethics@uts.edu.au, and quote the UTS HREC reference number. Any matter raised will be treated confidentially, investigated and you will be informed of the outcome.

Questionnaire

1. **Please read the following instructions carefully. In order to continue with the study, please put on the earphones provided and then raise your hand. Do NOT click on the "next" button until you are instructed to do so.**

   (1) Time Pressure Condition:

   Please watch the following video. By the way, you may have notice that you were served a plate of food, please feel free to have as much as you like. These are a thank you for participating in the study. Note that the food will be removed to make way for the next part of the study, **so you only have 2 minutes to eat**. Enjoy!
   https://www.youtube.com/embed/H14bBuluwB8?start=13

   (2) No Time Pressure Condition:

   Please watch the following video. By the way, you may have notice that you were served a plate of food, please feel free to have as much as you like. These are a thank you for participating in the study. Enjoy!
   https://www.youtube.com/embed/H14bBuluwB8?start=13

2. **For the following statements please tick the answer that best reflects your perception from 1 (strongly disagree) to 7 (strongly agree). We are interested in your feelings during the "table tasting" activity.**

   - "I was pressed for time "

1 Strongly disagree	2	3	4 Neutral	5	6	7 Strongly agree

   - "I felt rushed to eat"

1 Strongly disagree	2	3	4 Neutral	5	6	7 Strongly agree

   - "I thought I could miss out "

1 Strongly disagree	2	3	4 Neutral	5	6	7 Strongly agree

- "I thought I would not have enough time to enjoy the cake"

1 Strongly disagree	2	3	4 Neutral	5	6	7 Strongly agree

- "I felt stressed "

1 Strongly disagree	2	3	4 Neutral	5	6	7 Strongly agree

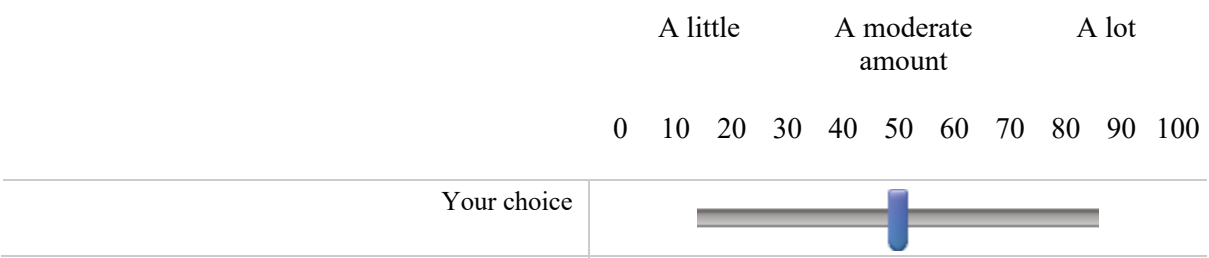
3. **Please respond to the statements below, describing how you feel right now. We are interested in your feelings at this moment. Please rate the following statements from 1 (=not true) to 7 (=true).**

	1 Not True	2	3	4	5	6	7 True
I feel mentally exhausted.							
Right now, it would take a lot of effort for me to concentrate on something.							
I need something pleasant to make me feel better.							
I feel motivated.							
If I were given a difficult task right now, I would give up easily.							

I feel drained.							
I have lots of energy.							
I feel worn out.							
If I were tempted by something right now, it would be very difficult to resist.							
I would want to quit any difficult task I were given.							
I feel calm and rational.							
I can't absorb any more information.							
I feel lazy.							
Right now I would find it difficult to plan ahead.							
I feel sharp and focused.							
I want to give up.							
This would be a good time for me to make an important decision.							
I feel like my willpower is gone.							

My mind feels unfocused right now.							
I feel ready to concentrate.							
My mental energy is running low.							
A new challenge would appeal to me right now.							
I wish I could just relax for a while.							
I am having a hard time controlling my urges.							
I feel discouraged.							

4. **How much did you like the extract of the video you watched?**



5. **Is there anything you found interesting about the video? If so, what was it? If not, why?**

_____

_____

_____

6. **Had you seen this video before?**

   ○ Yes

   ○ No

7. **How much do you like cake in general?**

A little A Moderate Amount A lot

0 10 20 30 40 50 60 70 80 90 100

The following questions will ask you to judge or express your opinions on the food you previously ate. Please answer to them truthfully.

8. **What did you particularly like about *the cake you had*?**

9. **What did you particularly dislike about *the cake you had*?**

10. **How would you rate *Food 1* in terms of the following attributes? Please select the box that best reflects your opinion.**

Taste	1 Dislike Extremely	2 Somewhat Dislike	3 Neither Like or Dislike	4 Somewhat Like	5 Like Extremely
Appearance	1 Dislike Extremely	2 Somewhat Dislike	3 Neither Like or Dislike	4 Somewhat Like	5 Like Extremely
Flavour	1 Dislike Extremely	2 Somewhat Dislike	3 Neither Like or Dislike	4 Somewhat Like	5 Like Extremely
Texture	1 Dislike Extremely	2 Somewhat Dislike	3 Neither Like or Dislike	4 Somewhat Like	5 Like Extremely
Smell	1 Dislike Extremely	2 Somewhat Dislike	3 Neither Like or Dislike	4 Somewhat Like	5 Like Extremely

