TO DO OR TO HAVE, MORE OR LESS: NEW INSIGHTS FROM QUANTITATIVE REVIEWS OF THE EXPERIENTIAL ADVANTAGE AND THE USE OF SCARCITY TACTICS IN MARKETING

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CERTIFICATE OF ORIGINAL AUTHORSHIP

I, Belinda Louise Barton, declare that this thesis is submitted in fulfillment of the requirements for the award of Doctor of Philosophy in the Marketing Discipline Group, Faculty of Business, at the University of Technology Sydney.

This thesis is wholly my own work unless otherwise referenced 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.

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The format of this thesis is by compilation.

Paper One: Barton, Belinda, Tom van Laer and Natalina Zlatevska, "The Experiential Advantage: A Meta-Analysis of the Processes, Outcomes, and Moderators of Consuming Experiences." invited for second round revision at *Journal of Consumer Research*.

Paper Two: Barton, Belinda, Natalina Zlatevska and Harmen Oppewal, "Scarcity Tactics in Marketing: A Meta-Analysis of Product Scarcity Effects on Consumer Value Perceptions and Behavioral Intentions." under review at the *Journal of Retailing.*

Table of Contents

ABSTRACT

Is it possible to buy happiness? Prior research suggests that shifting discretionary spending from material goods such as clothes, to experiences such as concerts, will bring greater happiness, satisfaction, and overall wellbeing. Other research provides evidence for the benefits of purchasing and consuming material goods rather than experiences. Using a theory driven meta-analysis of 412 effect sizes, paper one shows that there is an hedonic advantage to consuming experiences rather than material goods. Paper two then explores how a common marketing tactic – scarcity – influences consumer attitudes and behaviour. Using commodity theory as the overarching framework to integrate more than fifty years of research into the psychological effects of scarcity, a meta-analysis of 416 effect sizes highlights that not all scarcity tactics are equal. Rather, the size of scarcity's effect on value depends on a number of moderating factors including the source of the scarcity, product benefits, how the scarcity cue is communicated, and level of involvement with the product. Together these two quantitative reviews synthesize piecemeal literature examining two of the existing debates in contemporary consumer research. That is, what people should spend their money on when seeking to maximise happiness and wellbeing, and how scarcity tactics influence decision-making when consumers make choices from the abundance of options available in the marketplace.

Chapter One

Introduction

A fortunate consequence of the continued growth of Western and emerging economies is the increased levels of discretionary spending that individuals benefit from. An increasing portion of populations have greater discretionary spending capacity than ever before, and with it comes the dilemma of where consumers should spend their money and what they should purchase with it.

As economies have shifted from offering commodities to goods, then services, and now experiences (Pine and Gilmore 1998), consumers have more freedom of choice than ever before when deciding how to spend their money. Consumer spending is following this shift into the experience economy, with almost 2 billion experience related online searches conducted in Australia in 2017 (Gleeson 2019). In the United States, recent spending data from the U.S. Bureau of Labour Statistics shows that annual household spending on major experience categories of entertainment and food away from home increasing 10% and 6.7% respectively in 2017 (U.S. Bureau of Labor Statistics 2019). Similar statistics prevail across other parts of the world, with the United Kingdom reporting a 10.2% increase in annual spending on entertainment in 2017 (Deloitte 2019) and Chinese consumers increasing their monthly household spending on travel and entertainment from 5.5% to 11% in 2017 (Credit Suisse 2017). Research shows that moving discretionary spending from material goods to experiences leads to greater happiness and wellbeing (Van Boven and Gilovich 2003), and one potential explanation for increased spending on experiences is that consumers readily intuit this outcome and consciously seek to spend money on experiential purchases in the pursuit of happiness.

Experiences, as defined by (Van Boven and Gilovich 2003, 1194), are purchases that are made with "..the primary intention of acquiring a life experience: an event or series of events that one lives through" and material purchases are those made with "…the primary intention of acquiring a material good: a tangible object that is kept in one's possession." Vacations, concert tickets, and ski passes are all examples of experiential purchases, and watches, clothing, and jewellery are all common examples of material goods. The greater happiness, satisfaction, and overall wellbeing that flows from increased experiential consumption was termed the experiential advantage (Guevarra and Howell 2015), and is drawing increasing attention from scholars.

Many researchers have advocated for the experiential advantage, arguing that the hedonic gains stemming from experiences satisfy higher order psychological needs that material goods cannot (Howell and Hill 2009; Thomas and Millar 2013). Moreover, because experiences also tend to be consumed with other people (e.g. we often see movies with friends, take group dance classes) they are more social (Caprariello and Reis 2013) and provide more "talking value" (Kumar and Gilovich 2015). Experiences thus foster greater social contact compared to material goods, which connects people through increased relatedness and identity satisfaction (Howell and Hill 2009). Even waiting for an experience is more exciting than waiting for a material good (Kumar et al. 2014), and simply thinking about an experience can put people in a better mood than thinking about a material purchase (Van Boven and Gilovich 2003). Another reason that experiences deliver greater happiness and satisfaction is that people are less likely to make invidious comparisons about their experiential purchases to other purchases that might have been better or cheaper (Carter and Gilovich 2010).

Despite theoretical and empirical support for an experiential advantage, other research exists challenging its existence. Evidence highlighting a favourable link between the consumption of material goods and happiness anchors on the difference between instrumental and terminal materialism. When products are consumed as "essential means for discovering and furthering personal values and goals of life", materialism is termed "instrumental materialism" (Csikszentmihalyi and Rochberg-Halton 1978, 8) and is less likely to be detrimental to wellbeing. Vargo and Lusch (2004, 9) summarise the case for the consumption of material goods as being a "means" for reaching "end states" which include happiness, security, and accomplishment. Similarly, Rifkin (2001) suggests that material goods are necessary platforms for meeting higher order needs. Material goods can also provide individuals multiple opportunities for consumption, and therefore multiple opportunities to experience happiness and satisfaction with their purchase. For example, a new pair of jeans gives the owner an opportunity to be happy with her purchase every time she wears them. It is this type of *momentary happiness,* the pleasure or happiness people feel while actually consuming a purchase (Dunn and Weidman 2015), which illustrates an unsung advantage of material goods. When considering this type of consumption related happiness, material goods have been shown to provide more frequent momentary happiness that endures over time (Weidman and Dunn 2016) compared to experiences. Similarly, Carter (2009) finds that material goods and experiences do not differ in the levels of purchase related satisfaction that is measured initially, or at the time of purchase. In addition to happiness and satisfaction measured initially, or in the consumption moment, other research has demonstrated that people forecast material goods to be a better use of money compared to experiences (Pchelin and Howell 2014). People not only anticipate that material goods will be money better spent compared to experiences, these economic considerations are also rated as being more important than happiness when deciding to buy material goods.

In summary, the literature is conflicted in its support for the experiential advantage. As well as opposing views on whether there is, or is not, an advantage to consuming experiences rather than material goods for happiness and satisfaction, there is diversity in the conceptual and methodological approaches that have been taken when conducting research into the experiential advantage. To reconcile these differences, in the first paper of my thesis I integrate twenty years of research testing the theory that consuming experiences delivers greater happiness and satisfaction than consuming material goods. I develop an overarching theoretical model that includes the processes, outcomes, and moderators of the experiential advantage before assessing the model using a theory-driven meta-analysis of 412 effect sizes from 128 published and unpublished studies. I then conclude the paper with seven propositions that provides a roadmap for future research into the experiential advantage. This paper is being finalised for a second revision at the *Journal of Consumer Research*.

After synthesizing extant literature on the experiential advantage and determining which types of purchases consumers should purchase in the pursuit of happiness, the second paper of my thesis explores a common factor that influences the consumer's purchase decision. Moving from what a consumer *should* buy to maximise happiness into what affects the decision, I explore how a common marketing tactic – scarcity – influences consumer behaviour, and the contexts under which the effect of scarcity varies.

The use of scarcity tactics and cues in marketing is ubiquitous. Limited edition lines, depleted inventory levels on shelf-space, and time windows to acquire products and participate in events are common examples of how marketers implement scarcity tactics. Commodity Theory (Brock 1968) is the overarching framework used to understand the psychological effects of scarcity. It's main principle is that "any commodity will be valued to the extent that it is unavailable", and a commodity is defined as "anything which has usefulness to its possessor and which can be conveyed from person to person" (Brock 1968, 246). In a marketing context, commodities are not only shelf-based material goods such as groceries, clothing, or handbags.

Experiences are also commodities. Theme park passes, massages, and vacations are examples of marketable products whose value may be influenced by current or potential scarcity.

Since the development of commodity theory, researchers have progressed understanding of the effects of scarcity by disentangling the effect of generalised unavailability into different types of scarcity that are differentiated by their source. Sources of scarcity are broadly classified by quantity and time, with quantity restrictions further categorized according to which market force is driving the unavailability – namely supplier restriction or consumer demand. Under quantity restrictions, supply-based scarcity cues articulate that the supply of the product is restricted. Limited production lines and restricted distribution channels are common sources of supply-based scarcity and are found across a range of product categories, from low-involvement grocery items through to high involvement luxury vehicles. On the other hand, quantity restrictions due to demand-based scarcity occur during the selling process where the number of consumers purchasing a product exceeds supply.

Depending on whether the scarcity is due to restricted supply or consumer demand, differing explanations have been offered for the effects on consumer behaviour. In the case of supply-based scarcity, restricted supply can infer a product's quality and status, increasing its desirability (Lynn 1992), particularly for those consumers with a greater need for uniqueness (Fromkin 1970). On the other hand, bandwagon effects can explain further increases in demand stemming from demand-based scarcity (Leibenstein 1950; Van Herpen, Pieters, and Zeelenberg 2009). In the case of time-based scarcity, the offer itself is the scarce commodity which stimulates a sense of urgency in consumers as they seek to beat the deadline imposed to avoid missing out (Abendroth and Diehl 2006).

As the effects of generalised unavailability have been disentangled into their respective sources, so too has the concept of value. Brock (1968, 246) defined value as the ability to "potently affect attitudes and behaviour", and research has steadily expanded the number and type of attitudes and behaviour examined from value and desirability to include a range of variables from general attitudes, to enjoyment and exclusivity, perceived competition, popularity, purchase intentions, and willingness-to-pay, amongst others.

An early meta-analysis by Lynn (1991) confirmed the existence of scarcity's enhancement of value, however since publication of the meta-analysis nearly 30 years ago, the two critical constructs – scarcity and value – have evolved conceptually and empirically, as has the retail landscape. Technological advancements including e-commerce and social media have changed how retailers distribute and promote their products, with many retailers using virtual sales and stock levels as proxies for shelf-based scarcity. Moreover, the very nature of consumer purchasing has changed, with a significant shift toward experiences over material goods, particularly for the millennial generation (Gleeson 2019). In addition, there is significant variation in how researchers have approached testing their hypotheses. Some researchers have used low involvement, utilitarian products in their experiments whilst others have used high priced, luxury products. Familiar brands, how the source of scarcity is communicated, as well as whether the product is a material good or experience are other examples of variables that have the potential to moderate the effects of scarcity, but their use varies across studies.

As can be seen, significant changes have occurred in the retail landscape, as well as how key concepts of commodity theory (Brock 1968) have been defined and henceforth researched. Accordingly, the second paper of my thesis seeks to advance an updated quantitative review of the psychological effects of scarcity by (1) synthesizing extant literature to date; (2) exploring the deconstructed effects of different sources of scarcity; and (3) uncovering new moderators of the psychological effects of scarcity. I meta-analyse 416 effect sizes from 131 studies and discuss the results of the meta-analysis as they compare to Lynn's (1991) quantitative review, as well as the practical implications of these findings for marketing managers in the present-day retail landscape. This manuscript is under review at the *Journal of Retailing*.

Together, these papers settle two of the existing debates in contemporary consumer research. That is, what people should buy when seeking to maximise happiness and wellbeing; and, how scarcity tactics influence decision-making when consumers make choices from the abundance of options available in the marketplace.

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Chapter Two

The Experiential Advantage:

A Meta-Analysis of the Processes, Outcomes, and Moderators of Consuming Experiences

ABSTRACT

Experiences, and their ability to positively affect well-being, have fascinated humanists from the ancient Greek philosophers to contemporary consumer researchers. Despite the relevance of this experiential advantage for consumer well-being, extant contributions lack conceptual clarity and empirical systematization. Integrating prior literature derived from a wide variety of disciplines, this article offers a review of two decades' worth of studies testing the theory that consuming experiences delivers greater happiness and satisfaction than consuming material goods. The authors conceive an experiential advantage model that includes not only the processes, outcomes, and moderators of the experiential advantage but also a balanced dialogue between the consumer and social psychological perspectives on the research field. The authors assess the model using a theory-driven meta-analysis of 412 effect sizes of the experiential advantage from 128 published and unpublished studies and set an agenda of directions for future research.

Keywords: experience, experiential advantage, happiness, meta-analysis, satisfaction, well-being

Intuition and recommendations to do more and accumulate less have a long history (Easterlin 1973; Hume 1739/2003; Kondo 2011; Scitovsky 1992; Veenhoven et al. 1993). Ancient Greek philosophers, including Plato (399BC/2010) and Aristotle (350BC/1984), expressed the sentiment that there is an advantage to consuming experiences. More recently, Holbrook and Hirschman (1982, 132) vividly noted that an experiential view of consumption involves a steady flow of "fantasies, feelings, and fun" and that consumers can derive well-being from engaging in the consumption of experiences. Sociologists argue that everyday consumers recognize this potential (Oropesa 1995). Taking a humanistic outlook, Van Boven and Gilovich (2003) unpack the underlying foundation of experiences. While acknowledging the challenge of interpreting the variety of experiences, they detect a common consumption intention that distinguishes experiences from material goods. Experiences are consumed "with the primary intention of acquiring a life experience: an event or series of events that one lives through" (Van Boven and Gilovich 2003, 1194). In line with their study, the term "consumer" in this research refers to anyone acquiring a material good or an experience.

The theory of the experiential advantage (Guevarra and Howell 2015) proposes that consuming experiences such as concerts or vacations delivers greater happiness and satisfaction than consuming material goods such as clothes or gadgets (Van Boven and Gilovich 2003). Experiences yield increases in positive affect and satisfy higher-order psychological needs that material goods cannot, which can explain the experiential advantage for consumers (Howell and Hill 2009; Thomas and Millar 2013). Consumers may enjoy the benefits because of particular processes, as Gilovich and colleagues (Gilovich, Kumar, and Jampol 2015; Van Boven and Gilovich 2003) postulate. As we elaborate subsequently, the experiential advantage occurs because experiences are more open to positive reinterpretation, are more central to consumers' identities, have greater storytelling value, and are less likely to engender social comparisons. In view of the implications of these processes for the happiness and satisfaction of consumers, nothing is more material than an experience.

The pursuit of well-being has intrigued many economists (e.g., Easterlin 1973), policymakers (Helliwell, Layard, and Sachs 2019), and psychologists (Lyubomirsky and Lepper 1999). Since Van Boven and Gilovich (2003) first established empirical support for their theory, evidence reveals an experiential advantage in the pursuit of happiness and satisfaction in a plethora of contexts, including cooking (Bastos 2019), lotteries (Dunn, Wilson, and Gilbert 2003), memento collections (Chu 2017), and travel (Fuchs, Chen, and Pizam 2015). Recent developments further enhance the timeliness of this research field. Happiness levels have decreased around the world (Helliwell et al. 2019), Gross National Happiness has become a Constitutional Principle of Bhutan State Policy (Constitution of Bhutan 2008), the United Arab Emirates (2016) has launched a "National Programme for Happiness and Positivity," and the New Zealand government (2019) has designed its entire budget around well-being priorities.

However, extant literature on the experiential advantage remains fragmented, as several qualitative commentaries highlight (Dunn and Weidman 2015; Gilovich et al. 2015; Pham 2015; Schmitt, Brakus, and Zarantonello 2015). Research suffers from a lack of conceptual consistency in the use of the two key concepts, material good and experience. To help reconcile the inconsistencies in the literature, we take a theory-driven meta-analytic approach (van Laer et al. 2014) to synthesize existing studies that examine the comparison of material goods and experiences. Thus, we answer the call for more balanced, broader consumer research (Kirmani et al. 2018; Mick 2006) by establishing a dialogue between consumer and social psychological articles on material goods, experiences, happiness, satisfaction, and their critical integration.

More specifically, the objectives of this research are threefold: (1) to conceive a conceptual model that separates the processes, outcomes, and moderators of the experiential advantage through an in-depth review of substantive contributions to the field, (2) to empirically assess this model with a quantitative meta-analysis of existing studies, and (3) to set an agenda of directions for future research.

(RE)DEFINING THE FIELD OF CONSUMPTION WELL-BEING

Well-being through consumption stems from key elements. Yet, a preliminary clarification of its building blocks, here represented by the notions of material good and experience, and their implications in terms of happiness and satisfaction, which constitute the relevance of our model, would be helpful. The material goods for which consumers shop and the experiences they live through form the two potential causes of happiness and satisfaction. In this section, we conceptually clarify the terminology adopted in the field of consumption well-being. We begin from the simple observation that original studies sometimes frame material goods as an experience, which blurs the boundary between them (Carter and Gilovich 2010, 2012; Rosenzweig and Gilovich 2012). Similarly, Schmitt et al. (2015) suggest that the experiential–material contrast is a false dichotomy and that well-being is not derived from *either* material goods *or* experiences. Brakus, Schmitt, and Zhang (2014) and Guevarra and Howell (2015, 28) conduct empirical analyses of "experiential products" that exist in between pure material goods and pure experiences. They note that consumers derive an experience from a positive perception of the interactionable properties of a material good. Bardhi and Eckhardt (2012, 2017) make similar suggestions. Relying on their suggestions and the consideration that consumption always includes at least a provider and a consumer, we argue that material good and experience are anchor points that articulate the continuum between ownership and access—and thus between solid and liquid consumer paths to attain well-being.

Material Goods as Solid Consumption for Well-Being

Van Boven and Gilovich (2003) define a "material good" as a tangible object that is acquired and kept in one's possession. In line with this definition, material goods essentially imply assets that are produced such that they can be (1) physically held, seen, and touched (Tully, Hershfield, and Meyvis 2015); (2) individually bought, purchased, or otherwise obtained (Tully and Sharma 2017); (3) cognitively evaluated (Nicolao, Irwin, and Goodman 2009); and (4) visibly controlled, occupied, and owned (Atasoy and Morewedge 2017). Of these essential elements, scholars from various fields have particularly debated what constitutes ownership. First, they contend that single-use products are not necessarily material goods (Gilovich et al. 2015; Guevarra and Howell 2015). The lack of a possibility to interact with them again reverts such products to mere disposable consumables (Schmitt et al. 2015). Second, they argue that a material good's ownership is the result of a combination of the object–self relationship, or the ways consumers identify with their possessions (Belk 1988), and the rules that govern and regulate this relationship, or the rights and freedoms to deny or regulate access to the object (Bardhi and Eckhardt 2012).

Scholars in the field of consumption well-being agree that consuming material goods is a valuable exercise in two ways. First, to the extent that material goods can serve as "essential means for discovering and furthering personal values and goals of life," a phenomenon termed “instrumental materialism” (Csikszentmihalyi and Rochberg-Halton 1978, 8), their consumption can potentially lead to happiness. Second, material goods can offer consumers multiple opportunities for consumption and, therefore, multiple opportunities to feel happy and satisfied. It is this momentary happiness, the pleasure or happiness people enjoy while actually consuming a material good, that confers another material advantage (Dunn and Weidman 2015; Weidman and Dunn 2016): Ben & Jerry’s (2014) selling ice-cream scoops of happiness, Coca-Cola telling consumers they can “Open Happiness” (Business Wire 2009), the Hershey Company (2019) “kissing” people happy with chocolate, and IHOP’s pancakes “getting” happy (Stinson 2015) all provide examples of how companies-as-good-doers can benefit by marketing material goods to their current and prospective customers.

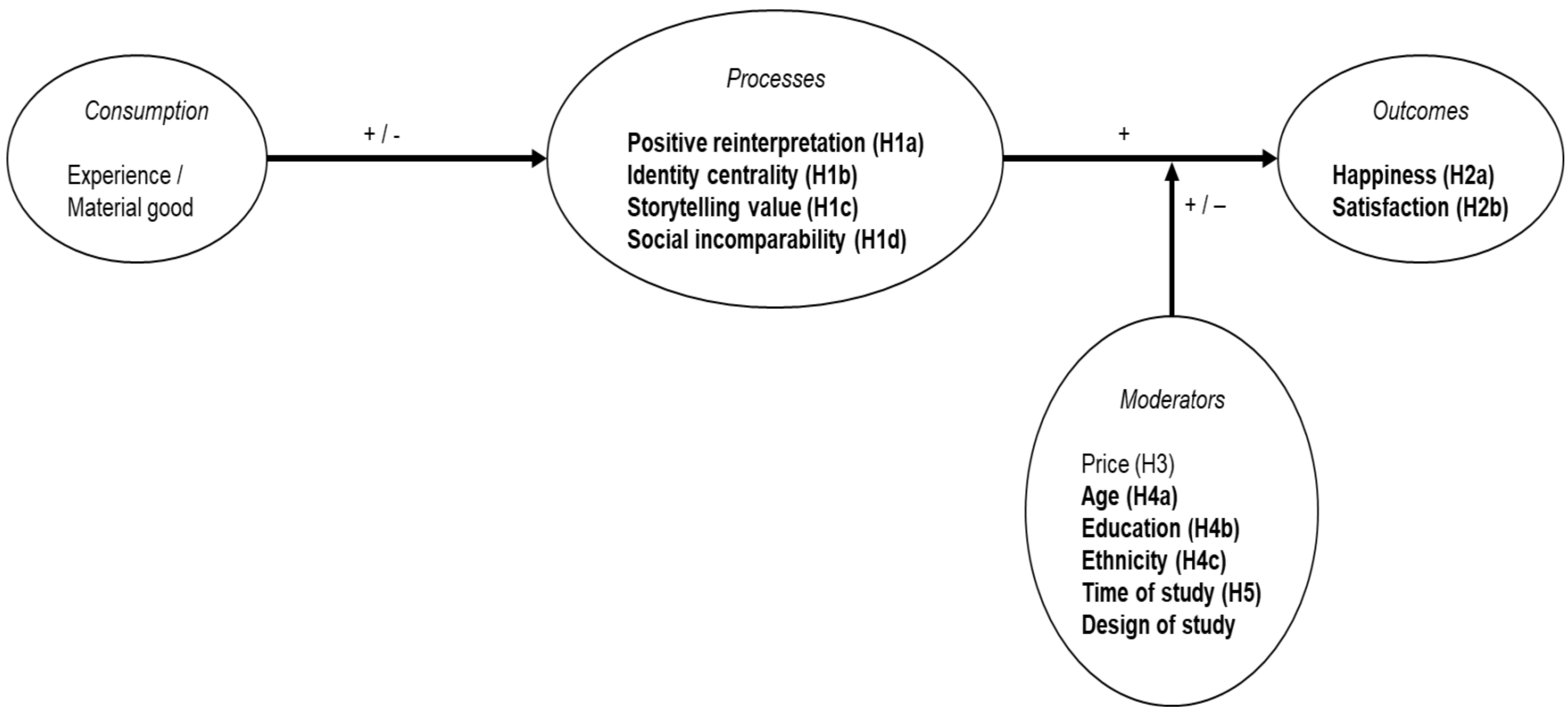
Experiences as Liquid Consumption for Well-Being

Consistent with Lynn’s (1991) observations that certain consumption is beyond the reach of a person’s ownership and thus is not a material good for her or him, we distinguish between material good and experience anchor points. Van Boven and Gilovich (2003) define “experience” as an event or series of events that are personally encountered or lived through. In other words, the event leads to a transition in a consumer from an initial state to a later state or outcome (van Laer et al. 2019). This observation of experience overtly acknowledges the temporality of the experience economy (Pine and Gilmore 2013). An aspect of liquid consumption (Bardhi and Eckhardt 2017), temporal access to experiences rather than timeless ownership may ultimately convert their consumption into well-being (Goodman, Malkoc, and Rosenboim 2019). For example, Mitchell et al. (1997) find that consumers tend to (1) overestimate how much pleasure they will get from experiences and (2) remember events as more positive than they actually were at the time. In their multimethod study of river-rafting trips, Arnould and Price (1993) also observe that memories of the experience in the Colorado River basin seem to be more unintentionally affective than intentionally critical in nature. Experiences such as attending festivals (Kozinets 2002), visiting museums (Joy and Sherry 2003), participating in raves (Goulding et al. 2009), and using social media (Arvidsson and Caliandro 2015) have similar consequences. Nicolao et al. (2009) show that happiness ratings for such experiences are quite steady over time. That is, while hedonic returns of experiences erode, hedonic adaptation is reasonably slow (Frederick and Loewenstein 1999).

In summary, consuming material goods requires ownership, while consuming experiences necessitates access through which consumers convert experiences into well-being. Currently, these extensions of Van Boven and Gilovich's (2003) definitions of material good into solid consumption and experience into liquid consumption do not reflect standard practice in well-being research. However, the further distinction helps us elaborate a continuum of consumption for well-being that is broader in scope than the consumer (Schmitt et al. 2015) and social (Gilovich et al. 2015) psychological perspectives on the field. As such, our overarching model of consumption for well-being offers conceptual clarity and epistemological integration across various streams of contributions to the field, as we outline in figure 1 and detail subsequently.

FIGURE 1

THE EXPERIENTIAL ADVANTAGE MODEL



CONSTRUCTING THE EXPERIENTIAL ADVANTAGE MODEL

Easterlin (1973, 2001) anticipates the experiential advantage construct by arguing that increased levels of happiness have not been achieved because of material abundance and wealth. Guevarra and Howell (2015, 29) were the first to coin the notion of an "experiential advantage" for dining, travel, and outdoor activities, in which recalling accessing a material good, rather than owning it, provides similar levels of well-being to recalling accessing an experience and higher levels of well-being than recalling owning a material good. They also note that experiences are better at evoking certain psychological processes than material goods, thus marking a clear separation between owning/accessing and solid/liquid, or material good/experience.

Extant contributions, however, have not led to an overarching model that includes the main processes, outcomes, and moderators of the experiential advantage theorized over the course of decades of scholarly investigation. Van Boven and Gilovich (2003) clearly marked the field's boundaries, but their article is limited in scope. Thus, a comprehensive model is overdue not only to advance knowledge on the experiential advantage per se but also to complement well-being research.

We develop two composite hypotheses on the processes and outcomes of the experiential advantage as well as five hypotheses on its theoretical moderators. Our model addresses the limitations of single studies by examining the experiential advantage through a multifocal, big-picture lens, concentrating on both consumer and social psychological research streams. In line with the classic articles that reflect these streams (Brakus, Schmitt, and Zarantonello 2009; Van Boven and Gilovich 2003), our model comprises the material good–experience continuum as determinant and positive reinterpretation, identity centrality, storytelling value, and social incomparability as processes. Moreover, “the experiential advantage model” treats happiness and satisfaction as outcomes of the experiential advantage. We also include moderators of the experiential advantage.

The Experiential Advantage

Most research on the experiential advantage follows the original conceptual framework. Although research to date has identified individual processes underlying the experiential advantage, the literature overall remains fragmented and suffers from a lack of conceptual consistency (Dunn and Weidman 2015; Gilovich et al. 2015; Pham 2015; Schmitt et al. 2015). Synthesizing existing studies, our review delineates four processes of which scholars in the field constantly reaffirm the relevance.

First, consumption can be positively reinterpreted in which case consumers bask in a “rosy afterglow” (Weidman and Dunn 2016). In other words, consumption interpretations and evaluations can become increasingly favorable with the passage of time. Much but not all research in the experiential advantage domain supports that positive reinterpretation after consumption leads to greater happiness (Caprariello and Reis 2012; Carter and Gilovich 2012; Howell and Hill 2009; Kumar and Gilovich 2015; Nicolao et al. 2009; Van Boven and Gilovich 2003). For example, the unwillingness to give up one’s memories is a significant predictor of consumers’ happiness after consumption and this effect is greater for experiences than material goods (Carter and Gilovich 2012). Moreover, college students feel happier after thinking about their consumption and they did so more about their experiences than material goods (Van Boven and Gilovich 2003). Thinking about past consumption also makes consumers of lower socioeconomic status happier (Lee 2014). In contrast to Van Boven and Gilovich's (2003) college students however, Lee's (2014) lower socioeconomic status consumers are happier after reminiscing over material goods than experiences. Additionally, Weidman and Dunn (2016) report consumers generally do not differ in frequency or intensity of afterglow happiness during the first two weeks after consuming either an experience or a material good.

Second, consumption can be denoted as central to a consumer's identity (Escalas and Bettman 2000). Carter and Gilovich (2012, 1311) lend support to the claim that identity centralization leads to happiness. They asked consumers to "choose the set of circles … that best represents how much the purchase of a 3-D TV would seem to you like it would overlap with your sense of self" as well as to imagine how happy they would be with the television. When they reported the television would be more a part of their true self, they anticipated greater happiness. Prior research in consumer psychology has identified the identity centralization dimensions of effectiveness (i.e., helping consumers gain a perceived sense of autonomy and independence), distinctiveness (i.e., allowing the expression of the self as a unique entity), and self-esteem (i.e., moving consumers closer to their ideal self and increasing their perception of self-worth) (Dittmar 1991, 2011; Dittmar, Beattie, and Friese 1996; Dittmar and Drury 2000). Moldes et al. (2019) find these identity centralization-related factors predict happiness, connecting Dittmar and colleagues' research to happiness. Qualifying Carter and Gilovich and Moldes et al.'s findings however, Lee (2014) reports identity centralization mediates the relationship between consumption and happiness for higher but not for lower socioeconomic status consumers.

Third, consumption tends to promote story sharing when it flows like a narrative *ceteris paribus* (van Laer et al. 2019). In support of story sharing's effect on happiness, Kumar and

Gilovich (2015) show that people gain pleasure from sharing narratives about their consumption. The valuable stories consumption creates (Scott, Cayla, and Cova 2017) can thus foster social contact (Caprariello and Reis 2013; Howell and Hill 2009) since they increase the likelihood that people will advise others to consume similarly (Moore 2012). In connection to story sharing, prior research in this domain further confirms the effect of consumption on happiness through the social value associated with conversation (Bastos and Brucks 2017), relatedness (Howell and Hill 2009), and the act and amount of talking (Kumar and Gilovich 2015).

Fourth, consumers can compare their consumption with their peers (Carter and Gilovich 2010; Howell and Hill 2009). In support of social comparison's negative effect on happiness, Kim et al. (2016) show consumers can regret their consumption after social comparison. Any regret that arises can be one of inaction, or missed opportunity compared with peers (e.g., on Instagram and other social media), or of action, or buyer's remorse (Rosenzweig and Gilovich 2012). Increased social comparison can also manifest as jealousy. For example, consumers report being more jealous of a rival's superior material good than a rival's superior experience, indicating that social comparisons loom larger for rivals' material goods (Carter and Gilovich (2010). This difference in social comparison, furthermore, translates into consumers' more diminished sense of happiness with their own material goods than with their own experiences. Compared to material goods, experiences are also less subject to social comparison (Howell and Hill 2009). In apparent contrast however, Lin et al. (2018) find that social comparison on Facebook increases envy but the type of consumption does not affect whether consumers compare it with others on social media.

In summary, increases in positive reinterpretation, identity centralization, story-telling value, and decreases in social comparison are associated with consumption-related happiness. In line with the classic articles that reflect these streams (Brakus, Schmitt, and Zarantonello 2009; Van Boven and Gilovich 2003), our model comprises the material goods and experiences as determinants and positive reinterpretation, identity centralization, story sharing, and social comparison as processes. We predict that the experiential advantage functions as follows:

H1: Experiences are more likely to (a) be more positively reinterpreted, (b) be more central to consumers' identities, (c) have greater storytelling value, and (d) be less socially comparable than material goods.

Consumption Well-Being

Since the experiential advantage's conceptualization, research has shown that consumption of experiences increases positive affect and reduces negative affect (Van Boven and Gilovich 2003). The affective response of the experiential advantage is well-being. More specifically, our literature review, from which we develop precise hypotheses on the outcomes of the experiential advantage, reveals that experiences can cause more happiness and satisfaction than material goods.

The concept of happiness has been a topic of intellectual and philosophical debate for centuries. Plato (399BC/2010) conceptualized happiness as arising from the totality of one's different pleasures, and Aristotle (350BC/1984) deemed happiness to be the supreme good and ultimate goal of human behavior. In this humanistic view, happiness consists of the subjective sum of a consumer's perceptions of pleasure versus displeasure and judgments of the good versus bad elements of life (Lyubomirsky, Sheldon, and Schkade 2005). Happiness has multiple facets that requires assessment of global judgments, mood reports, physiology, memory, and emotional expression (Diener et al. 1999). Happiness is thus not simply a physical phenomenon; it stems from valued outcomes. Happiness explains most of the variation in broader measures of well-being, such as optimism, quality of life, and self-esteem (Compton et al. 1996), and anecdotally most people can recognize differences in disposition when it comes to happiness (Myers and Diener 1995). Although some people seem characteristically happier than others, most people know when they are happy and when they are not (Lyubomirsky and Lepper 1999).

Self-determination theory may explain satisfaction with experiences. Initially developed by Deci and Ryan (1985), the theory has been extended many times since. Concerned with people's innate psychological needs that are the basis for human behavior, self-determination theory proposes that satisfaction essentially means having one's needs met (Ryan and Deci 2000). Applied to well-being, Walker, Kumar, and Gilovich (2016) show in a series of experiments that consumers can be appreciative, grateful, and thankful for their experiences. In other words, to the extent that experiences fulfill consumer needs, they drive consumer satisfaction (Brakus et al. 2009), which in turn fosters greater well-being (Emmons and McCulough 2003; Watkins et al. 2003).

As mentioned previously, recent contributions to the field that address the strength and duration of the experiential advantage (Frederick and Loewenstein 1999; Nicolao et al. 2009) suggest a fundamental distinction between the extreme effect of categorically consuming material goods and the extreme effect of categorically consuming experiences. That is, unlike material goods, experiences produce enduring consequences for well-being without careful cognitive evaluation. Experiences engross consumers in ways that involve neither inherent criticism nor great scrutiny. This paradoxical property of experiences consists of more pronounced happiness and satisfaction over time. Following this line of reasoning, we define the manifestation of the experiential advantage as well-being, with outcomes in terms of consumers' happiness and satisfaction from positively reinterpreting experiences, incorporating them in their identities, and telling stories about them, without comparing them much socially. These psychological processes and the theoretically sound interpretation of consumption well-being both ground our model. Thus:

H2: The more experiences are positively reinterpreted, are central to consumers' identities, have greater storytelling value, or are socially incomparable, the more (a) happiness and (b) satisfaction increase.

Moderators

Having explored why experiences may result in increased levels of happiness compared to material goods, we now turn our attention to the circumstances under which the effect may vary. Here, we highlight five moderators in our review related to contexts and situations that may influence the experiential advantage. In particular, we explore how the experiential advantage may vary across what is being consumed (H3), namely differences between high and low priced purchases, the characteristics of who is consuming it (H4a-c), and when the experiential advantage was measured (H5).

Price. Regarding what is being consumed, one of the tools of the original marketing mix is the amount of value given in payment (McCarthy 1960). Our review shows that 40 studies on the experiential advantage measure price, using a range of operationalizations. Participants recall consuming a material good or an experience with an exact price (C$20, Weidman and Dunn 2016), a minimum price (US$50, Bastos and Brucks 2017), an approximate price ("about $300," Nicolao et al. 2009, 191), a price range ("more than £50 and less than £1000," Moldes et al. 2019, 232), or any price (Guevarra and Howell 2015). This research body suggests that price has bearing on the experiential advantage.

Low-priced experiences may have a greater advantage over equally priced material goods than higher-priced experiences over equally priced material goods. Experiences both make consumers happier and are more unique than material goods (Bastos 2019). Cheaper material goods are typically commoditized or mass-produced, while cheaper experiences are typically unique; yet uniqueness may differ far less between equally expensive, custom-made material goods and experiences. This is not to affirm that the price tag moderates whether material goods or experiences are more satisfying. Carter and Gilovich (2012) reveal that the tendency of participants to draw their experiences literally closer to the self than their material goods was due not to their experiences having higher monetary value but to their experiences being more satisfying. In other words, the difference in satisfaction between hiking in the Himalayas and owning a Patek Philippe watch (Van Boven and Gilovich 2003) is not likely to be significantly greater than the difference in satisfaction between drinking a cup of coffee and receiving a coffee cup (Chan and Mogilner 2016). In summary, we expect the moderating effect of price on the experiential advantage to function as follows:

H3: As price increases, the experiential advantage decreases, thereby decreasing the asymmetrical effect on happiness.

Age, Education, and Ethnicity. The next three moderators of the experiential advantage pertain to who is consuming: their age, education, and ethnicity. First, we find that the length of time consumers have lived plays a critical role in determining their well-being associated with the experiential advantage. Bhattacharjee and Mogilner (2013) reveal that a key driver of younger consumers' happiness is the extent to which experiences help define the self at their age. Younger consumers may also find experiences more satisfying than older consumers because experiences build cultural capital, which older consumers should possess to a higher degree (Weinberger, Zavisca, and Silva 2017).

Second, there is good reason to believe that the experiential advantage is stronger for consumers who are more educated. Consumers who have received systematic instruction at a university tend to belong to a community of individuals bounded by a higher social status than less educated consumers do. Several scholars (Thomas and Millar 2013; Weinberger et al. 2017) indicate that higher-social-class consumers are happier with experiences than lower-social-class members because they are less preoccupied with basic needs such as comfort and physical safety that material goods provide. Higher-social-class consumers also tend to value self-development and self-expression more than lower-social-class consumers (Henry 2005), an orientation better satisfied by consuming experiences than material goods (Lee, Hall, and Wood 2018).

Third, we note that participants in the original studies share different customs, races, and traditions that distinguish their ethnicity from others. Samples include majority Dutch (Lin, van de Ven, and Utz 2018), Israeli (Fuchs et al. 2015), Japanese (Hayase and Ura 2015), and white American (Guevarra and Howell 2015). These studies find both similarities and differences in consumption well-being of diverse ethnic groups. Regarding happiness, different ethnic groups show the same preference for experiences over material goods. However, material goods appear to have an advantage over experiences in terms of satisfaction for minority groups (Fuchs et al. 2015). For example, Bone, Christensen, and Williams (2014) find that black and Hispanic consumers in the United States have poorer experiences with loan officers than white consumers.

To manage their stigma, black consumers mobilize material goods—but not experiences—to reform the self and pursue satisfaction (Crockett 2017). The dehumanizing systematic restrictions put on minority consumers can thus explain the exceptional material advantage for their ethnicity. Thus:

H4a: The younger consumers' age, the greater is the experiential advantage, and thus the greater is the asymmetrical effect on happiness and satisfaction.

H4b: The higher consumers' education level, the greater is the experiential advantage, and thus the greater is the asymmetrical effect on happiness and satisfaction.

H4c: Material goods satisfy minority consumers more than experiences.

Time of Study. The time of the study refers to when research first appears online or in print. Researchers contend that while satisfaction with experiences is tied to the purchase (Carter and Gilovich 2010), happiness can change over time (Helliwell et al. 2019) and consumers compare their present happiness with their happiness in the past (Sharma and Alter 2012). The influential World Happiness Report (Helliwell et al. 2019) shows decreasing happiness from 2006 to 2018. Moreover, Sharma and Alter (2012) suggest that in a context of financial deprivation, consumers are likely to focus on earlier periods when they were financially more comfortable. This comparative part of happiness drives them to consume scarce material goods. Despite these efforts to incorporate time into the literature on consumption of happiness, there is still a need to examine why happiness changes over the years if happiness from experiences is greater than that from material goods.

We acknowledge that happiness is likely to change over time and that the role of the experiential advantage in driving happiness is itself unlikely to be stable. During geographic moves, for example, material goods are more central to sustain migrant consumers' identities and happiness than experiences (Belk 1992; Mehta and Belk 1991), but even repeated measures experimental designs with standard time lags of a few weeks cannot account for these temporal effects and thus fail to reveal trends. It is therefore important not only to investigate the overall contribution of the experiential advantage in explaining happiness but also to consider these effects over time using multiple studies across years.

We argue that the relationship between experiences and identity centrality is becoming weaker. The more experiences are available, the less each one can contribute to the construction of the self. As the experience economy keeps shifting up gears and increasingly more organizations are staging experiences, how consumers perceive an experience changes: experiences become commodities (Pine and Gilmore 2013). The commonly voiced phrase "Been there, done that" exemplifies this peripheral effect of experience commoditization on consumers' identities. In summary, we hypothesize that the relationship between consuming experiences and happiness is becoming weaker with time due to the commoditization of experiences. Thus:

H5: Experiences that are more recent are less central to consumers' identities and thus affect happiness less.

As mentioned previously, our aim is to advance understanding of the current state of the art of well-being research; thus, we address substantive contributions to the field. Previously, we theoretically developed five moderators and elaborated on their discrete relationships to the experiential advantage. Using a theory-driven meta-analytic method, we next assess our hypotheses and draw conclusions about the model. One of the greatest strengths of meta-analysis is that it pieces together data from many different studies, thus avoiding the problem of isolated single-study claims (Ioannidis 2010). Our model also includes the (between- or within-subject) design of these different original studies that might moderate the experiential advantage's outcomes. If this moderating effect exists, it indicates the impact of the methodological formulation of the original studies. We therefore do not elaborate a specific hypothesis on it.