11. **How hungry would you say you were before starting this study? Please select the option on the following spectrum that best represents your feelings from "a little" to "a lot.**

	1	2	3	4	5	
A Little						A Lot

12. **How long before coming in for this study had you last eaten (in hours, approximately)? Remember that "0.5" stands for half hour, so you can for example drag the slider to point 2.5 if you last ate 2 hours and a half ago.**

	0 1 2 3 4 5 6 7
Time (in hours)	

13. **This scale consists of a number of words that describe different feelings and emotions. For each item indicate from 1 to 5 to what extent you feel this way right now, that is, at the present moment.**

	1 Very slightly or Not at all	2 A little	3 Moderately	4 Quite a bit	5 Extremely
Interested					
Distressed					
Excited					
Upset					
Strong					
Guilty					
Scared					
Hostile					
Enthusiastic					
Proud					
Irritable					
Alert					
Ashamed					
Inspired					
Nervous					
Determined					
Attentive					
Jittery					
Active					
Afraid					

14. **For the following statements please tick the answer that best reflects your habits from 1 (never) to 7 (always).**

	1 Never	2	3	4	5	6	7 Always
When you have put on weight, you eat less than you usually do.							
You try to eat less at mealtimes than you would like to eat.							
You refuse food or drink offered because you are concerned about your weight.							
You watch exactly what you eat.							
You deliberately eat foods that are slimming.							
You have eaten too much do you eat less than usual the following day.							
You deliberately eat less in order not to become heavier.							
You try not to eat between meals because you are watching your weight.							
In the evenings you try not to eat because you are watching your weight.							
You take into account your weight with what you eat.							

15. **For the following statements please tick the answer that best reflects your habits from 1 (Strongly Disagree) to 7 (Strongly Agree).**

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree

I am good at resisting temptation.							
I have a hard time breaking bad habits.							
I am lazy.							
I say inappropriate things.							
I do certain things that are bad for me, if they are fun.							
I refuse things that are bad for me.							
People would say that I have iron self-discipline.							
Pleasure and fun sometimes keep me from getting work done.							
I have trouble concentrating.							
I am able to work effectively toward long-term goals.							
Sometimes I can't stop myself from doing something, even if I know it is wrong.							
I often act without thinking through the alternatives.							
I wish I had more self-discipline.							

16. **For the following statements please tick the answer that best reflects your habits from 1 (Strongly Disagree) to 7 (Strongly Agree).**

	1 Never	2	3	4	5	6	7 Always
I try to avoid foods that are high in fat.							
I try to avoid foods that are high in cholesterol.							
I try to avoid foods with a high salt content.							
I am concerned about how much sugar I eat.							
I make a special effort to get enough fiber in my diet.							
I use a lot of low calorie or calorie reduced products							
I try to select foods that are fortified with vitamins and minerals.							
I am careful about what I eat in order to keep my weight under control.							
I try to avoid foods that have additives in them.							
I am concerned about getting enough calcium in my diet.							

17. **What is your gender?**
    - ○ Male
    - ○ Female
    - ○ Other

18. **What is your age?**
    - ○ 18
    - ○ 19
    - ○ 20
    - ○ 21
    - ○ 22
    - ○ 23
    - ○ 24
    - ○ 25
    - ○ 26
    - ○ 27
    - ○ 28
    - ○ 29
    - ○ 30 or older

19. **How tall are you roughly in cm? ____**
20. **How much do you weigh roughly in kg? _____**

Exegesis

The current dissertation project set out to investigate consumer excessive behaviours in order to better understand factors that could mitigate them as well as exacerbate them. To this effect, three essays have addressed the effect of maximization (excessive decision-making) on individual well-being, the role of time pressure on risk-seeking (excessive risk-taking) and eating/drinking behaviours (excessive consumption).

The first essay aimed to settle the debate on whether maximization undermines one's well-being and discover the conditions under which this decision-making strategy is detrimental or beneficial for well-being. A meta-analyses of 196 effect sizes established that maximization is a double jeopardy for well-being on two different levels, in that it decreases both positive well-being as a trait and a state and it increases negative well-being as a trait and a state. However, the study unveiled that the conceptualization of maximization as "high standards" and of well-being as eudaimonic mitigate the double jeopardy on a trait level, whereas the consumption decision context decreases the negative impact of maximization on well-being as a state. Moreover, the findings explored and found a new account for the maximization paradox, whereby maximizers' lower level of positive well-being can be attributed to the autonomy granted by their environment rather than overchoice per se.

The second essay addressed the issue of whether time pressure increases risk-taking behaviours. After conducting three sub-group meta-analysis using a sample of 102 effect sizes, the study showed not only that the grand mean effect of time pressure on risk-seeking is insignificant, but also that framing, probabilities of the best possible outcome and expected values do not have an impact on risk-taking. Nonetheless, individuals tend to be much more risk-seeking when the level of risk is ambiguously defined, and when the outcome of the risky decision affects others.

Lastly, the third study explored the relationship between time pressure and consumption amount and tested whether anticipated regret mediates this relationship. Our findings suggested that even though people think they will not consume more under time pressure due to their overconfidence in self-control, in reality they are likely to consume more.

Based on these findings, the papers offered valuable managerial, public policy and methodological implications, and proposed avenues for further research in the field. The author hopes public policy makers and marketers could utilize the results of the current project to enhance their strategies, and place consumer well-being on the foreground of their actions.