METHOD

Search Process and Sampling Frame

Our search encompassed an inclusive range of literature published between Van Boven and Gilovich's (2003) operationalization of the experiential advantage and the analysis of our model in July 2019. To counteract the file-drawer problem associated with meta-analyses (Grewal, Puccinelli, and Monroe 2018), we did not restrict the search to any particular publication form. We employed various methods in our literature search, as follows:

(1) Searches for the keywords "experiences," "experiential," "material," and "good" in the ABI/INFORM Collection, Business Source Premier, Google Scholar, ProQuest Dissertations and Theses, PsycARTICLES, PsycINFO, and Web of Science databases;

(2) A search of the Social Sciences Citation Index based on Van Boven and Gilovich's (2003) article;

(3) Manual searches of journals and conference proceedings that frequently include articles on the experiential advantage: *Advances in Consumer Research*, *Journal of Consumer Research*, *Journal of Personality & Social Psychology*, *Journal of Positive*

Psychology, *Psychology & Marketing*, *Journal of Consumer Psychology*, *Journal of Experimental Psychology: General, Psychological Science*, *Journal of Research in Personality*, *Personality & Social Psychology Bulletin*, and *Marketing Letters*;

(4) Backward and forward citation chaining of all found relevant articles using the Google Scholar, Scopus, and Web of Science databases; and

(5) A call on ELMAR (Electronic List for Marketing Academics and Researchers) for unpublished work.

Variable Coding

Our search produced 273 studies (22 unpublished and 148 published works) related to consuming experiences. However, to appear in our meta-analysis, a study needed to meet our criteria for inclusion. Therefore, the study had to include (1) a treatment that allows a comparison of owned material goods with accessed experiences, as the experiential advantage model distinguishes between them, and (2) a dependent variable that the original authors claimed measured happiness or satisfaction. No other manipulations or measures met our definitional criteria.

We followed Grewal et al.'s (2018) procedure, including writing explicit coding instructions with clear variable definitions. Two independent expert coders classified the multitude of variables reported in the original studies based on the four processes, two outcomes, five theoretical and one methodological moderator. We took care to ensure that the coders carefully read the variable definitions and the information provided in the studies before deciding which categories the variables represented. Near-perfect agreement was reached between the coders (Cohen's κ = .91, $p < .001$), with any differences resolved through discussion. Table 1 presents illustrative examples. After this coding procedure, the meta-analysis included 128 studies from 54 articles (see citations marked with an asterisk in the reference list). The complete list of articles is available in web appendix A. Together, the articles featured 412 effect sizes that compared consuming material goods with consuming experiences.

TABLE 1

DETERMINANTS, PROCESSES, OUTCOMES, AND MODERATORS OF THE EXPERIENTIAL ADVANTAGE: DEFINITIONS, EXAMPLE OPERATIONALIZATIONS, AND REPRESENTATIVE ARTICLES

Variable	Definition	Operationalization and representative articles
Determinants		
Experience	An event or series of events being accessed and personally encountered or lived through	Self-report survey: comedy show, dinner, playing pool (Van Boven and Gilovich 2003); hotel spa (Chun and Hiang 2016); tickets to a sporting event, beach vacation, ski passes (Kumar and Gilovich 2015); wedding reception (Goodman, Malkoc, and Stephenson 2016)
Material good	A tangible object that is acquired, owned, and kept in one's possession	Self-report survey: bathrobe (Chun and Hiang 2016); jacket, jeans, laptop (Kumar and Gilovich 2015); pair of boots, CD, watch (Van Boven and Gilovich 2003); wedding ring (Goodman et al. 2016)
Processes		
Positive reinterpretation	Interpretations and evaluations of an experience or material good becoming increasingly favorable with the passage of time	Measure: afterglow (Weidman and Dunn 2016); memory exchange index (Carter and Gilovich 2012); recall (Bastos 2013); reminiscing (Lee et al. 2018)
Identity centrality	The contribution of an experience or material good to the construction of the self	Measure: distance between center of central self-circle and center of purchase circle (Carter and Gilovich 2012); personal connection (Mittal, Kapitan, and Silvera 2019); projected identity (Moldes et al. 2019); purchase centrality to the self (Lee et al. 2018)

Storytelling value	The pleasure derived from sharing narratives about an experience or material good	Measure: change in relationship strength (Chan and Mogilner 2016); conversational value (Bastos and Brucks 2017); relatedness (Howell and Hill 2009); talking (Kumar and Gilovich 2015)
Social incomparability	Reduced likelihood of an experience or material good to engender social comparisons	Measure: comparability (Lin et al. 2018); envy (Howell and Hill 2009); jealousy (Carter and Gilovich 2010); purchase uniqueness (Bastos 2019)
Outcomes		
Happiness	The subjective sum of a consumer's perceptions of pleasure versus displeasure and judgments of the good versus bad elements of life	Measure: eudemonic well-being (Pchelin and Howell 2014); happiness (Van Boven and Gilovich 2003); hedonic well-being (Guevarra and Howell 2015); positive emotions (Moldes et al. 2019)
Satisfaction	The extent to which an experience meets a consumer's needs	Measure: disturbance (Carter and Gilovich 2010); economic value (Pchelin and Howell 2014); money well spent (Caprariello and Reis 2013); satisfaction (Howell and Hill 2009)
Moderators		
Price	The amount of value given in payment	Categorical: whether what participants consumed was priced US$ < *Mdn* = 250 or US$ > *Mdn* = 250
Age	The length of time a consumer has lived	Continuous: the sample age the original authors report
Education	The receipt of systematic instruction	Continuous: proportion of university-educated participants in the original sample
Ethnicity	Shared, distinctively different customs, races, and traditions	Continuous: proportion of majority-to-minority participants in the original sample
Time of study	When the study first appears online or in print	Continuous: year of availability of the original study
Design of study	The plan of an experiment	Categorical: whether the original study had a between- or within-subject design

Effect Size Computation

To reflect the experience–material good continuum, the standardized mean difference presents our effect size indicator. This effect size statistic compares material good and experience consuming groups according to their scores on positive reinterpretation, identity centrality, storytelling value, social incomparability, and their outcomes (happiness and satisfaction). Thus, the more positive the standardized mean difference, the greater is the experiential advantage; a negative standardized mean difference describes a material advantage. To calculate the unadjusted standardized mean difference, we adopted Cohen's (1977) formula: $d_{\mathrm{u}} = \frac{M_{\mathrm{e}} - M_{\mathrm{m}}}{\mathrm{SD}}$, where M_e is the experience consuming group mean, M_m is the material good consuming group mean, and SD is the pooled standard deviation. We weighted this unadjusted standardized mean difference to compensate for sample size distortion, using the inverse of the variance (Marín-Martínez and Sánchez-Meca 2010). We then corrected these weighted estimates for error in the measurement of the *y* variables involved. To calculate the reliability-adjusted, inverse variance-weighted standardized mean difference δ of variable *y*, we used Bobko, Roth, and Bobko's (2001) formula: $\delta = \frac{d}{\sqrt{\alpha_{\mathrm{y}}}}$, where α_y represents the measurement reliability of *y*. Most studies report coefficient reliability values of their *y* variables, such as Cronbach's α, Pearson's ρ, which we used to estimate α_y. We imputed the missing values by using the average reliability. We made no other corrections.

To test the effects of the difference between consuming material goods and experiences on positive reinterpretation, identity centrality, storytelling value, and social incomparability and the effects of these processes on happiness and satisfaction, we computed not only the reliability-adjusted, inverse variance-weighted δ but also a mixed effects model. We combined within-study estimates using the fixed effect *z* before calculating the 95% confidence interval and the random effect *z* (Schmidt and Hunter 2015). In addition, we examined the data for outliers, using the sample-adjusted meta-analytic deviancy (Huffcutt and Arthur 1995) technique because it takes sample size into account. To determine the presence of heterogeneity due to the moderators, we used the *Q* statistic (Huedo-Medina et al. 2006). Finally, we determined the file-drawer *N*, or "the number of [null effect] studies that would need to be added to a meta-analysis to reduce an overall statistically significant observed result to non-significance" (Rosenberg 2005, 464), and followed the trim-and-fill procedure (Duval and Tweedie 2000). To support our analysis, we relied on the Comprehensive Meta-Analysis software program (Borenstein et al. 2013).

Actual or Hypothetical Consumption

The experiential advantage model includes five theoretical and one methodological factor that could moderate the overall effect of the experiential advantage (see table 1). Researchers have also raised the point of prospective, momentary, and retrospective evaluation of experiences. In line with Weidman and Dunn (2016), we agree that happiness and satisfaction arising from an experience can be measured before, during, or after consumption. However, from a purely theoretical perspective, the inclusion of hypothetical well-being as a moderator of the experiential advantage would be problematic. The aim of experiential advantage theory is to explain conditions under which experiences have actually made consumers happier than material goods. Original studies of anticipatory, predicted, or prospective consumption do not meet this aim but instead are markedly different investigations of affective forecasting or consumers' lay psychology of expectations. Because the theory does not allow for these potentially moderating effects, we assess whether well-being is much different before and after consumption by conducting the previously mentioned outlier analysis instead. We discuss forecasting further when we propose future research directions.

RESULTS

Outlier Analysis

As noted, we used Huffcutt and Arthur's (1995) sample-adjusted meta-analytic deviancy technique to check our data for outliers. The rank order based on their statistic suggests that the potential outliers in our data set are exclusively effects of actual consumption. Following Geyskens et al.'s (2009) advice, we did not eliminate these outliers but performed a sensitivity analysis. Thus, we compared the well-being effects from a meta-analysis on the actual consumption data set with the well-being effects from a comparable meta-analysis on the hypothetical consumption data set. While actual and hypothetical satisfaction are similar in size ($Q_{(1)} = 0.13$, $p = .718$), actual and hypothetical happiness differ significantly ($Q_{(1)} = 6.09$, $p < .01$). The effects of hypothetical consumption on happiness ($\delta = .33$) are greater than the effects of actual consumption ($\delta = 0.22$; $z = 9.84$ $p < .001$). Conservatively, we conclude that the difference between actual and hypothetical consumption affects our results, and we report separate models next.

Actual Consumption

We first consider actually consuming material goods or experiences. Our results confirm the overall prediction that well-being is greater after consuming experiences; this effect is significant for happiness ($\delta = 0.22$, $z = 9.84$, $p < .001$) and satisfaction ($\delta = 0.11$, $z = 3.21$, $p < .001$). We report the effects regarding the processes underlying this experiential advantage in table 2. Consumers process experiences differently than material goods. The effect sizes indicate specifically that positive reinterpretation ($\delta = 0.28$, $z = 3.82$, $p < .001$), identity centrality ($\delta = 0.19$, $z = 6.02$, $p < .001$), storytelling value ($\delta = 0.42$, $z = 15.16$, $p < .001$), and social incomparability ($\delta = 0.21$, $z = 2.23$, $p < .05$) are greater for experiences than for material goods, in support of hypotheses 1a–1d.

TABLE 2

PROCESSES AND OUTCOMES OF THE ADVANTAGE OF ACTUAL EXPERIENCES

	k	*N*	d_u	CI_{du}	*d*	CI_d	δ	CI	*z*	FD
Effect of experience/material good										
Happiness	103	25,058	0.28	0.23–0.33	0.20	0.16–0.25	0.22	0.18–0.27	9.84 ***	5,648
Satisfaction	42	6,741	0.19	0.10–0.29	0.10	0.04–0.17	0.11	0.04–0.18	3.21 ***	165
Positive reinterpretation	23	2,883	0.33	0.17–0.49	0.22	0.09–0.35	0.28	0.14–0.43	3.82 ***	200
Identity centrality	35	5,156	0.35	0.24–0.45	0.19	0.13–0.24	0.19	0.13–0.25	6.02 ***	329
Storytelling value	62	11,922	0.55	0.47–0.64	0.38	0.33–0.42	0.42	0.36–0.47	15.16 ***	6,222
Social incomparability	14	2,455	0.19	0.01–0.40	0.18	0.01–0.35	0.21	0.03–0.39	2.23 *	72
Effect on happiness										
Identity centrality	17	2,894	0.32	0.12–0.52	0.23	0.08–0.38	0.24	0.08–0.41	2.88 **	158
Storytelling value	15	1,755	0.84	0.61–1.07	0.45	0.34–0.57	0.52	0.38–0.65	7.52 ***	381
Social incomparability	3	461	0.40	0.21–0.58	0.35	0.17–0.54	0.37	0.18–0.56	3.86 **	9
Effect on satisfaction										
Positive reinterpretation	1	60	0.71	0.19–1.24	0.52	-0.02–1.05	0.62	0.07–1.16	2.22 *	0

NOTE.—*k* = number of effect sizes; *N* = number of participants in the original studies; d_u = unadjusted standardized mean difference; CI_{du} = lower and upper limit of the 95% confidence interval around the unadjusted standardized mean difference; *d* = inverse variance-weighted standardized mean difference; CI_d = lower and upper limit of the 95% confidence interval around the inverse variance-weighted standardized mean difference; δ = reliability-adjusted, inverse variance-weighted standardized mean difference; CI = lower and upper limit of the 95% confidence interval around the reliability-adjusted, inverse variance-weighted standardized mean difference; *z* = test of null (two-tailed); FD = file-drawer *N* giving an indication of publication bias.

* $p < .05$; ** $p < .01$; *** $p < .001$.

We also examined the effects of the processes on the outcomes of the experiential advantage. We find that, consistent with hypothesis 2a, identity centrality ($\delta = 0.24$, $z = 2.88$, $p < .01$), storytelling value ($\delta = 0.52$, $z = 7.52$, $p < .001$), and social incomparability ($\delta = 0.37$, $z = 3.86$, $p < .01$) have significant, positive effects on happiness. Furthermore, we confirm a positive effect of positive reinterpretation on satisfaction ($\delta = 0.62$, $z = 2.22$, $p < .05$), in support of hypothesis 2b. The original studies did not measure any other effects on the outcome variables (ks = 0).

Next, we consider the effects of five theoretical and one methodological variable as moderators of the experiential advantage (see table 3). The Q statistic is marginally significant for happiness by price ($Q_{(1)} = 3.46$, $p = .06$), and thus it may be beneficial to assess the levels of this moderator. The advantage for happiness appears greater for experiences under US$250 ($\delta = 0.32$, $z = 8.06$, $p < .001$) than for more expensive experiences ($\delta = 0.22$, $z = 5.52$, $p < .001$), lending some support to hypothesis 3.

Significantly, the effect sizes are heterogeneous by age (happiness: $Q_{(1)} = 21.94$, $p < .001$; satisfaction: $Q_{(1)} = 9.05$, $p < .01$) and education (happiness: $Q_{(1)} = 4.85$, $p < .05$; satisfaction: $Q_{(1)} = 6.56$, $p < .01$). Experiences are more advantageous for younger consumers' happiness ($z = –4.68$, $p < .001$) and satisfaction ($z = –3.01$, $p < .01$) and for more educated consumers' happiness ($z = 2.20$, $p < .05$) and satisfaction ($z = 2.56$, $p < .01$), in support of hypotheses 4a and 4b. For ethnicity, the Q statistic shows a significant effect of consuming experiences or material goods on satisfaction ($Q_{(1)} = 5.46$, $p < .05$). In support of hypothesis 4c, the effect size indicates a material advantage for minority consumers ($\delta = –0.76$, $z = –2.34$, $p < .05$), as it is both negative and larger than the overall effect on satisfaction ($\delta = 0.11$).

TABLE 3

MODERATORS OF THE ADVANTAGE OF ACTUAL EXPERIENCES

	k	*N*	d_u	CI_{du}	*d*	CI_d	δ	CI	*z*	*Q*
Happiness										
Price										3.46
US$<250	26	2,851	0.44	0.31–0.57	0.29	0.21–0.37	0.32	0.24–0.40	8.06 ***	
US$>250	43	8,596	0.24	0.17–0.32	0.20	0.13–0.27	0.22	0.14–0.29	5.52 ***	
Age	69	18,819	-0.02	-0.03–-0.01	-0.01	-0.02–-0.01	-0.02	-0.02–-0.01	-4.68 ***	21.94 ***
Education	47	5,100	0.43	-0.03–0.89	0.30	0.03–0.57	0.44	0.05–0.84	2.20 *	4.85 *
Ethnicity	46	13,431	0.14	-0.14–0.42	0.15	-0.04–0.35	0.16	-0.06–0.38	1.45	2.10
Time of study	15	2,526	0.04	-0.01–0.08	0.02	-0.01–0.05	0.03	-0.01–0.06	1.63	2.67
Design of study										36.10 ***
Between-subjects	73	11,740	0.33	0.26–0.39	0.26	0.22–0.31	0.29	0.23–0.34	10.49 ***	
Within-subject	26	12,917	0.18	0.12–0.24	0.06	0.01–0.19	0.06	0.02–0.11	2.59 **	
Satisfaction										
Price										0.08
US$<250	11	1,417	0.20	0.05–0.36	0.15	0.04–0.26	0.15	0.04–0.26	2.77 **	
US$>250	15	2,413	0.23	0.06–0.41	0.15	0.06–0.25	0.17	0.07–0.28	3.28 ***	
Age	24	4,856	-0.02	-0.04–0.00	-0.02	-0.03–-0.01	-0.02	-0.04–-0.01	-3.01 **	9.05 **
Education	14	1,745	0.65	-0.13–1.44	0.54	0.12–0.96	0.55	0.13–0.96	2.56 **	6.56 **
Ethnicity	14	2,197	-0.79	-1.54–0.05	-0.65	-1.25–-0.05	-0.76	-1.40–-0.12	-2.34 *	5.46 *
Time of study	42	6,741	-0.01	-0.04–0.02	-0.02	-0.04–0.00	-0.02	-0.04–0.01	-1.48	2.18
Design of study										1.51
Between-subjects	34	5,755	0.18	0.08–0.27	0.12	0.04–0.20	0.14	0.05–0.22	3.15 **	
Within-subject	8	986	0.22	-0.04–0.47	0.04	-0.09–0.17	0.04	-0.09–0.17	0.62	

NOTE.—*k* = number of effect sizes; *N* = number of participants in the original studies; d_u = unadjusted standardized mean difference; CI_{du} = lower and upper limit of the 95% confidence interval around the unadjusted standardized mean difference; *d* = inverse variance-weighted standardized mean difference; CI_d = lower and upper limit of the 95% confidence interval around the inverse variance-weighted standardized mean difference; δ = reliability-adjusted, inverse variance-weighted standardized mean difference; CI = lower and upper limit of the 95% confidence interval around the reliability-adjusted, inverse variance-weighted standardized mean difference; *z* = test of null (two-tailed); *Q* = test of difference between moderator levels.

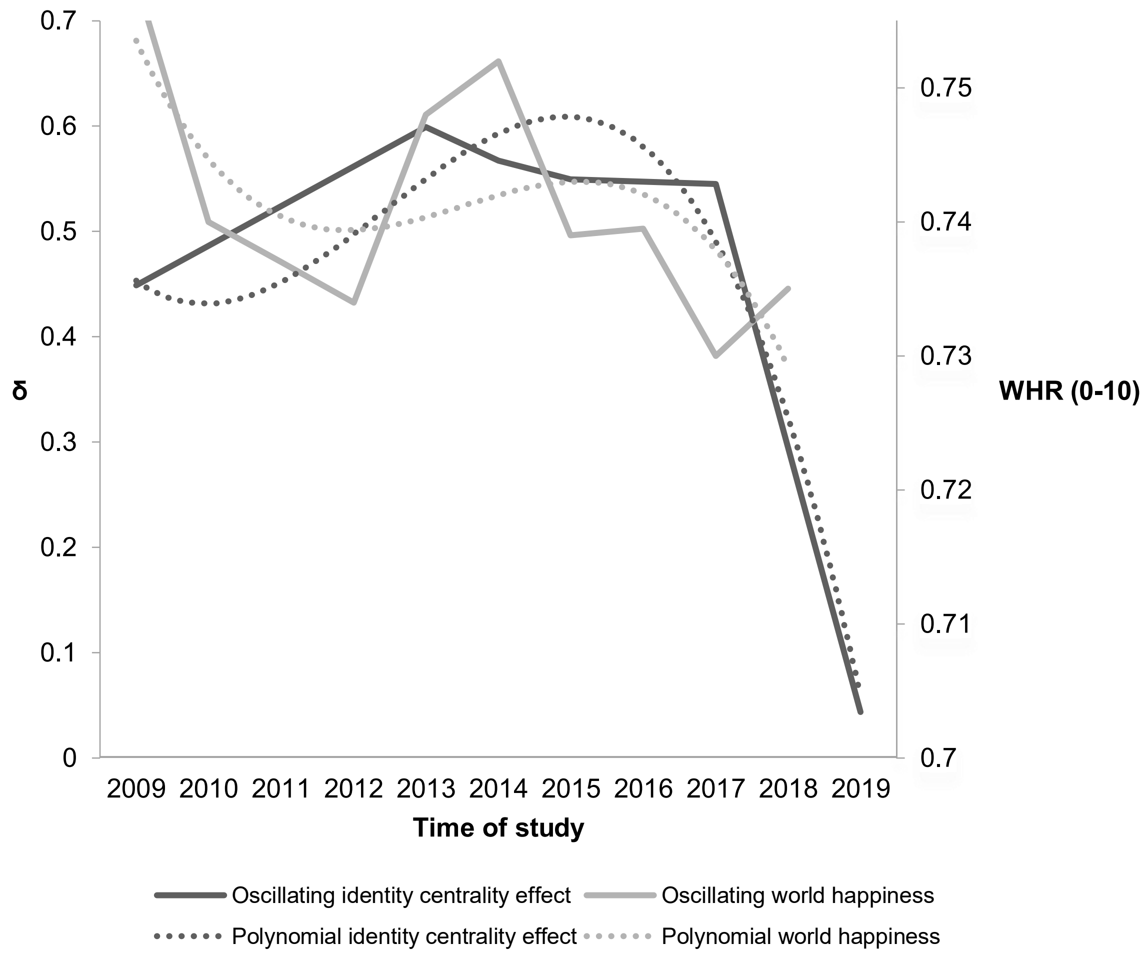
* $p < .05$; ** $p < .01$; *** $p < .001$.

We do not find a significant Q statistic for the moderation by time of the experiential advantage for happiness ($Q_{(1)} = 2.67$, $p = .102$). However, a supplementary analysis of the selective moderation by time of the identity centrality effect on happiness qualifies this finding ($Q_{(1)} = 8.50$, $p < .01$). Recent experiences are less central to consumers' identities than former experiences ($\delta = -0.05$, $z = -2.92$, $p < .01$), which supports hypothesis 5 and explains the World Happiness Report's declining happiness levels worldwide (following Howell and Hill's [2009] quantitative operationalization of identity centrality; see figure 2).

The Q statistic and effect size for design of study further indicate that the experiential advantage for happiness is greater in between-subjects designs ($Q_{(1)} = 36.10$, $p < .001$; $\delta = 0.29$, $z = 10.49$, $p < .001$) than in within-subject designs ($\delta = 0.06$, $z = 2.59$, $p < .01$). No other moderating effects were significant (Qs ≤ 2.67, ps $> .102$).

FIGURE 2

HAPPINESS PER YEAR AS A FUNCTION OF IDENTITY CENTRALITY (OSCILLATING AND POLYNOMIAL) AND THE WORLD HAPPINESS REPORT (WHR)



Hypothetical Consumption

We now turn to the hypothetical consumption of material goods or experiences. Our results show that consumers forecast happiness to be greater when consuming experiences rather than material goods ($\delta = 0.33$, $z = 8.92$, $p < .001$); this effect is not significant for satisfaction ($\delta = 0.10$, $z = 1.42$, $p = .155$). We report the effects regarding the predicted processes underlying this experiential advantage in table 4. Consumers expect to process experiences differently than material goods. The effect sizes indicate specifically that they forecast identity centrality ($\delta = 0.21$, $z = 3.14$, $p < .01$), storytelling value ($\delta = 0.56$, $z = 8.76$, $p < .001$), and social incomparability ($\delta = 0.27$, $z = 2.18$, $p < .05$) to be greater but positive reinterpretation ($\delta = -0.28$, $z = -2.43$, $p < .05$) to be lesser for experiences than for material goods.

We also examined the effects of the predicted processes on the predicted outcomes of the experiential advantage. We find that predicted storytelling value ($\delta = 0.59$, $z = 9.60$, $p < .001$) leads to significantly greater predicted happiness. We do not find a significant effect for predicted identity centrality ($\delta = 0.06$, $z = 0.90$, $p = .370$). The original studies did not measure any other predicted effects on the outcome variables (*k*s = 0).

TABLE 4

PROCESSES AND OUTCOMES OF THE ADVANTAGE OF HYPOTHETICAL EXPERIENCES

	k	*N*	d_u	CI_{du}	*d*	CI_d	δ	CI	*z*	FD
Effect of experience/material good										
Happiness	40	8,153	0.46	0.36–0.57	0.31	0.24–0.38	0.33	0.26–0.40	8.92***	1,717
Satisfaction	16	1,956	0.10	-0.15–0.36	0.11	-0.03–0.24	0.10	-0.04–0.24	1.42	0
Positive reinterpretation	6	938	-0.25	-0.86–0.37	-0.28	-0.51–0.05	-0.28	-0.51–0.05	-2.43*	23
Identity centrality	11	2,447	0.30	0.08–0.53	0.20	0.08–0.32	0.21	0.08–0.34	3.14**	57
Storytelling value	7	1,066	0.71	0.44–0.98	0.51	0.38–0.63	0.56	0.44–0.69	8.76***	109
Social incomparability	7	1,029	0.45	0.12–0.79	0.24	0.02–0.46	0.27	0.03–0.52	2.18**	25
Effect on happiness										
Identity centrality	5	1,629	0.21	-0.02–0.43	0.06	-0.07–0.20	0.06	-0.07–0.20	0.90	0
Storytelling value	5	1,169	0.72	0.42–1.01	0.52	0.40–0.64	0.59	0.47–0.71	9.60***	102

NOTE.—k = number of effect sizes; N = number of participants in the original studies; d_u = unadjusted standardized mean difference; CI_{du} = lower and upper limit of the 95% confidence interval around the unadjusted standardized mean difference; d = inverse variance-weighted standardized mean difference; CI_d = lower and upper limit of the 95% confidence interval around the inverse variance-weighted standardized mean difference; δ = reliability-adjusted, inverse variance-weighted standardized mean difference; CI = lower and upper limit of the 95% confidence interval around the reliability-adjusted, inverse variance-weighted standardized mean difference; z = test of null (two-tailed); FD = file-drawer N giving an indication of publication bias.

* $p < .05$; ** $p < .01$; *** $p < .001$.

Next, we consider the effects of our theoretical and methodological variables as moderators of the experiential advantage (see table 5). Significantly, the effect sizes are somewhat heterogeneous by age (happiness: $Q_{(1)} = 10.90$, $p < .01$; satisfaction: $Q_{(1)} = 0.10$, $p = .754$) and education (happiness: $Q_{(1)} = 0.40$, $p = .529$ satisfaction: $Q_{(1)} = 8.63$, $p < .01$). Younger consumers forecast experiences to make them happier ($z = -3.30$, $p < .001$), and more educated consumers forecast experiences to make them more satisfied ($z = 2.94$, $p < .01$). For ethnicity, the Q statistic shows a significant effect on predicted happiness ($Q_{(1)} = 3.81$, $p < .05$) but not predicted satisfaction ($Q_{(1)} = 0.70$, $p = .403$). The effect size shows that minority consumers forecast an experiential advantage for happiness ($\delta = 0.93$, $z = 1.95$, $p < .05$).

We also find a significant Q statistic for happiness by time of study ($Q_{(1)} = 6.78$, $p < .01$). In more recent times, consumers forecast a greater experiential advantage for happiness than in former times ($\delta = .03$, $z = 2.60$, $p < .01$). All other hypothetical moderators were either nonsignificant (Qs $\leq .70$, ps $> .754$), including the effect of design of study (happiness: $Q_{(1)} = 2.03$, $p = .154$; satisfaction: $Q_{(1)} = .59$, $p = .442$), or not measured by any original study (e.g., price.

TABLE 5

MODERATORS OF THE ADVANTAGE OF HYPOTHETICAL EXPERIENCES

	k	*N*	d_u	CI_{du}	*d*	CI_d	δ	CI	*z*	*Q*
Happiness										
Age	32	7,153	-0.02	-0.04–-0.01	-0.02	-0.02–-0.01	-0.02	-0.03–-0.01	-3.30 ***	10.90 ***
Education	19	2,424	-0.74	-2.34–0.86	-0.19	-0.96–0.58	-0.29	-1.19–0.61	-0.63	0.40
Ethnicity	13	2,414	0.71	-1.12–2.54	0.75	-0.09–1.60	0.93	0.00–1.86	1.95 *	3.81 *
Time of study	40	8,153	0.03	-0.01–0.07	0.03	0.01–0.05	0.03	0.01–0.06	2.60 **	6.78 **
Design of study										2.03
Between-subjects	26	3,682	0.49	0.37–0.61	0.34	0.28–0.41	0.36	0.30–0.43	10.68 ***	
Within-subject	9	4,108	0.34	0.17–0.51	0.22	0.09–0.36	0.24	0.08–0.40	3.03 ***	
Satisfaction										
Age	12	1,602	-0.02	-0.05–0.02	0.00	-0.02–0.01	0.00	-0.02–0.01	-0.31	0.10
Education	11	1,133	6.84	4.25–9.41	1.47	0.32–2.63	1.75	0.58–2.91	2.94 **	8.63 **
Ethnicity	12	1,602	2.23	-2.84–7.37	0.82	-1.30–2.95	0.97	-1.29–3.23	0.84	0.70
Time of study	16	1,956	-0.05	-0.18–0.08	-0.02	-0.07–0.04	-0.02	-0.07–0.04	-0.61	0.38
Design of study										0.59
Between-subjects	11	1,414	0.16	-0.22–0.53	0.19	0.05–0.34	0.19	0.03–0.34	2.36 *	
Within-subject	3	380	0.37	0.11–0.63	0.09	-0.12–0.29	0.09	-0.12–0.29	0.84	

NOTE.—*k* = number of effect sizes; *N* = number of participants in the original studies; d_u = unadjusted standardized mean difference; CI_{du} = lower and upper limit of the 95% confidence interval around the unadjusted standardized mean difference; *d* = inverse variance-weighted standardized mean difference; CI_d = lower and upper limit of the 95% confidence interval around the inverse variance-weighted standardized mean difference; δ = reliability-adjusted, inverse variance-weighted standardized mean difference; CI = lower and upper limit of the 95% confidence interval around the reliability-adjusted, inverse variance-weighted standardized mean difference; *z* = test of null (two-tailed); *Q* = test of difference between moderator levels.

* $p < .05$; ** $p < .01$; *** $p < .001$.

Effect Sizes Interpretation and Publication Bias Tests

Because no other meta-analyses have been run on the experiential advantage, we compare the observed effect sizes with Cohen's (1992) guidelines. We show that across actual and hypothetical consumption, eight significant effect sizes are large ($\delta > .50$). These effect sizes are the effect of hypothetical experiential consumption on storytelling value; both actual and hypothetical storytelling value on happiness; actual positive reinterpretation on satisfaction; and moderation of the effects on actual satisfaction by education and ethnicity, hypothetical satisfaction by education, and hypothetical happiness by ethnicity. Four other effect sizes are medium sized ($.30 < \delta < .50$), and 11 are small but not trivial ($.10 < \delta < .30$).

Considering publication bias, the file-drawer results indicate that most effect sizes are robust and not a reflection of publication bias. That is, between 23 and 6,222 null effects would be required to reduce the statistical significance of the experiential advantage to .05 at the two-tailed level, bar the effects of social incomparability on actual happiness (file-drawer $N = 9$). To assess that effect size, we adopted the trim-and-fill procedure (Duval and Tweedie 2000). No effects needed trimming or otherwise adjusting, so the original effect size is unbiased by publication.

DISCUSSION AND RESEARCH AGENDA

Our results confirm that there is an advantage to consuming experiences over material goods, echoing the sentiment of the ancient Greek philosophers (Aristotle 350BC/1984; Plato 399BC/2010) and corroborating those of the field's pioneers (Van Boven and Gilovich 2003). In line with the experiential advantage model, the consumption of experiences leads to significantly more happiness and satisfaction than the consumption of material goods. If someone were to consume an experience, his or her satisfaction would increase by 5.76% while his or her happiness would increase by 11.23%, ceteris paribus. To gain a better sense of the substantive implications of these effects, we note that the happiness effect ($\rho = .11$) corresponds to the difference between drinking a cup of coffee and receiving a coffee cup (Chan and Mogilner 2016, Study 4) or between using a personal electronic device and buying new clothes (Guevarra and Howell 2015, Study 1). The effect found for satisfaction ($\rho = .06$) is comparable to the difference between going to a concert and acquiring a television set (Lee 2014, Study 3a) or between playing a video game and purchasing jewelry (Guevarra and Howell 2015, Study 3). These specific cases show that consuming more life experiences and less material goods is not only beneficial to overall happiness and satisfaction but also within reach for everyday consumers.

The evidence from our meta-analysis also offers researchers insight into the actual processes, outcomes, and moderators of the experiential advantage. Regarding the effects of consuming experiences or material goods on the processes in the experiential advantage model, all are significant and consistent with hypotheses 1a–1d. These effects show that experiences are more effective than material goods in changing memories for the better, affecting consumers' identities, delivering stories, and detracting from social comparisons.

Overall, we can assign the significant processes to one of the two well-being outcomes: happiness or satisfaction. In the first category, we show that identity centrality, storytelling value, and social incomparability, consistent with hypothesis 2a, influence happiness. In the second category, we show that positive reinterpretation, consistent with hypothesis 2b, influences satisfaction. We specifically note that the effects of storytelling value and positive reinterpretation are large enough that laypeople can easily perceive the advantage of experiences over material goods for those reasons ($\delta > .50$, Cohen 1992). These results highlight the greater effectiveness of experiences in becoming cherished and shared memories. When attempting a painful obstacle course, for example (Scott et al. 2017), consumers are happy to talk about the experience with family and friends and reappraise it in satisfying terms. It also appears that positive reinterpretation is the only process underlying the effect of consuming experiences on satisfaction. This lack of processes may explain the comparatively smaller satisfaction effect. Accordingly, Carter and Gilovich (2012) suggest that consumers take time to come to a new realization and some experiences, such as rainy vacations, leave little room for self-negotiation to serve the need for satisfaction.

The significant theoretical moderators offer support for hypotheses 4a–4c. Assigning them to the previously mentioned well-being outcomes, we find significant moderation by age and education of the asymmetrical effect on happiness. We also find significant moderation by age, education, and ethnicity of the asymmetrical effect on satisfaction. These findings confirm that the experiential advantage increases when consumers are younger or more educated. By contrast, the moderation by ethnicity is negative and larger than the positive asymmetrical main effect on satisfaction. In other words, the results uncover a complex pattern that underlies a material advantage for minorities' satisfaction. Specifically, minorities would rather consume material goods than experiences to fulfill their need to be satisfied. According to Crockett (2017), this material advantage exists in contexts of ethnic suppression because material goods signal both self-importance and a level of fulfillment for minority consumers.

Regarding price—the marginally significant theoretical moderator—we find that experiences that cost more than US$250 deliver a slightly smaller advantage than those that cost less than US$250. This evidence bolsters prior findings that money cannot, as the proverb says, buy happiness. We interpret the effect's marginality as an artifact of the variable's small variance (s = .002). We also offer an explanation based on the work of Carter and Gilovich (2010). They show that well-being derived from an experience depends on the experience's importance while well-being derived from a material good is independent of the good's importance. As an experience's price increases, consumer involvement increases, thus increasing the importance of the experience (Chaiken 1980). The increased importance put on expensive experiences, compared with expensive material goods, could further explain the weaker moderation by price of the relationship between experiences and happiness.

Regarding time of study—the selectively significant theoretical moderator—the results show that while the variable does not moderate the overall experiential advantage, it does moderate the effect of identity centrality on happiness. Experiences that are more recent make consumers happy to a lesser extent because those experiences are less central to their identities. Consonant with this finding, worldwide happiness levels have been declining in recent years (Helliwell et al. 2019).

In addition to five theoretical moderators, our meta-analysis includes design of study as a methodological moderator. We find that studies featuring between-subjects designs report greater happiness evaluations than other experimental plans. That is, when participants are solely evaluating an experience or a material good, there is a greater experiential advantage than when participants are evaluating both an experience and a material good. Therefore, we conclude that a within-subject design, which reports more conservative effect sizes, is the best plan for exploring the experiential advantage because it is more robust to nonrandom inflation.

While 31,799 participants in the original studies reported their well-being derived from an actual experience or material good, 10,109 participants predicted their well-being from a hypothetical experience or material good. For example, Carter and Gilovich (2010) provided participants with a predetermined list of electronics and vacations and asked them to rate how satisfied they would be with each. This technique may address the issue of selective recall. However, our results confirm those of Wilson and Gilbert (Dunn et al. 2003; Wilson and Gilbert 2005) that people commit errors in forecasting their own future feelings. We compare the participants in the hypothetical consumption scenarios with the participants who actually consumed an experience or a material good and find that the hypothetical consumers forecast 5.21% more happiness and 0.69% less satisfaction with experiences than material goods, such as $1,000 gift cards (Goodman et al. 2016), 3D TVs (Mann and Gilovich 2016), beach vacations (Kim et al. 2016), and trips to China (Chun and Hiang 2016). The nonsignificance of the hypothetical effect on satisfaction further reduces the validity of these predictions. In addition, measuring hypothetical consumption may produce artificial processes of the experiential advantage. Indeed, we show that consumers forecast positive reinterpretation to be greater after consuming material goods. These results lend support to our contention that scholars should interpret these well-being predictions with caution. People simply seem to overestimate their happiness and satisfaction from future consumption.

Overall, our findings have implications for consumption practice and consumer research. Pine and Gilmore (2013) note that the ratio of experiences to material goods is increasing. Such growth of the experience economy dramatically influences the way consumers make decisions about, process, and feel happy and satisfied with experiences. As members of society increasingly benefit less from having more experiences, it becomes even more important—ethically, theoretically, and practically—to understand the process of consumption well-being. Explaining the paradox, we warn that consuming ever more experiences risks consumers treating experiences as mere commodities. The process of experience commoditization decreases each experience's proportional contribution to the construction of the self, in turn reducing the experiential advantage.

Limitations

As with any type of research, meta-analyses suffer from limitations. First, we could not reveal all potential process effects because of a lack of data. Similar to Brown, Homer, and Inman (1998), we examine how four processes, five theoretical and one significant methodological moderator of the experiential advantage influence happiness and satisfaction separately as well as how experiences and material goods influence the well-being outcomes directly. However, the lack of some effects diametrically oppose the significant ones. We could neither examine whether positive reinterpretation influences happiness nor code whether identity centrality, storytelling value, and social incomparability influence satisfaction. Instead, we call for more investigation of their potential impact.

Second, meta-analytic structural equation modeling was not possible because of the small number of intercorrelations (see web appendix B). Such modeling demands more data, in that the effect sizes between any two variables in the model must be available (Cheung and Chan 2005). The missing intercorrelations limit the risk of common method bias in our meta-analysis.

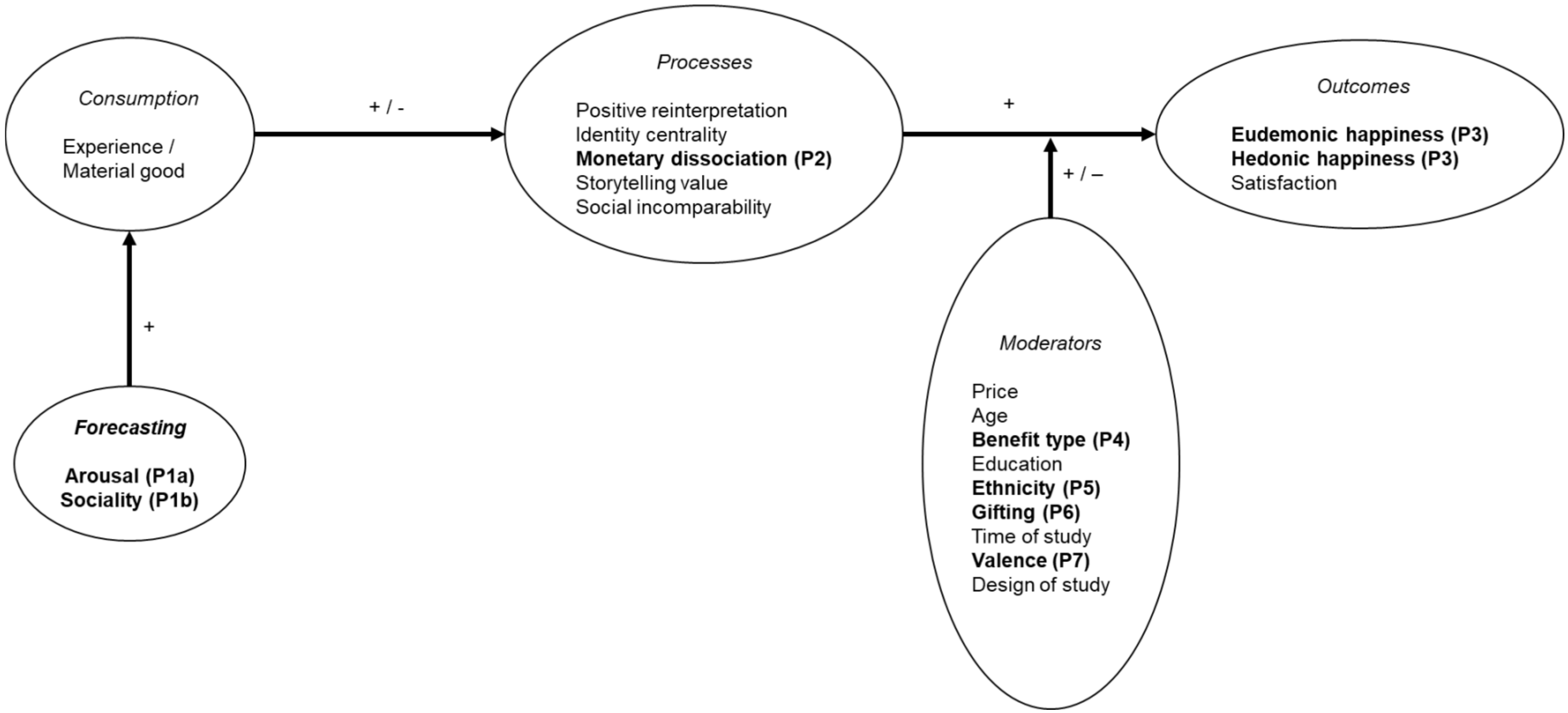
Nevertheless, future studies should control for common method bias by using multiple observers of the experiential advantage or separating the measurement of the processes, outcomes, and moderators of the experiential advantage methodologically, psychologically, or temporally (Podsakoff 2012).

Third, scholars have made the case that other moderators may account for variance. Although classic works theorize a relationship between well-being on the one hand and gifts (Belk 1988) and particularly positive experiences (Csikszentmihalyi 1992) on the other hand, our review reveals that only three articles on the experiential advantage address the gift-status or valence of experiences consumers live through. These numbers are insufficient for meta-analysis to provide meaningful insight into the extent to which a moderator may have an influence (Valentine 2010); therefore, our model included neither gifting nor valence. Over time, as novel studies tackle these issues, it will become possible to determine such effects.

In summary, our confluence of the consumer (Schmitt et al. 2015) and social (Gilovich et al. 2015) psychological research streams has shown the need for research that goes beyond the limitations of our meta-analysis. We discuss these avenues next and outline them in figure 3.

FIGURE 3

THE EXPERIENTIAL ADVANTAGE MODEL INCLUDING FUTURE RESEARCH PROPOSALS



NOTE.—Variables suggested for future research directions appear in bold.

Agenda of Directions for Future Research

Forecasting as a Predeterminant. Studies of hypothetical or anticipated consumption cannot answer our questions of why and when experiences make people happier and more satisfied than material goods. An abundant body of research in consumer (Buechel and Townsend 2018; Ratner and Hamilton 2015) and social (Pchelin and Howell 2014; Wilson and Gilbert 2005) psychology demonstrates significant consumer errors in affective forecasting, so these predictions cannot serve as proxies for actual well-being derived from an experience. One unanswered question is whether the well-being impact bias is advantageous in some way. Exaggerating the well-being impact of experiences could arguably serve as a motivator, making consumers work hard to have experiences that they predict will have large positive outcomes for well-being. Yet affective forecasting errors also have costs. For example, consumers who overestimate the positive well-being impact of undergoing Botox cosmetic treatments might be too willing to get an extreme makeover (Giesler 2012). Finding ways to increase the accuracy of affective forecasts is therefore a worthy endeavor. Recent studies suggest that it is easier to put oneself in the future and imagine what life after an experience will be like if that experience does not seem arousing (Buechel and Townsend 2018) and is consumed alone (Ratner and Hamilton 2015). As such mental time travel might ultimately lead to better decisions and greater well-being, we make the following research proposition:

P1: The less experiences are (a) arousing and (b) consumed socially, the more accurate well-being forecasts will be.

Monetary Dissociation as a Process. Extant work mostly measures the previously reviewed processes of the experiential advantage: positive reinterpretation, identity centrality, storytelling value, and social incomparability. An exception is Shim and White (2017), who investigate the experiential advantage and observe that consumers perceive experiences as more meaningful than material goods. Building on their work, we propose an investigation of experiences in terms of the monetary association they disallow. Consumers are more likely to use monetary associations to appraise material goods than to appraise experiences (Mann and Gilovich 2016). Monetary associations tend to detract from happiness and satisfaction. Simply having consumers think about money influences them to behave differently in terms of helping, self-reliance, and individualism (Vohs, Mead, and Goode 2006). That is, thinking about money makes consumers less willing to ask for help, more self-reliant, and less willing to help others. Imposing monetary associations also has long-term negative effects (Gneezy and Rustichini 2000). When money is associated with an experience, consumers frequently choose to misbehave and continue to misbehave even if the experience provider explicitly removes the monetary association. As Burning Man suggests, experiences are better and more meaningful without a monetary association (Kozinets 2002). The event rejects monetary associations, and its participants do not accept money, which leads us to the following proposition:

P2: The less experiences are associated with money, the more well-being will increase.

Eudemonic and Hedonic Happiness as Outcomes. Ryan and Deci (2001) distinguish between two types of happiness that can occur in response to consuming experiences or material goods: eudemonic happiness and hedonic happiness. Eudemonic happiness arises from the fulfillment of meaningful goals, such as conquering a mountain peak, while hedonic happiness is a result of sheer pleasure, such as eating a tasty serving of ice cream. Empirical work on the different types of happiness is scant however. Our review shows that only Pchelin and Howell (2014) differentiate between eudemonic and hedonic happiness. Therefore, we suggest broadening the discussion of happiness as an outcome of the experiential advantage. Experiences and material goods would possibly have very different effects on the extent to which consumers are eudemonically or hedonically happy. As Schmitt et al. (2015) note, eudemonic happiness originates in access, while hedonic happiness originates in both ownership and access. We thus propose dividing happiness into a eudemonic and hedonic component in which eudemonic happiness increases more with experiential consumption than hedonic happiness:

P3: The experiential advantage is greater for eudemonic happiness than for hedonic happiness.

Benefit Type as a Moderator. The distinction between hedonic and utilitarian benefits constitutes an important but overlooked dimension of consumption well-being (Dhar and Wertenbroch 2000; Holbrook and Hirschman 1982). Not to be confused with hedonic happiness, which is an outcome, hedonic benefits are intrinsic characteristics of an experience or a material good. They are emotional, enjoyable, exciting, fun, sensory, and fulfilling a desire. Conversely, utilitarian benefits are functional, practical, useful, solving a problem, and fulfilling a physiological or safety need. In other words, for hedonic experiences and material goods, how they make consumers feel affects consumers' happiness and satisfaction. For utilitarian experiences and material goods, what they do for consumers affects consumers' happiness and satisfaction (Botti and McGill 2011; Mano and Oliver 1993; Voss et al. 2003). We expect these differences in benefit type to influence the experiential advantage. Specifically, this research proposition posits that the affective nature of experiences and the cognitive nature of material goods align with hedonic and utilitarian benefits, respectively. By definition, consuming experiences is more affective, focused on the events the consumer lives through, while consuming material goods is more cognitive, focused on the object's functions and use (Carter and Gilovich 2010; Frederick and Loewenstein 1999). Similarly, hedonic benefits specify advantages of accessing or encountering certain features; such advantages are primarily affective. By contrast, utilitarian benefits specify advantages of acquiring or owning certain features; such advantages are primarily cognitive (Moore 2015), which suggests possible compatibility between certain experiences and material goods on the one hand and hedonic and utilitarian benefits on the other hand. Building on this suggestion, we propose that experience/material goods and hedonic/utilitarian benefits should interact:

P4: As benefits are more hedonic, the experiential advantage increases, thus increasing the asymmetrical effect on well-being.

Ethnicity as a Moderator. Although a material advantage occurs for minority consumers in our analysis, we note that except for the Brazilians in Araujo's (2018) doctoral dissertation, the participants in all the original studies live in developed economies such as North America. Further research should recruit participants from other populous civilizations, such as the Chinese, Indians, and Indonesians, because preferences commonly differ between economies, differences that may lead to more manifestations of material advantages for well-being. People in developing economies typically lack the financial means to consume freely and therefore are less likely to be happier and more satisfied with experiences than material goods. Specifically, living in a developing economy represents a structure for a person's consumption that may facilitate a material advantage (Zhang et al. 2014). When consumers are deprived of financial means, the time available to extract value drives their well-being (Sharma and Alter 2012). While temporal access is generally associated with experiences, timeless ownership is generally associated with material goods (Goodman et al. 2019). Thus, we propose the following:

P5: Material goods make consumers in developing economies happier and more satisfied than experiences.

Gifting as a Moderator. The experiential advantage model allows for the possibility that consumers occasionally receive the experience or material good as a gift they will eventually consume. However, the model largely relies on the assumption that consumption is the result of a personal purchase. By challenging this assumption, we can further expand research on the experiential advantage. In this regard, Chun and Hiang (2016) show that whether an experience or a material good is a gift has a particular effect on consumers. They demonstrate that the use of gifts on meaningful, extraordinary occasions weakens consumers' happiness and satisfaction with experiences but strengthens their happiness and satisfaction in the case of a material good. They present the belief that the gift can have storytelling value as the mechanism underlying this material advantage. They do not compare the well-being outcomes of gifts with those of purchases however. As such, their article marks a starting point from which to initiate a line of research into a possible experiential advantage moderated by gifting. We make the following research proposition:

P6: Context affects experiential purchases and material gifts differently. On ordinary occasions, experiential purchases have greater storytelling value, leading to a net experiential advantage for well-being. On extraordinary occasions, material gifts have greater storytelling value, leading to a net material advantage for well-being.

Valence as a Moderator. Our review indicates that there is ample room to investigate valence as an additional moderator of the experiential advantage. Prior consumer research has barely addressed valence of experiences and material goods (Bastos 2019; Guevarra and Howell 2015; Nicolao et al. 2009). From a purely conceptual perspective, we propose further investigation of experiences and material goods in terms of the valence that naturally belongs to them. At one extreme, we would locate experiences and material goods that evoke a mostly positive reception; at the other extreme, we would place experiences such as rainy vacations and material goods such as crash-prone laptops that elicit a mostly negative reception. From a more practical perspective, we observe that most experiences and material goods include a combination of positive and negative emotions. In addition, different consumers can evaluate the same experience or material good positively and negatively, though most articles on the experiential advantage currently examine only one extreme. Scholars clearly need to pay more attention to the intricacies of valence that can affect the experiential advantage. In that regard, Nicolao et al. (2009) show that negative experiences do not have an advantage over material goods in terms of happiness; Guevarra and Howell (2015) do not replicate this result for satisfaction. Thus:

P7: As valence deteriorates, the experiential advantage decreases, thus removing the asymmetrical effect on happiness.

CONCLUSION

Consistent with the study's objectives, our contributions are threefold. First, in conceiving the experiential advantage model, we offer an overall assessment of the complicated relationships among experiences, material goods, happiness, satisfaction, and a host of underlying variables. Second, our meta-analysis of this model underscores the robustness of the experiential advantage and builds on previous research to refine and extend current knowledge. Third, we identified seven paths on which research on consumption for well-being has not yet trod and, in doing so, provide avenues for further inquiry.

Noting the distinct lack of epistemologically integrated literature, our work constitutes the first multifocal study on the experiential advantage, a confluence of the consumer and social psychological research streams. While the methodological specificities of meta-analysis require tests based on completely separate categories, the conceptualization of the model, the development of our hypotheses, and the interpretation of our results explicitly rely on the argument that material good and experience are anchor points that articulate the continuum between ownership and access. Thus thinking through the respective perspectives' theorems, we conceive one experiential advantage model that incorporates the many insights into the field.

APPENDIX A

WORKS INCLUDED IN THE META-ANALYSIS

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APPENDIX B

INTERCORRELATIONS OF PROCESSES, OUTCOMES, AND MODERATORS OF THE EXPERIENTIAL ADVANTAGE

		1	2	3	4	5	6	7	8	9	10	11
1	Happiness											
2	Satisfaction	-0.09										
3	Positive reinterpretation	-0.07	-0.02									
4	Identity centrality	-0.13 **	-0.05	-0.04								
5	Storytelling value	-0.24 **	-0.09	-0.06	-0.13 **							
6	Social incomparability	0.08	0.03	0.02	0.04	0.08						
7	Price	-0.14	-0.05									
8	Age	-0.38 **	-0.10					0.27 *				
9	Education	0.29 **	-0.19					-0.46 **	-0.77 **			
10	Ethnicity	-0.01	0.29 **					-0.24	-0.12	-0.31		
11	Time of study	0.13	-0.08					0.12	-0.14	-0.04	-0.09	
	Design of study	-0.22 **	-0.13					0.18	0.06	0.16	-0.08	-0.08

Statistically significant correlations at the two-tailed level: * $p < .05$; ** $p < .0$

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Chapter Three

Scarcity Tactics in Marketing: A Meta-Analysis of Product Scarcity Effects on Consumer Value Perceptions and Behavioral Intentions

ABSTRACT

Scarcity tactics are an essential tool for marketers. Cues that signal the current or potential unavailability of a product generally enhance its value and desirability and in turn increase purchase intentions. While there have been earlier reviews, the fragmented nature of the research to date means there is no cohesion across findings and that, ultimately, little is known about the actual effect size of scarcity and how this depends on possible moderators. Given that retailers employ scarcity cues in a diversity of settings, it is important to identify how the effect of scarcity on consumer behavior varies across conditions. This research presents a meta-analysis of 416 effect sizes from 131 studies. Results show that not all scarcity cues are equally successful at influencing consumer attitudes and behavior. Effects are moderated by the source of scarcity, product benefits, how the scarcity cue is communicated, and level of involvement. The results show that managers need to consider the above factors to maximize the success of scarcity tactics in their marketing campaigns.

Keywords: scarcity; unavailability; quantity restrictions; time limits; meta-analysis

Scarcity cues and tactics play a prominent role in marketing. Examples include promotional campaigns featuring limited edition products and increases in consumer demand resulting in unprecedented global stock runs on common household staples like pasta, flour and, surprisingly, toilet paper, as seen during the COVID-19 pandemic. Online examples include the restricted time frames for acquiring products, such as the Cyber Monday and Click Frenzy sales events (Hancock, Stevens, and Waites 2018) and the use of real-time sales and stock levels as signals of impending product scarcity (He and Oppewal 2018). Regardless of which tactic a marketing practitioner might employ, creating the perception that there is, or potentially will be, a limited supply and possible unavailability of a product increases a product's perceived value and desirability (Cialdini 2009) and consumers' purchase intentions for the product (Zeithaml 1988). Scarcity tactics appear powerful and pervasive in their effects on behavior. It is precisely these strong, motivational effects of scarcity that have resulted in its longstanding use by marketing practitioners over the years.

Given the prominence and importance of scarcity, it is not surprising that a great deal of effort has been devoted to researching the impact of product scarcity on consumer behavior. Prior research has explored how scarcity cues change the perceived value of a product (Lynn 1991) and how they affect consumer attitudes (e.g. Gierl and Huettl 2010; Howard and Kerin 2006; Inman, Peter, and Raghubir 1997), as well as enjoyment (Sevilla and Redden 2014), popularity (Castro, Morales, and Nowlis 2013; Parker 2011; Van Herpen, Pieters, and Zeelenberg 2009), purchase intention (Aggarwal, Jun, and Huh 2011; Ramanathan and Dhar 2010; Zhu and Ratner 2015), and quality (Jeong and Kwon 2012; Suri, Kohli, and Monroe 2007; Van Herpen, Pieters, and Zeelenberg 2014). Research has also disentangled the effects of scarcity according to its three sources of demand, supply, and time-based scarcity (Gierl, Plantsch, and Schweidler 2008)[1].

When considering how potential product unavailability or scarcity is communicated in a retail context, differences may also arise between types of products and between types of consumers. Products differ in the benefits and experiences they provide and in their level of consumer involvement. Consumers differ on basic demographics such as age and sex, but also differ in their level of brand familiarity, to name just a few potentially relevant characteristics. A recent conceptual review by Shi et al. (2020) suggests several more potentially moderating factors such as need for cognition and the consumer's need for uniqueness. In an early meta-analysis, Lynn (1991) found significant heterogeneity in scarcity's effect size, highlighting the potential for between-study moderators. However, Lynn does not further discuss these moderators due to the small number of effect sizes across sub-groups, making interpretation difficult. Lynn's meta-analysis was conducted three decades ago and is in need of updating, not only because much new work has appeared, but also because the retail environment has changed so much over the last decades.

Notable changes in the retail environment include an increasing shift in consumer preferences from acquiring and consuming traditional material goods to being engaged in experiences, especially for the millennial generation (Gleeson 2019). Material goods tend to have strong visual markers of unavailability and scarcity, for example through depleted shelf stock levels. Empty racks and shelves can signal high consumer demand or limited supply of material goods such as t-shirts, grocery items, or electronic goods. Instead, for experiences, current or

[1] Scarcity has also been considered to encompass not only scarcity of marketable consumer products but also scarcity of resources such as time and money (Hamilton et al 2019). The latter however presents its own domain of theories, findings and applications. The present paper therefore exclusively focuses on the effects of product scarcity.

potential scarcity can only indirectly be evidenced, through a consumer witnessing physical or virtual queuing for ticket sales or through claims commonly practiced by experience providers. In such settings, the consumer has little ability to verify the scarcity cues. The question arises, will scarcity effects for experiences be different from those for material products?

The retail landscape has also significantly evolved in other ways since Lynn's (1991) study appeared. The introduction and adoption of online retailing has changed how products are distributed. In online settings consumers often have less information for assessing product quality and may be more dependent on scarcity cues to infer the value of a product (He and Oppewal 2018). In addition, marketing communication and advertising practices have adapted to the introduction of social media and other virtual platforms, allowing scarcity cues to be disseminated in new ways (Dhruv, Roggeveen, and Nordfalt 2017). Given these shifts in the retail landscape, it is timely that an updated quantitative review be conducted which addresses the outstanding question of the differential impact of scarcity on consumer behavior.

In sum, although marketing practice commonly employs scarcity cues in a range of consumption situations and although there is a vast literature on scarcity, the research into scarcity effects is fragmented and diverse, as also noted by Shi et al. (2020), and does not answer whether scarcity strategies have a uniform effect or whether they have a stronger impact in some situations than in others. The aim of our paper is to quantify how the effect of scarcity varies across conditions. Providing insight into the conditions where scarcity has greater or smaller effects will help practitioners decide when to best use scarcity cues for their own products or how to respond to competitors who use scarcity cues. Indeed, given the wide-ranging investment by retailers into the use of such scarcity tactics in practice, the implications of these efforts for consumers need to be better understood.

To attain our goal we build on, and extend the meta-analysis conducted by Lynn (1991). Lynn adopted the framework of commodity theory (Brock 1968) to analyze the effect of scarcity on perceived value. He conceptualized value as the combined effect of value and desirability and the analysis included marketable consumer products and informational messages. Scarcity was conceptualized as unavailability resulting either from market forces of imbalance between supply and demand, or from more generalized restrictions[2]. The study did not analyze the separate effect of each of the market forces of demand, supply, and time-based scarcity; it only analyzed scarcity effects at the aggregate level. In doing so it reported an overall effect size for scarcity on perceived value of $r = 0.12$. Although Lynn's (1991) analysis thus provided valuable insight into the overall effect of scarcity on perceived value, the broader question of its differential impact on a wider range of consumer behavior variables has been left unanswered.

Thus, the present paper, through the use of a meta-analytic framework, contributes to the literature by (1) synthesizing existing research and providing an updated analysis into the effect of scarcity cues on consumer behavior; (2) exploring the effects of different sources of scarcity, taking into consideration recent changes in the retail landscape; and (3) uncovering new moderators of the effect of scarcity on consumer behavior to identify variation in the effect depending on differences in product level characteristics. The remainder of this paper is structured as follows. First, we provide a review of the role of scarcity in marketing, based in particular on the framework of commodity theory (Brock 1968). We then discuss differences in the sources of scarcity and identify potential product level moderators of the effect. A meta-analysis of 416 effect sizes from 131 studies examining the effect of scarcity on consumer

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[2] Generalized restrictions in Lynn (1991) include the legislation of restricted access to products such as pornographic materials, alcohol, and illicit substances.

behavior is presented. We end with a discussion of the results and of the implications for marketing practice and the current retail landscape.

THE ROLE OF SCARCITY IN MARKETING

In his early review, Lynn (1991) adopts commodity theory (Brock 1968) as the overarching framework for understanding the psychological effects of scarcity. The theory's main principle is that "any commodity will be valued to the extent that it is unavailable" (1968), where a commodity is defined as "anything which has usefulness to its possessor and which can be conveyed from person to person". The author highlights three criteria central to this definition. First, a commodity must be useful and provide some utility to the person interested in possessing the product. A product that bears no utility to a person cannot be considered a commodity under commodity theory. Second, a commodity must be able to be transferred from one person to another. Products that cannot be transferred are not commodities. Third, a commodity must be able to be possessed. In a marketing context, this relatively broad definition signifies that any marketable product capable of providing utility to a consumer be considered a commodity. Material and shelf-based goods such as clothing are well examined in the scarcity literature; however other types of products, including experiences, also meet the definition of a commodity. Tickets to a concert, seats on an airplane, and ski passes are all marketable products that provide utility to consumers and may be prone to the psychological effects of scarcity.

A second core concept to commodity theory as used by Lynn (1991) is value. A commodity's value refers to its ability to potently affect attitudes and behavior (Brock 1968). Since a commodity must be useful and provide some positive utility to the person interested in possessing the product, any enhancement of its potency should increase the perceived utility of the commodity, and therefore its desirability. Perceived value is critical to marketers, as it is regarded as the primary driver of purchase intentions as suggested by Zeithaml (1988). Desirability and value, however, are not the only variables that can be affected by scarcity. Perceived quality, popularity, exclusivity, and purchase intentions are examples of other attitudinal and behavioral variables subject to the effects of scarcity, and will be incorporated in our meta-analysis.

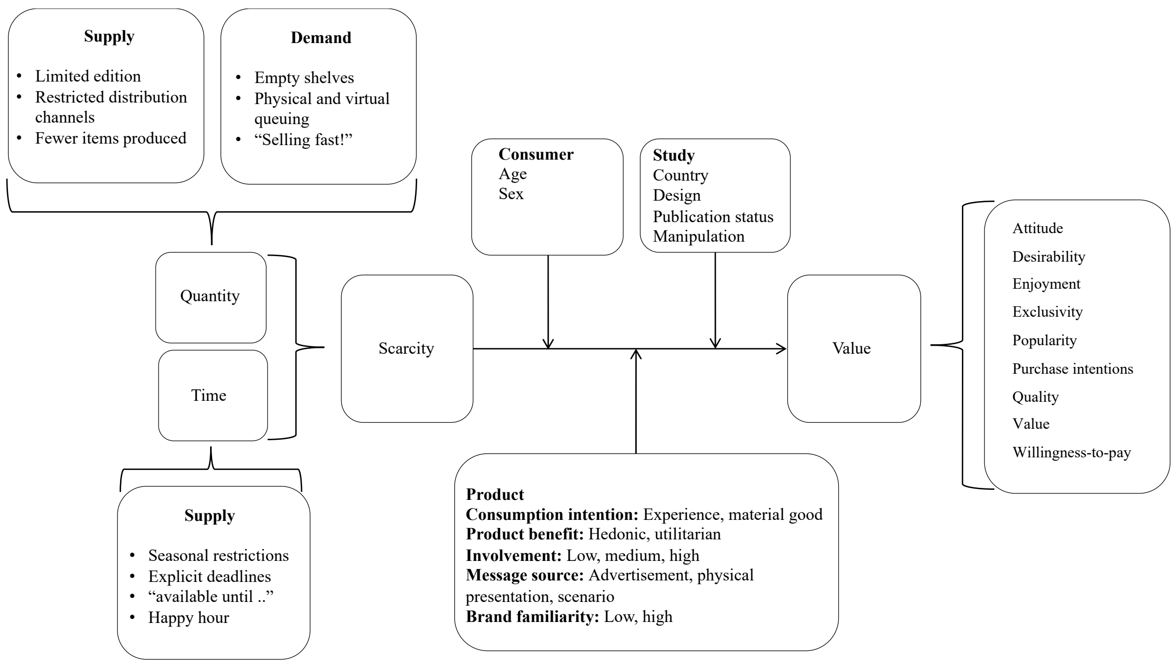
Third, unavailability of a commodity refers to restrictions placed on the availability of, or ability to obtain, a product (Lynn 1991). The source of unavailability may vary across contexts, however in marketing the three main sources of unavailability include supplier restrictions on production and manufacture, for example limited edition product lines or restricted distribution channels, excess consumer demand, and time limits or windows to obtain products. While unintentional or accidental stock-outs due to non-market forces, such as natural disasters or technological faults disrupting supply of raw materials and products, are also prone to the effects of scarcity, the present study focuses on sources of unavailability that are due to market forces.

Although it is considered the dominant framework, commodity theory is not the only framework that can be used to explain scarcity effects. Shi et al. (2020) summarize three more alternative frameworks, specifically, conformity theory, regret theory and reactance theory. Conformity theory in many respects is the opposite of commodity theory. Where commodity theory relates to consumers' need for uniqueness, conformity theory explains scarcity effects as the result of adherence to group norms. Scarcity signals popularity and this in turn indicates what other group members apparently prefer, and individuals try to conform to this perceived norm (Cialdini 1993; Parker and Lehmann 2011; Van Herpen et al. 2014). Regret theory describes how consumers seek to avoid making the wrong choice. Finally, reactance theory is most applicable when consumers are restrained from accessing a particular product, for example because of regulatory frameworks or because of external constraints not related to the market forces of supply and demand. In our discussion we will revisit the applicability of these three alternate theories when explaining the findings from our meta-analysis, which following Lynn (1991) is mostly informed by commodity theory.

In the following section we use the framework of commodity theory to help provide an overview of the role of scarcity in marketing (figure 1). We also extend our conceptualizations to incorporate uniqueness theory and bandwagon effects due to conformity theory. In our overview, we outline the sources of product scarcity as well as identify a number of potential product level moderators of the effect.

FIGURE 1

THE ROLE OF SCARCITY IN MARKETING



Sources of product scarcity

Sources of product scarcity can be classified according to whether the restriction is due to quantity or time (Gierl et al. 2008) (see figure 1). Scarcity due to quantity restrictions can be further categorized according to whether the unavailability is driven by consumer demand or by supplier restrictions. Instead, product scarcity due to time limits can only result from restricted supply. When the seller communicates a product's availability until an explicit deadline or time limit using messages such as "only available until …" and "for the next hour", availability of the product is guaranteed, irrespective of the level of demand leading up to the expiry, as long as the consumer meets the deadline imposed.

Quantity restrictions. Under quantity restrictions, supply-based scarcity cues clearly articulate that the supply of the product is restricted via limited production or distribution channels. Products scarce due to supply can be found across a range of categories, from groceries (e.g. Birthday Cake flavored Kit Kat), to shoes and clothing (e.g. limited-edition Travis Scott Air Jordan 1 Hi OG trainers), to cars (e.g. Volkswagen R32), and even gaming consoles (e.g. Animal Crossing Nintendo Switch Console) and toys (e.g. Celebration Barbie Doll's). Supply-based scarcity cues signal a product's quality and status, thereby increasing the product's desirability (Lynn 1992). We extend the use of a commodity theory framework and suggest that this increased desirability can partly be explained by uniqueness theory (Fromkin 1970), which states that consumers pursue scarce commodities and the exclusivity they provide because scarce products serve as a means to differentiate oneself from others. The need to be unique also relates to a 'snob effect' (Leibenstein 1950), whereby the demand for a scarce product decreases when others are also consuming the same product, or increasing their consumption of it. In other words, as consumption of the product increases, the less that product serves as a marker of uniqueness, and so, the less it is desired by those with a greater need to be unique. Products restricted in quantity through supplier limits serve as better markers of uniqueness than products restricted in quantity through excess consumer demand. The exclusivity associated with supplier imposed quantity limits provides consumers an opportunity to create status, which fulfils their desire to be unique (Amaldoss and Jain 2005; Veblen 1973). For example, luxury automobile manufacturers, such as Ferrari, are known to purposefully keep production quantity low in order to maintain brand status. In the case of Ferrari, "...the company was founded on one simple principle, you only produce one car less than the demand for the vehicle. To meet demand would destroy the exclusivity of the brand" (Alexander 2020). Thus, supply-based scarcity is most effective for marketing products that convey status and uniqueness, in particular those that are associated with conspicuous consumption (Gierl and Huettl 2010).

In contrast to supply side restrictions, quantity restrictions arising due to demand occur during the selling process, whereby the number of consumers purchasing a product exceeds available supply. This excess demand often results in depleted stock levels and empty shelf space, from which consumers may infer popularity (Parker 2011) and quality (Van Herpen et al. 2014). This excess demand thus causes further increases in demand, leading to bandwagon effects and a 'fear of missing out' (Hodkinson 2019). As these informational cascades occur, consumers compete for the remaining products. In extreme situations this competition can lead to aggression towards other consumers (Kristofferson et al. 2017), as exemplified by worldwide media reports of supermarket aggression over common household items like pasta, rice and toilet paper during the coronavirus pandemic (Kang and Chaudhuri 2020). Whilst uniqueness theory explains scarcity's effects on consumer behavior for products restricted in supply, it cannot explain increases in preference for products scarce in quantity due to prior consumer demand. It predicts that when a shelf display signals that many items of a product have been sold, the product is less likely to be selected because products high in demand, and consumed by many others, are inefficient markers of uniqueness. In many cases consumers nevertheless select the scarce option. Under these circumstances, selection of the scarce option is better explained by bandwagon effects (Leibenstein 1950) and the desire to conform with, rather than differentiate from, others (Berger and Heath 2007).

Time restrictions. Under conditions of time-based scarcity, the supply of a product or offer is constrained to an explicit time frame, and is often found in seasonal restrictions, such as Hot

Cross Buns at Easter and Starbucks Phantom Frappuccino's at Halloween. As well as seasonal windows, sellers may restrict supply temporally with expiration dates and times for offers. A classic example is the "Happy Hour", often used for promotional offers in hospitality settings that includes offers such as 2 for 1 beverages, discounted food, and airline tickets and vacation packages. With time-based scarcity, supply is guaranteed, irrespective of level of consumer demand and competition. As long as the consumer meets the supplier-imposed deadline or expiry, the product being purchased is not the scarce commodity but rather the offer itself (Aggarwal et al. 2011), as consumers feel a sense of urgency to act and avoid the anticipated regret associated with missing out (Abendroth and Diehl 2006). Similar to demand-based scarcity, time-based scarcity creates a sense of competition as consumers compete to beat deadlines to obtain products that other consumers cannot obtain post expiry of the deadline. Purchasing products limited by time-restrictions leads to a sense of achievement (Garretson and Burton 2003), and feelings of pride and satisfaction from being a 'smart shopper' (Babakus, Tat, and Cunningham 1988).

Having identified the sources of scarcity, we now turn our attention to potential moderators of the effect. Specifically, we explore whether product characteristics, such as the material/experiential and hedonic/utilitarian distinctions, and level of brand familiarity and involvement have an influence on the effect of scarcity on consumer behavior. For example, does limiting the number of luxury items produced have the same effect on consumer desire as displaying a depleted shelf of utilitarian products?

Product level moderators

Experiences versus material goods. Commodity theory (Brock 1968) defines a commodity as "anything which has usefulness to its possessor and can be conveyed from person to person." In a marketing context, a commodity is not only a material good such as a bicycle or pair of shoes, a commodity is also an experience. Vacations, concerts, and spa treatments are all products that have some use to their possessor. Despite being unable to be conveyed from person to person in the same way as material goods, experiences are still able to be transferred from person to person in ways such as ticket sales and bookings. A great deal of the research into the effects of scarcity cues has utilized material goods as stimuli (Aggarwal et al. 2011; Gierl and Huettl 2010; Gierl et al. 2008; Howard and Kerin 2006; Worchel, Lee, and Adewole 1975), many of which involved shelf-based visual cues (Castro et al. 2013; Gabler and Reynolds 2013; Parker 2011), a strategy not available for many experiential products. A substantial research program has explored differences in the effect of consuming experiences rather than material goods on various consumer behavior outcomes such has happiness and satisfaction (Caprariello and Reis 2013; Carter and Gilovich 2010, 2012; Nicolao, Irwin, and Goodman 2009; Van Boven and Gilovich 2003; Zhang et al. 2014), as well as how scarcity of financial resources shifts choice and preference from experiences to material goods (Tully, Hershfield, and Meyvis 2015). However, no prior research has investigated the moderating effect of source of scarcity on the type of product - experience or material good - and whether experiences are better marketed by one source of scarcity compared to another. Lynn (1991) observed no moderating effect of the tangibility of the purchase in his meta-analysis, however intangibility is only one aspect characterizing the ephemeral nature of an experience, as noted by Shi et al. (2020). For example, a bottle of fine wine is both a tangible product and an experiential product. To explore these potential moderating effects, we take a consumption intention approach to the products used as stimuli in the studies. Material goods are purchases "…made with the primary intention of acquiring a material good: a tangible object that is kept in one's possession" while experiences are purchases "…made with the primary intention of acquiring a life experience: an event or series of events that one lives through" (Van Boven and Gilovich 2003, 1194).

Hedonic versus utilitarian products. Consumer products can be broadly classified along hedonic and utilitarian dimensions. Whilst many products involve both hedonic and utilitarian attributes, consumers typically purchase products for either hedonic gratification or instrumental, utilitarian reasons (Batra and Ahtola 1991). Hedonic products are those that are self-defining and deliver consumption episodes primarily characterized by affective and sensory experiences of fantasy, fun, and sensual pleasure (Hirschman and Holbrook 1982). On the other hand, consumption of utilitarian products is goal-oriented and fills a basic need or accomplishes a functional task (Strahilevitz and Myers 1998). Hedonic goods are subject to "want" preferences that better satisfy promotion goals whilst utilitarian products are subject to "should" preferences and better satisfy prevention goals (Chernev 2004; Dhar and Wertenbroch 2000). Thus, the "social proof" offered by demand-based scarcity cues is particularly effective for utilitarian products that satisfy goals relating to the need to "fit in" and conform (Van Herpen et al. 2009), whilst supply-based scarcity cues are advantageous for hedonic products that satisfy transformational or promotion goals that allow consumers to differentiate themselves from others (Ku et al. 2013; Van Herpen et al. 2009).

Level of involvement. Products tend to differ in their tendency to arouse involvement (Bloch 1981), and the level of arousal generated also varies between consumers (Antil 1984). Broadly speaking, involvement reflects the extent of personal relevance and importance a decision has to an individual (Zaichkowsky 1985), and reveals a level of interest in an object or activity (Mittal 1983) stemming from the consumer's perception that the product meets important values and goals (Mittal and Lee 1989). High involvement products typically satisfy hedonic goals, whilst low involvement products satisfy more functional, utilitarian goals. As the level of importance increases, consumers move from decisions that are trivial and casual to more deliberative choice processes where information is scrutinized and elaborated upon. Thus, in low involvement situations, demand-based scarcity cues that provide evidence of popularity and quality will be more effective at influencing consumer behavior compared to supply-based or time-based scarcity cues. This effect should weaken as involvement increases and consumers elaborate on their decision process. Therefore, to the extent that a high involvement product meets hedonic goals, supply-based scarcity cues can be expected to be more effective at influencing consumer behavior than demand-based or time-based scarcity cues.

Source of scarcity cue. A variety of message sources have been employed in the literature to communicate product scarcity. Researchers have utilized advertisements, scenario-based references to scarcity, physical and shelf-based product presentations, and sales-person communications to indicate current or potential product scarcity in their studies. Shelf-based scarcity has been shown to lead to increased consumer preference through popularity and quality inference (Parker 2011), with depleted stock levels being interpreted as evidence of prior consumer demand, leading to bandwagon effects (Van Herpen et al. 2009). Thus, physical display of strong prior consumer demand is likely to influence consumer behavior for low involvement and utilitarian products to a greater degree than other message sources. Conversely, advertisements communicating supply-based scarcity are better able to influence consumer behavior than the physical display of products, since the physical display of products is already limited in quantity. In the case of time-based scarcity, the message source will not significantly moderate the effect of scarcity on consumer behavior, since the supply is guaranteed up until the purchase deadline, irrespective of competing consumer demand.

Brand familiarity. Consumers are often faced with making purchase decisions without prior knowledge or experience in a particular product class, or when new brands enter into existing markets. Whilst consumer familiarity with a brand leads to increased confidence in that brand, in turn leading to increased purchase intentions (Laroche, Kim, and Zhou 1996), in the absence of brand familiarity consumers may rely on cues and heuristics to form judgement and purchase decisions (Gigerenzer and Gaissmaier 2011). Perceived scarcity of a product is one such heuristic, where scarce objects are believed to be more valuable (Cialdini 2009). As mentioned previously, perceived scarcity leads to popularity and quality inferences (He and Oppewal 2018; Parker 2011; Van Herpen et al. 2009), a type of "social proof" that allows consumers to interpret a product's superiority (Gierl and Huettl 2010; Ku, Kuo, and Kuo 2012; Van Herpen et al. 2009). Thus, in the context of a new brand entering the market, restricting availability may serve as a motivating factor for consumers to purchase and adopt the product.

In the following section we outline the methodology and results of our meta-analysis. The analysis incorporates all the variables listed in Figure 1, including the types of scarcity and moderator variables identified above, and identifies how these impact not only value, as in Lynn (1991), but also on a range of additional dependent variables as shown in figure 1.

METHOD

Search Process and Sampling Frame

An extensive search was conducted to locate research examining the relationship between scarcity and consumer behavior outcomes. The search was not restricted to any particular publication form and included the following methods to identify all relevant research conducted since the publication of commodity theory (Brock 1968) as available per May 2020:

(1) Searches for the keywords “scarcity,” “consumer,” “choice,” and “decision,” in the ABI/INFORM Collection, Business Source Premier, Google Scholar, ProQuest Dissertations and Theses, PsycARTICLES, PsycINFO, Scopus, and Web of Science databases;

(2) A search of the Social Sciences Citation Index based on Lynn’s (1991) meta-analysis;

(3) Manual searches of journals and conference proceedings that frequently include articles on scarcity cues and heuristics: *Journal of Advertising, Journal of Consumer Research, Journal of Marketing, Psychology and Marketing, International Journal of Research in Marketing, Journal of Marketing Research,* and *Journal of Personality and Social Psychology.*

(4) Backward and forward citation chaining of all found relevant articles using Google Scholar, Scopus, and Web of Science databases; and

(5) A call on ELMAR (Electronic List of Marketing Academics and Researchers) for unpublished work.

Variable Coding

The search process produced 540 unique works related to the effects of scarcity cues and tactics and consumer behavior outcomes. However, to be included in the meta-analysis, a study had to include (1) a treatment that allowed the comparison of a scarce consumer product with a control condition, and (2) an interpretable dependent variable related to the marketing mix. Applying these criteria, 416[3] effect sizes were included in the meta-analysis. See web appendix 1 for a list of works included in the meta-analysis.

Dependent Variables. The dependent variables included in the meta-analysis comprised effect sizes that measured the relationship between manipulations of scarcity and an interpretable consumer behavior outcome measure related to the marketing mix. Dependent variables were grouped according to whether the effect size measured a relationship between scarcity cues and attitude, desirability, enjoyment, exclusivity, purchase intentions, popularity, quality, value, and willingness-to-pay. Illustrative examples of the various operationalizations' of coded variables are in Table 1.

[3] The complete dataset comprised 425 effect sizes from 74 papers. Nine effect sizes were identified as outliers, leaving a final data set of $k = 416$.

TABLE 1

THE EFFECT OF SCARCITY ON CONSUMER BEHAVIOR: DEFINITIONS, EXAMPLE OPERATIONALIZATIONS, AND ILLUSTRATIVE ARTICLES

Variable	Definition	Operationalization and illustrative articles
Outcomes		
Attitude	The tendency to respond to a product with some degree of favorableness or unfavorableness	Attitude towards deal (e.g. Aggarwal and Vaidyanathan 2003) Attitude towards product (e.g. Lee and Seidle 2012) Attitude towards price (e.g. Howard and Kerin 2006) Deal evaluation (e.g. Inman et al 1997), Attitude towards brand (e.g. Jang et al 2015), Evaluation (e.g. Worchel 1975) Falsity inference (e.g. Lee et al 2018) Perceived fairness of price (e.g. Heo 2010), Product evaluation (e.g. Shen 2011) Sales tactic inference (e.g. Lee et al 2016)
Desirability	A feeling of wanting to have something	Affective evaluation (e.g. Pons 2004), Attractiveness (e.g. Szybillo 1975), Desirability (e.g. Lynn 1987)
Enjoyment	The pleasure derived from consuming the product	Immediate enjoyment (e.g. Sevilla and Redden 2014), Liking (e.g. Zhu and Ratner 2015), final enjoyment (e.g. Sevilla and Redden 2014)
Exclusivity	The perception that a product is restricted to a person or group and is not available elsewhere	Perceived exclusiveness (e.g. van Herpen et al. 2009)
Popularity	The perception that a product is consumed by many	Perceived popularity (e.g. Castro et al 2013)
Purchase intentions	The likelihood of selecting, purchasing, or consuming a product	Behavioral intentions (e.g. Heo 2010); Choice (e.g. Mittone and Savadori 2009); Preference (e.g. Zhu and Ratner 2015); Product usage (e.g. Folkes et al 1993); Purchase (e.g. Ramanathan and Dhar 2010); Purchase intentions (e.g. Inman et al 1997); Purchase likelihood (e.g. Castro et al 2013), Quantity consumed (e.g. Sevilla and Redden 2014), repurchase intention (e.g. Shin et al. 2017); Sales (e.g. Amaldoss and Jain 2010); Selection (e.g. Sevilla and Redden 2014); Shopping intentions (e.g. Howard and Kerin 2007) Willingness to buy/participate (e.g. Lynn 1989)

Quality	The standard of a product as measured against other similar products	Perceived quality (e.g. Jeong and Kwon 2012)
Value	The perceived importance, worth, or usefulness of a product	Perception of value (e.g. Eisend 2008)
Willingness-to-pay	The amount a consumer is willing to pay for a product	Average amount a participant is willing to pay (e.g. Abendroth and Diehl 2006)
Moderators		
Source of scarcity		
Demand-based	Limitation on the available units due to excess consumer demand	Advertisement (e.g. Gierl and Huettl 2010); Shelf-based scarcity (e.g. Parker 2011); Scenario (e.g. Ku et al. 2012)
Supply-based	Limitation on the available units on the part of the vendor	Limited edition (e.g. Gierl et al. 2008); Sales person (Knishinsky 1982); Limited stock (e.g.Lee and Seidle 2012); Restricted outlet (e.g. Lynn 1989)
Time-based	Limitation on the available units on the part of the vendor due to a time window or expiration date	Time-limited promotion (e.g. Inman et al. 1997); Seasonal restriction (e.g. Sevilla and Redden 2014)
Consumption intention	The primary intention of the consumption episode	Categorical: experience (e.g.Castro et al. 2013), material good (e.g. Aggarwal et al. 2011)
Product benefits	The benefits the product primarily provides	Categorical: hedonic (e.g. Lee and Seidle 2012), utilitarian (e.g. Jeong and Kwon 2012)
Source of scarcity cue	The mode of delivery of the source of scarcity	Categorical: advertisement (e.g. Mukherjee and Lee 2016), physical presentation (e.g. Parker 2011), scenario (e.g. Salerno and Sevilla 2019)
Involvement	The level of personal relevance that a product has for a consumer	Categorical: low (e.g. Sevilla and Redden 2014), medium (e.g. Ku et al. 2012), high (e.g. Lee et al. 2013)
Brand familiarity	How recognizable the brand is	Categorical: low (e.g. Gierl et al. 2008), high (e.g. Aggarwal et al. 2011)
Exploratory moderators		
Age	The length of time a consumer has lived	Continuous: the mean sample age the original authors report
Sex	Identified gender	Continuous: proportion of participants in the original sample that identified as female

Country of data collection	The location where data collection took place	Categorical: location of country of data collection
Design of study	The plan of an experiment	Categorical: between-, mixed-, within-subject design
Sample	The characteristics of the group of participants	Categorical: student sample or public sample
Publication status	The status of the manuscript or paper	Categorical: working paper, dissertation, or peer-reviewed publication
Year of publication	When the study first appears online or in print	Continuous: year of availability of the original study

Moderator variables. The moderating variables included in the meta-analysis were coded according to (1) source of scarcity (demand-based, supply-based, time-based); (2) consumption intention (whether the product was an experience or material good); (3) primary product benefits (hedonic or utilitarian); (4) level of involvement (low, medium, high); (5) source of scarcity cue (advertisement, physical presentation, scenario); and (6) brand familiarity (low, high).

In addition, consumer characteristics were coded as continuous variables according to (1) the mean age of the sample; and (2) the proportion of female participants in the sample. Lastly, we explored the data for potential differences based on methodological practices. Variables were coded categorically according to (1) country of data collection; (2) experimental design (between-, mixed-, within-subjects design); (3) consumption episode (actual, hypothetical); (4) publication status (dissertation, published, working paper); (5) sample composition (public, student), and (6) year of study availability (continuous). See web appendix 2 for a correlation matrix.

Effect Size Computation

The effect size statistic chosen for the meta-analysis was the standardized difference in means expressed as Cohen's d (Cohen 1977). This statistic compares groups according to their standardized mean scores for the dependent variables selected for the meta-analysis: attitude, desirability, enjoyment, exclusivity, purchase intentions, popularity, quality, value, and willingness-to-pay. To calculate the standardized mean difference, Cohen's (1977) formula was used: $d = \frac{Ms - Mc}{\mathrm{SD}}$, where M_s is the scarcity group mean, M_c is the control group mean, and SD is the pooled standard deviation. To account for differences in study sample size, each effect size was then weighted by the inverse of its variance (Marín-Martínez and Sánchez-Meca 2010). Each weighted effect size estimate was then corrected for error in the measurement of the dependent variable y. To calculate the reliability adjusted, inverse variance-weighted standardized mean difference δ, Bobko, Roth and Bobko's (2001) formula: $\delta = \frac{d}{\sqrt{\alpha_y}}$, where α_y represents the measurement reliability of y, was used. Most studies reported coefficient reliability values of y variables, such as Cronbach's α, which were used to estimate α_y. If a study did not report the reliability value of y, average reliabilities were imputed for the missing value. Sub-groups within studies were assumed to have a common among-study variance component, and thus within-group estimates of tau-squared were pooled. Sub-groups were then combined using a random effects model to yield the overall effect (Borenstein et al. 2013). To determine the presence of between-study heterogeneity, the Q statistic was used (Huedo-Medina et al. 2006) and a sensitivity analysis conducted to examine the dataset for outliers and publication bias.

Sensitivity Analysis

In any meta-analysis, the presence of influential cases and outliers can affect not only the magnitude of the effect, but also the robustness and validity of conclusions drawn (Viechtbauer and Cheung 2010). To ensure the results were not biased by any influential cases, a sensitivity analysis was conducted to examine the dataset for outliers and publication bias.

Outliers were identified by following the procedure outlined in Hedges and Olkin (2014) and Viechtbauer and Cheung (2010). Standardized residuals were calculated for each effect size, and effect sizes with standardized residuals equal to or greater than 3 in absolute value were considered outliers. Nine studies were identified as outliers (see web appendix 3). The meta-analysis was conducted with these studies removed to ensure mean effect sizes were not biased by extreme cases. To assess publication bias the file drawer *N,* or the number of studies with a null result required to reduce the combined probability level to $\alpha = .05$ (Rosenthal 1979) was calculated.

RESULTS

The data in this meta-analysis were analyzed using the software Comprehensive Meta-Analysis (Borenstein et al. 2013). A mixed effects model was estimated to allow for variation within and between studies, such that the combined effect estimates the overall mean effect for the distribution (Borenstein, Hedges, and Rothstein 2007). Within-study estimates were pooled using the fixed effect z before calculating the 95% confidence interval and random effect z between studies (Hunter and Schmidt 2004). First, the different sources of scarcity were combined to explore the aggregate effect of scarcity on each dependent variable coded. Following this, the moderating effect of each source of scarcity on each dependent variable was analyzed. Sub-group analyses were performed to examine the moderating effect of source of scarcity cue, product characteristics, consumer characteristics, and methodological practices. As all consumer behavior outcomes in the meta-analysis are positively valenced outcome measures, dependent variables were pooled to conduct the moderator analysis.

TABLE 2

THE EFFECT OF SCARCITY ON CONSUMER BEHAVIOR

	k	*N*	δ	CI	*z*	FD
Effect of scarcity on						
Attitude	76	18,766	0.15	0.05-0.24	3.07**	827
Desirability	52	6,650	0.25	0.13-0.36	4.22***	1112
Enjoyment	14	1,926	0.33	0.11-0.54	3.00**	157
Exclusivity	6	492	0.52	0.15-0.89	2.79**	32
Popularity	12	1,122	0.71	0.46-0.96	5.57***	329
Purchase intentions	193	22,655	0.31	0.25-0.37	10.01***	20400
Quality	25	2,969	0.47	0.30-0.64	5.33***	760
Value	20	1,867	0.37	0.18-0.57	3.73***	264
Willingness-to-pay	18	1,749	0.47	0.26-0.67	4.52***	370

NOTE.—*k* = number of effect sizes; *N* = number of participants in the original studies; δ = reliability corrected inverse variance-weighted standardized mean difference; CI = lower and upper limit of the 95% confidence interval around the reliability corrected inverse variance-weighted standardized mean difference; *z* = test of null (two-tailed); FD = file-drawer N giving an indication of publication bias.

. $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Effect of scarcity cues on consumer behavior outcomes

"Value" as defined by commodity theory refers to a commodity's "potency for affecting attitudes and behavior" (Brock 1968). Our analysis includes a range of dependent variables that reflect this broad concept and shows that scarcity has positive effects for each of these (see Table 2). Scarcity leads to more favorable attitudes ($\delta = 0.15$, $z = 3.07$, $p < .01$), increased product desirability ($\delta = 0.25$, $z = 4.22$, $p < .001$) and enjoyment ($\delta = 0.33$, $z = 3.00$, $p < .01$), enhanced perceptions of exclusivity ($\delta = 0.52$, $z = 2.79$, $p < .01$), popularity ($\delta = 0.71$, $z = 5.57$, $p < .001$), quality ($\delta = 0.47$, $z = 5.33$, $p < .001$), value ($\delta = 0.37$, $z = 3.73$, p < .001), greater purchase intentions ($\delta = 0.31$, $z = 10.01$, $p < .001$) and willingness-to-pay ($\delta = 0.47$, $z = 4.52$, $p < .001$). So, scarcity increases value regardless of its type of manifestation.

When considering the sources of scarcity, differences emerge between the effect of demand, supply, and time-based scarcity (see web appendix 4). Demand-based scarcity has the largest effects on perceived popularity ($\delta = 0.82$, $z = 5.10$, $p < .001$) and quality ($\delta = 0.51$, $z = 4.73$, $p < .001$), with a smaller effect on purchase intentions ($\delta = 0.28$, $z = 5.35$, $p < .001$). This is consistent with bandwagon effects (Parker 2011; Van Herpen et al. 2009), which means that demand for a product increases due to the fact that others are consuming it (Leibenstein 1950). In situations of demand-based scarcity informational cascades occur and consumers base their decisions on the belief that other consumers are more knowledgeable, and so start mimicking these other consumers' behavior (Bikhchandani, Hirshleifer, and Welch 1998). When scarcity causes consumers to interpret the prior behavior of other consumers, popularity and quality inferences also occur. Finally, there is no significant effect of demand-based scarcity on attitude.

Supply-based scarcity has the largest effects on perceptions of quality ($\delta = 0.74$, $z = 2.84$, $p < .01$) and value ($\delta = 0.64$, $z = 5.48$, $p < .001$). When products are scarce because a supplier places a deliberate limitation on the number and quantity of products available for purchase, scarcity signals higher product quality and enhanced value perceptions (Stock and Balachander 2005). These effects have been found to be particularly strong for consumers who value exclusivity (Balachander and Stock 2009) and uniqueness (Snyder and Fromkin 1977). Our results further show significant, albeit smaller effects of supply-based scarcity for attitude ($\delta = 0.16$, $z = 2.83$, $p < .01$), desirability ($\delta = 0.21$, $z = 5.53$, $p < .001$), purchase intentions ($\delta = 0.38$, $z = 6.28$, $p < .001$), and willingness-to-pay ($\delta = 0.44$, $z = 3.36$, $p < .001$).

For time-based scarcity, the largest effect is found for willingness-to-pay ($\delta = 0.43$, $z = 2.28$, $p < .05$), noting the effect is of similar size as the effect of supply-based scarcity on willingness-to-pay. Other significant effects of time based scarcity include effects on attitude ($\delta = 0.25$, $z = 2.35$, $p < .05$), desirability ($\delta = 0.21$, $z = 2.81$, $p < .01$), enjoyment ($\delta = 0.35$, $z = 6.18$, $p < .001$), and purchase intentions ($\delta = 0.34$, $z = 3.41$, $p < .001$). Time-based scarcity did not significantly affect perceptions of quality ($\delta = 0.06$, $z = 0.26$, $p = .797$) or value ($\delta = 0.30$, $z = 1.38$, $p = .166$).

Product, consumer, and study level moderator analysis

The following analysis considers the moderating effect of different sources of scarcity on consumer behavior (see table 3 for a summary of effect sizes). A significant difference emerges between sources of scarcity for hedonic products ($Q_{(2)} = 7.46$, $p < .05$) and how they affect consumer behavior. Supply-based scarcity has the largest effect ($\delta = 0.36$, $z = 8.37$, $p < .001$), followed by time-based scarcity ($\delta = 0.27$, $z = 4.92$, $p < .001$), and demand-based scarcity ($\delta = 0.19$, $z = 4.03$, $p < .001$). The source of scarcity is also significantly heterogeneous for utilitarian products ($Q_{(2)} = 19.07$, $p < .001$), with demand-based scarcity having the largest effect on consumer behavior ($\delta = 0.48$, $z = 8.01$, $p < .001$). Supply-based scarcity and time-based scarcity do not significantly affect consumer behavior for utilitarian products ($\delta = 0.06$, $z = 0.55$, $p = .579$ and ($\delta = 0.05$, $z = 0.42$, $p = .672$ respectively).

Advertising is also significantly heterogeneous ($Q_{(2)} = 8.03$, $p < .05$). Advertising of supply-based scarcity has the largest effect ($\delta = 0.32$, $z = 7.69$, $p < .001$), followed by time-based scarcity cues ($\delta = 0.27$, $z = 5.25$, $p < .001$). In contrast, there is no significant effect of advertising for demand-based scarcity ($\delta = 0.07$, $z = 0.88$, $p = .380$). This suggests that when considering which type of source to focus on in marketing communication to promote a product, the use of supply-based scarcity tactics will be most effective.

When examining differences in outcome for the level of product involvement; supply-based scarcity has the biggest impact on consumer behavior outcomes for medium involvement products ($\delta = 0.47$, $z = 7.66$, $p < .001$) while demand-based scarcity has the largest effect on low involvement products ($\delta = 0.43$, $z = 8.24$, $p < .001$). There is no difference in consumer behavior outcomes between the sources of scarcity for high involvement products ($Q_{(2)} = 1.12$, $p = .606$). The latter may be due to the increased elaboration in the decision-making process as the consumer's involvement increases.

No significant difference is found between sources of scarcity when considering the effects for experiences ($Q_{(2)} = 2.09$, $p = .352$), material goods ($Q_{(2)} = 0.32$, $p = .850$), physical presentation of products ($Q_{(2)} = 1.52$, $p = .468$), for scenario based message sources ($Q_{(2)} = 0.96$, $p = .620$), or for brands low ($Q_{(2)} = 2.65$, $p = .266$) or high in familiarity ($Q_{(2)} = 2.43$, $p = .297$).

Turning to consumer characteristics, effects of scarcity cues on consumer behavior are greatest for younger consumers ($\delta = -0.01$, $z = -1.65$, $p < .10$) while there is no significant effect of sex ($Q_{(1)} = 1.91$, $p = .167$).

Exploring the effect of different methodological practices, the effect size for country of data collection was significantly heterogeneous ($Q_{(6)} = 21.92$, $p < .001$), with India having the largest effects of scarcity cues ($\delta = 0.78$, $z = 5.75$, $p < .001$), and the smallest effects occurring in Germany ($\delta = 0.19$, $z = 3.38$, $p < .001$). Scarcity cues produce the largest effects in within-subjects designs ($\delta = 0.54$, $z = 6.53$, $p < .001$) and in working papers ($\delta = 0.80$, $z = 4.05$, $p < .001$). There is no significant difference in effect sizes for the type of consumption episode ($Q_{(1)} = 0.91$, $p = .339$), sample composition ($Q_{(1)} = 2.54$, $p = .111$) and year of publication ($Q_{(1)} = 0.27$, $p = .603$).

TABLE 3

THE MODERATING EFFECT OF DIFFERENT TYPES OF SCARCITY

	k	*N*	δ	CI	*z*	*Q*
Consumption intention						
Experience						
Demand-based scarcity	67	7,651	0.28	0.16- 0.39	4.63 ***	
Supply-based scarcity	44	5,158	0.38	0.24- 0.53	5.12 ***	2.09
Time-based scarcity	49	4,661	0.24	0.10- 0.38	3.26 ***	
Material good						
Demand-based scarcity	66	7,103	0.34	0.23- 0.46	5.89 ***	
Supply-based scarcity	101	9,875	0.32	0.23- 0.42	6.72 ***	0.32
Time-based scarcity	30	4,087	0.38	0.21- 0.55	4.50 ***	
Product benefits						
Hedonic						
Demand-based scarcity	91	9,971	0.19	0.10- 0.28	4.03 ***	
Supply-based scarcity	111	12,302	0.36	0.28- 0.45	8.37 ***	7.46 *
Time-based scarcity	69	7,317	0.27	0.16- 0.38	4.92 ***	
Utilitarian						
Demand-based scarcity	41	4,813	0.48	0.37- 0.60	8.01 ***	
Supply-based scarcity	14	1,388	0.06	-0.15- 0.27	0.55	19.07 ***
Time-based scarcity	11	1,436	0.05	-0.17- 0.27	0.42	

Source of scarcity cue						
Advertisement						
Demand-based scarcity	20	7,408	0.07	-0.08- 0.22	0.88	
Supply-based scarcity	81	14,224	0.32	0.24- 0.40	7.69 ***	8.03 *
Time-based scarcity	50	6,003	0.27	0.17- 0.37	5.25 ***	
Physical presentation						
Demand-based scarcity	76	8,137	0.41	0.31- 0.50	8.63 ***	
Supply-based scarcity	17	1,930	0.27	0.08- 0.47	2.73 **	1.52
Time-based scarcity	16	1,976	0.40	0.21- 0.59	4.07 ***	
Scenario						
Demand-based scarcity	50	5,740	0.23	0.07- 0.38	2.89 **	
Supply-based scarcity	56	5,231	0.31	0.16- 0.46	4.13 ***	0.96
Time-based scarcity	21	1,401	0.18	-0.08- 0.45	1.24	
Level of involvement						
Low						
Demand-based scarcity	58	9,750	0.43	0.33- 0.54	8.24 ***	
Supply-based scarcity	46	9,394	0.20	0.09- 0.31	3.50 ***	10.90 **
Time-based scarcity	48	6,114	0.23	0.12- 0.34	4.07 ***	
Medium						
Demand-based scarcity	74	7,916	0.19	0.08- 0.31	3.23 ***	
Supply-based scarcity	75	6,790	0.47	0.35- 0.59	7.66 ***	11.26 **
Time-based scarcity	19	1,905	0.43	0.21- 0.66	3.73 ***	
High						
Demand-based scarcity	7	2,704	0.08	-0.22- 0.38	0.52	
Supply-based scarcity	34	5,118	0.24	0.10- 0.39	3.33 ***	1.12
Time-based scarcity	20	1,402	0.27	0.05- 0.49	2.40 **	

Brand familiarity								
Low								
Demand-based scarcity	32	7,834	0.43	0.29- 0.57	6.08	***		
Supply-based scarcity	46	8,159	0.45	0.33- 0.57	7.15	***	2.65	
Time-based scarcity	24	3,278	0.29	0.14- 0.45	3.65	***		
High								
Demand-based scarcity	39	5,417	0.17	0.03- 0.31	2.33	*		
Supply-based scarcity	35	4,650	0.33	0.18- 0.48	4.36	***	2.43	
Time-based scarcity	23	2,815	0.25	0.07- 0.44	2.68	**		
Consumer characteristics								
Age	125	24,733	-0.01	-0.03- 0.00	-1.65		2.72	·
Sex	203	32,841	0.00	-0.01- 0.00	-1.38		1.91	
Methodological								
Country of data collection								
Canada	31	2,202	0.42	0.26- 0.58	5.14	***		
Germany	55	15,310	0.19	0.08- 0.30	3.38	***		
India	10	1,024	0.78	0.51- 1.05	5.75	***		
Korea	18	1,733	0.40	0.20- 0.60	3.94	***	21.92	***
Taiwan	28	2,990	0.31	0.16- 0.47	3.90	***		
The Netherlands	22	1,570	0.41	0.22- 0.60	4.22	***		
United States of America	219	30,143	0.27	0.22- 0.33	9.51	***		
Design of study								
Between-subjects	317	34,787	0.31	0.27- 0.36	12.79	***		
Mixed design	71	17,478	0.18	0.08- 0.27	3.49	***	14.62	***
Within-subjects	28	5,931	0.54	0.37- 0.70	6.53	***		
Consumption episode								
Actual	30	3,515	0.38	0.22- 0.54	4.70	***	0.91	
Hypothetical	384	54,481	0.30	0.25- 0.34	13.09	***		

Sample								
Public	124	14,083	0.25	0.17- 0.34	6.10	***	2.54	
Student	283	34,082	0.33	0.28- 0.39	11.86	***		
Publication status								
Dissertation	71	8,014	0.37	0.26- 0.47	7.02	***		
Peer-reviewed	339	49,837	0.28	0.24- 0.33	11.89	***	8.40	**
Working paper	6	345	0.80	0.41- 1.19	4.05	***		
Year of publication	416	58,196	0.00	0.00- 0.01	0.53		0.28	

NOTE.—k = number of effect sizes; N = number of participants in the original studies; δ = reliability corrected inverse variance-weighted standardized mean difference; CI = lower and upper limit of the 95% confidence interval around the reliability corrected inverse variance-weighted standardized mean difference; z = test of null (two-tailed); Q = test of difference between moderator levels. . $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Purchase intentions

We also uncover a number of moderating variables for purchase intentions as a dependent variable (see web appendix 5 for a summary of effect sizes). First, for experiences, supply-based scarcity has a greater effect ($\delta = 0.60$, $z = 3.97$, $p < .001$) than demand-based ($\delta = 0.21$, $z = 2.51$, $p < .01$) or time-based scarcity ($\delta = 0.28$, $z = 1.86$, $p < .10$). We suggest that for experiences, sources of scarcity that stimulate a fear of missing out are most effective in influencing purchase intentions. This is because experiences are subject to purchase timing importance. Consumers are averse to missing out on planned consumption (Tully and Sharma 2018), and therefore sources of scarcity that illustrate constraints on a consumer's ability to obtain an experience are more effective than sources of scarcity that do not. In line with this reasoning, we see supply-based scarcity having the largest effect on purchase intentions for hedonic purchases ($\delta = 0.55$, $z = 5.63$, $p < .001$), followed by time-based scarcity ($\delta = 0.33$, $z = 2.64$, $p < .01$), while demand-based scarcity has the smallest effect, although still significant ($\delta = 0.17$, $z = 2.44$, $p < .01$). In contrast, using demand-based scarcity can particularly motivate consumer purchase intentions of utilitarian products ($\delta = 0.41$, $z = 5.86$, $p < .001$). This is also consistent with demand-based scarcity being most effective for low-involvement products ($\delta = 0.36$, $z = 5.09$, $p < .001$).

Finally, supply-based scarcity communicated through advertisements has a greater effect on purchase intentions ($\delta = 0.68$, $z = 5.37$, $p < .001$) than does time-based scarcity ($\delta = 0.26$, $z = 2.20$, $p < .05$), while there is no significant effect of demand-based scarcity. In contrast, the effect for physical presentation is largest for demand-based scarcity ($\delta = 0.32$, $z = 5.42$, $p < .001$) while it is non-significant for supply-based scarcity.

GENERAL DISCUSSION

This paper presented a meta-analysis that extends previous research into scarcity effects by (1) comprehensively summarizing existing research into the role of scarcity in marketing; (2) extending Lynn's (1991) meta-analysis by expanding the number and type of dependent variables examined and distinguishing between different sources of market-based scarcity; and (3) identifying and testing new moderator variables and context effects of scarcity. The results confirm that scarcity has consistently positive and robust effects on a range of consumer behavior outcomes. They also show, however, that the size of the effect varies significantly across product types, purchase conditions and consumer characteristics. As such the findings integrate, extend, and refine previous scarcity research and provide new insights useful for managers and for future research and theory development.

Extending the analysis by Lynn (1991), our analysis included a range of dependent variables that reflect the broad concept of value. For all variables, scarcity showed significant positive effects, indicating its effect is robust across different dimensions of value. To the extent the data allowed, we analyzed how scarcity effects differ based on its source. We found that, consistent with bandwagon effects (Parker 2011; Van Herpen et al. 2009), demand-based scarcity has a particularly large effect on perceived popularity but also has a large effect on perceived quality. While it has no effect on attitude, its effect on perceived value was not available. Supply-based scarcity has particularly large effects on quality and value perceptions. The effects of time-based scarcity on value-related variables such as desirability or enjoyment were significant but modest and there were no significant effects for time-based scarcity on either value or quality perceptions; instead, time-based scarcity had the largest effect on willingness to pay.

We suggest that supply-based scarcity signals higher product quality and enhanced value perceptions (Stock and Balachander 2005) because supply-scarce products serve as efficient markers of uniqueness, helping satisfy the need to distinguish oneself from the 'herd' (Leibenstein 1950). This accords with consumers with a greater need for uniqueness having been found to value a product's exclusivity (Gierl and Huettl 2010). An implication of this is that supply-based scarcity cues are better coupled with products that meet these needs, in particular conspicuous consumption goods and products offered by symbolic brands (Aggarwal et al. 2011). Time-based scarcity's large effect on willingness-to-pay may rest in that as the expiration date approaches (Aggarwal and Vaidyanathan 2003), consumers seek to reduce any anticipated regret caused by missing the deadline (Inman and McAlister 1994) and forfeiting the purchase opportunity. Also, restricting the time available to purchase a product has an accelerating effect on purchases (Aggarwal and Vaidyanathan 2003). Consequently, the closer the deadline, the greater the willingness to buy and the lower the intention to search further, triggering a sense of urgency to act and avoid anticipated regret.

We also analyzed various moderators of the effects of source of scarcity on (pooled) consumer behaviors. Supply-based scarcity has the larger effect for hedonic products while demand-based scarcity has the larger effects for utilitarian products. Supply-based scarcity also has the larger effects for advertising. We suggest this means that when considering which type of source to focus on in marketing communication to promote a product, the use of advertising for supply-based scarcity tactics will be most effective. We further found that demand-based scarcity has the largest effect for low involvement products while there is no source difference for high involvement products. The latter may be due to the increased elaboration in the decision-making process as the consumer's involvement increases. As the consumer elaborates, the decision making process moves from casual to deliberative, paying more attention to brands, product attributes, and other features that satisfy the consumers goal (Mittal and Lee 1989). Inferences drawn from different sources of scarcity would thus attenuate as the consumer increases the involvement with the product and the decision.

Our analysis showed that demand-based scarcity cues produce an effect two and a half times greater for unfamiliar brands than for familiar brands. Moreover, we found no differences between scarcity sources when considering the effects for brand familiarity levels. This is important as it means that effect of familiarity is robust across types of scarcity. This is consistent with the literature proposing that when a brand or product is unfamiliar, scarcity serves as a scarce-is-good heuristic (Cialdini 1993) by which consumers infer a products quality, positively influencing attitudes (Griskevicius et al. 2009). We also find no difference between scarcity sources when examining the effects for physical presentation of products on consumer behaviors. We suggest this is because products scarce due to supply have a naturally diminished physical presence compared to products scarce due to demand or time, in which case the scarce physical presence is a stronger marker of potential unavailability.

Analyzing effects on purchase intent we found that for experiences, supply-based scarcity has the greater effect. We suggested that for experiences, sources of scarcity that stimulate a fear of missing out are most effective in influencing purchase intentions. We found supply-based scarcity also having the largest effect on purchase intentions for hedonic purchases. Restricting the supply, as well as constraining the time available to obtain a hedonic purchase seem particularly effective for motivating consumer responses to these types of purchases. In contrast, our findings suggest that demand-based scarcity can particularly motivate consumer purchase intentions of utilitarian products, which is consistent with demand-based scarcity being most effective for low-involvement products.

In sum, our findings largely reconfirm but also broaden the results of Lynn's (1991) analysis as well as allow a more refined insight into the conditions where scarcity cues are particularly effective versus those where their effects are only modest. Our analysis followed Lynn and similarly was largely based on commodity theory (Brock 1968). Nevertheless, scarcity effects can be explained from a range of perspectives. While commodity theory seems the most versatile and can explain many of the observed effects, there are other perspectives that can provide complementary insights into the effects of scarcity on consumer behavior. Shi et al. (2020) recently summarized these frameworks as consisting of conformity theory, regret theory, and reactance theory. Conformity theory predicts that consumers follow group norms and are not firstly motivating by seeking exclusivity as proposed by commodity theory, and also uniqueness theory (Fromkin 1970; Snyder and Fromkin 1977), but instead rely on others' behavior, in particular popularity cues, to determine the value of a product (or the nature of a threat, when considering risk). The prominent effect of demand-based scarcity on popularity is directly aligned with this explanation, although it is not inconsistent with commodity theory.

The regret and reactance frameworks might help explain the lack of effects observed for attitude. From a consumer's perspective, when encountering a situation where product scarcity exists, a consumer will try to make sense of the situation and attribute the scarcity either internally (e.g., to self-induced inaction in obtaining a product 'quick enough') or externally (e.g., to the supplier or to outside factors such as the market or the wider environment). Whereas the scarcity itself will signal popularity and quality, it is the inferred reasons for the scarcity that will invoke particular attitudes and that also may arouse particular emotions. Regret in terms of fear of missing out or in terms of regret of engaging with a particular supplier - including the extent to which a scarcity situation is considered as 'fair' - is not considered in the commodity or conformity frameworks but may play significant roles in determining consumer responses. Even more so, reactance may play a role where consumers feel forced or limited in their freedom to choose or more generally perceive a lack of agency (Brehm 1989). Our meta-analysis did not include variables that relate to these frameworks as too few studies included such variables. This is not to mean these variables are not relevant. There are many examples which can demonstrate the role of consumer emotions and the importance of primal responses to situations of scarcity, including aggression towards retailers for lack of stock during a pandemic. The lack of studies that include such variables indicates the importance of including these variables in future research.

Implications

The evidence presented here is relevant to marketing practitioners who utilize scarcity cues and tactics in their marketing campaigns. For marketers of low involvement and utilitarian products, cues indicating demand-based scarcity are the most effective at influencing consumer behavior. Marketing campaigns highlighting strong prior consumer demand will stimulate further consumer demand, and this is particularly the case with physical displays of products. For shelf-based goods, physical displays with partially depleted stock levels will help drive consumer inference of product popularity and quality, extending through to preference and purchase intentions. For marketers of medium involvement and hedonic products, supply-based scarcity cues have the greatest influence on consumer behavior. For these product types, marketing communications featuring advertising of the restricted supply has the greatest effect on consumer purchase intentions. For marketers of experiential products, supply-based scarcity cues have the largest effect on purchase intentions. Practically speaking, communicating restricted opportunities to obtain and participate in an experience will lift purchase intentions approximately 35% more than utilizing demand-based scarcity cues.

Our results identified that the effect of brand familiarity does not differ significantly between sources. That is, each source of scarcity has a similar effect on consumer behavior for brands low in familiarity. Depending on whether the innovation is hedonic or utilitarian, low, medium, or high involvement, or material or experiential, marketers might consider communicating the most appropriate source of scarcity according to the relevant product's attributes. For example, a marketer introducing a low-involvement washing powder would do best utilizing demand-based scarcity cues communicated via partially depleted stock shelves. This would stimulate an informational cascade, such that consumers infer the product's popularity and quality and consider purchasing. On the other hand, a hedonic experience would best be marketed under restricted supply cues, communicating exclusivity and stimulating snob effects and greater purchase intentions.

Stability over time

A notable finding from the meta-analysis presented here is the effect of scarcity cues on perceptions of value returning a similar effect size to that found by Lynn (1991), with no significant difference in effect size being found for year of publication. This indicates that the psychological effects of scarcity are stable across time. Lynn's (1991) meta-analysis included 51 effect sizes from 41 studies and produced a mean effect size of $r = 0.12$ for scarcity's enhancement of value. The dependent variable in Lynn's analysis combined effect sizes for value and desirability, whereas this meta-analysis explores the effects of scarcity cues on these variables separately. For comparison of the effects of scarcity on value as (Lynn 1991) conceptualized, we combined the dependent variables of value and desirability for follow up analysis. With the dependent variables of value and desirability combined, our meta-analysis replicates Lynn's (1991) finding, with a similar sized mean correlation of $r = 0.14$ ($z = 5.70$, $p < 0.001$) based on an increased sample size of $k = 72$. Further expanding the conceptualization of value to include all consumer behavior measures coded ($k = 416$), scarcity produces a slightly larger effect of $r = 0.15$ ($z = 13.63$, $p < .001$). Notwithstanding this modest difference, it can be seen that the effects of scarcity are stable and similar in size across time.

Despite a replication of the size of scarcity's effect on value, several conceptual and methodological differences exist between Lynn's (1991) meta-analysis and the one presented here. First, Lynn coded effect sizes based upon scarcity, restriction, cost/effort, delay, or other, and did not distinguish between demand-based, supply-based, or time-based scarcity. In contrast, this meta-analysis operationalizes scarcity as restrictions on quantity (demand or supply) and time, and excludes studies that measured effort or generalized restriction as an operationalization of scarcity. Second, Lynn's meta-analysis included studies that operationalized commodities as information-based messages, whereas this meta-analysis focuses only on consumer products (including experiences) and excludes studies examining the effects of scarcity on informational messages (unless relating to sales events), personality attributes, and health conditions. Third, Lynn's meta-analysis had too few studies to conduct meaningful moderator analysis, with three of twelve subgroups in his meta-analysis containing fewer than five studies. In contrast, this meta-analysis only reports results from relationships that have five or greater studies. Lastly, Lynn's meta-analysis weighted each observation equally, whereas this meta-analysis computes a weighted mean and accounts for sampling error within and between studies by weighting each observation by the inverse of its variance. This process ensures that the combined effect is not biased by effect sizes drawn from large studies and that small studies are not trivialized (Borenstein et al. 2007).

Limitations and future research

As with any research, several limitations should be mentioned. First, despite heterogeneity in the outcomes included in the meta-analysis, a lack of data meant that moderating effects could not be explored for each dependent variable individually, with the exception of purchase intentions. Moreover, purchase intentions do not always result in actual purchases, and the relative paucity of studies reporting actual rather than hypothetical behavior suggests there is room for future research to uncover exactly how scarcity cues operate in real shopping environments compared to lab-based scenarios. Second, there are challenges faced by marketing managers in implementing the principles of scarcity and more research is needed into how scarcity can be strategically used, including how scarcity principles should be implemented, as also noted by Shi et al. (2020). For example, in the case of demand-based scarcity, what is the optimum level of empty shelf-space in order to stimulate bandwagon effects? Is there a negative impact of leaving shelf-space empty? Leaving shelf-space unreplenished will increase the risk of stockouts but it also may make a cluttered impression on customers, possibly undermining the customer experience and the store's image, or it may result in other items temporarily taking over the shelf space (e.g. Koschat 2008). Also, as Castro et al. (2013) identified, while empty shelf space suggests popularity, products displayed in a disorganized fashion can result in perceptions of product contamination. To continue with an example for supply-based scarcity, is there a minimum number of stock-keeping units that optimizes snob-effects among consumers? For example, will producing 20 Hermès Birkin handbags stimulate the same sense of exclusivity as producing 100, or even 200 handbags? And, does this change depending on other moderating variables identified in this meta-analysis, such as consumption intention and product benefits? Similarly, for time-based scarcity, how does the time interval selected by the vendor impact consumer behavior? For example, at which point will customers feel excluded or unfairly treated, with the possibility of reactive behavior emerging?

Finally, whilst our meta-analysis confirms a consistent effect of scarcity on consumer behavior across time, there still remains much to be learnt of the effect of scarcity across cultures and also at the individual level. An early study by Jung and Kellaris (2004) shows that lower context cultures such as the United States are more prone to the effects of scarcity compared to higher context cultures such as France, and this effect is moderated by uncertainty avoidance and need for cognitive closure. Considering that online shopping provides consumers the opportunity to shop globally from the comfort of their home, and the ability of marketers to tailor messages and websites based on a range of variables including IP address, a thorough understanding of the interplay between culture and scarcity is critical.

APPENDIX 1

WORKS INCLUDED IN THE META-ANALYSIS

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APPENDIX 2

CORRELATION MATRIX (Pearson r values, N = 425)

Correlations

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. Source of scarcity	1.00											
2. Exp vs MG	0.04	1.00										
3. Hedonic	0.027	.491**	1.00									
4. Involvement	-0.025	.288**	.210**	1.00								
5. Message source	-0.086	-.104*	.182**	.142**	1.00							
6. Brand familiarity	0.017	-.209**	0.085	.108*	.256**	1.00						
7. Country	-.156**	.193**	.248**	0.029	0.04	.281**	1.00					
8. Design	-0.053	0.039	0.069	0.079	-.168**	0.087	-0.041	1.00				
9. Scenario	-.252**	.233**	0.093	.204**	-0.078	-.133**	.192**	0.006	1.00			
10. Sample	-0.092	.170**	0.072	-0.048	0.027	-.115*	.202**	-.123*	0.079	1.00		
11. Pub Status	.265**	.099*	0.011	0.054	-0.072	0.01	.338**	-0.087	-0.006	.169**	1.00	
12. Year of Pub	-.211**	0.009	0.07	-0.086	-.148**	-.205**	-0.039	-0.079	-.098*	-.109*	0.039	1.00

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

APPENDIX 3

OUTLIER STUDIES BASED ON STANDARDIZED RESIDUALS

Study	**Outcome**	**Std Residual**
Lee, Oh, and Jung 2018 (1) (Demand)	Attitude	4.104
Lee, Oh, and Jung 2018 (1) (Time)	Attitude	4.515
van Herpen et al. 2009 (3) (Supply)	Exclusivity	4.384
van Herpen et al. 2009 (3) (Demand)	Exclusivity	-3.003
van Herpen et al. 2009 (2) (Demand)	Popularity	3.396
van Herpen et al. 2009 (3) (Demand)	Popularity	4.895
van Herpen et al. 2009 (3) Demand	Popularity	4.938
Ku et al. 2012 (3) (Demand)	Purchase intentions	4.820
Suri et al. 2007 (2) (Time)	Value	-3.787

APPENDIX 4

THE EFFECT OF DIFFERENT SOURCES OF SCARCITY ON CONSUMER BEHAVIORS

	k	*N*	δ	CI	*z*	FD
Effect of demand-based scarcity cues						
Attitude	22	7,269	0.04	-0.09-0.17	0.58	0
Popularity	9	963	0.82	0.51-1.14	5.10 ***	268
Purchase intentions	90	9,459	0.28	0.18-0.38	5.35 ***	3472
Quality	12	1,646	0.51	0.30-0.72	4.73 ***	243
Effect of supply-based scarcity cues						
Attitude	37	9,176	0.16	0.05-0.26	2.83 **	216
Desirability	34	4,269	0.21	0.14-0.29	5.53 ***	380
Purchase intentions	64	9,056	0.38	0.26-0.50	6.28 ***	3289
Quality	5	870	0.74	0.23-1.25	2.84 **	110
Value	8	979	0.64	0.41-0.87	5.48 ***	172
Willingness-to-pay	8	526	0.44	0.18-0.70	3.36 ***	35
Effect of time-based scarcity cues						
Attitude	17	2,321	0.25	0.04-0.47	2.35 *	114
Desirability	15	1,400	0.21	0.06-0.35	2.81 **	42
Enjoyment	10	1,355	0.35	0.24-0.46	6.18 ***	92
Purchase intentions	27	3,265	0.34	0.15-0.54	3.41 ***	485
Quality	8	453	0.06	-0.42-0.54	0.26	0
Value	8	550	0.30	-0.12-0.72	1.38	0
Willingness-to-pay	6	642	0.43	0.06-0.80	2.28 *	36

NOTE.—*k* = number of effect sizes; *N* = number of participants in the original studies; δ= reliability corrected inverse variance-weighted standardized mean difference; CI = lower and upper limit of the 95% confidence interval around the reliability corrected inverse variance-weighted standardized mean difference; *z* = test of null (two-tailed); FD = file-drawer N giving an indication of publication bias. * $p < .05$; ** $p < .01$; *** $p < .001$.

APPENDIX 5

SCARCITY AS A MODERATOR OF PURCHASE INTENTIONS

	k	*N*	δ	CI		*z*		*Q*	
Purchase intentions									
Consumption intention									
Experience									
Demand-based scarcity	37	4,013	0.21	0.05-	0.38	2.51	**		
Supply-based scarcity	14	836	0.60	0.30-	0.89	3.97	***	4.97	·
Time-based scarcity	12	1,199	0.28	-0.02-	0.57	1.86	·		
Material good									
Demand-based scarcity	47	5,086	0.34	0.19-	0.49	4.50	***		
Supply-based scarcity	43	4,067	0.34	0.18-	0.49	4.16	***	0.17	
Time-based scarcity	13	1,841	0.40	0.12-	0.68	2.84	**		
Product benefit									
Hedonic									
Demand-based scarcity	49	4,862	0.17	0.03-	0.31	2.44	**		
Supply-based scarcity	29	2,201	0.55	0.36-	0.74	5.63	***	9.63	**
Time-based scarcity	16	1,808	0.33	0.08-	0.57	2.64	**		
Utilitarian									
Demand-based scarcity	29	3,265	0.41	0.28-	0.55	5.86	***		
Supply-based scarcity	10	943	-0.02	-0.27-	0.23	-0.16		12.38	**
Time-based scarcity	6	870	0.02	-0.27-	0.30	0.13			
Source of scarcity cue									
Advertisement									
Demand-based scarcity	5	484	-0.03	-0.46-	0.40	-0.14			
Supply-based scarcity	18	1,177	0.68	0.43-	0.92	5.37	***	10.09	**
Time-based scarcity	17	2,135	0.26	0.03-	0.49	2.20	**		
Physical presentation									
Demand-based scarcity	54	5,607	0.32	0.21-	0.44	5.42	***	1.62	

Supply-based scarcity	11	1,215	0.14	-0.12-	0.40	1.04			
Level of involvement									
Low									
Demand-based scarcity	40	4,512	0.36	0.22-	0.50	5.09	***		
Supply-based scarcity	18	2,057	0.14	-0.06-	0.35	1.36		3.48	
Time-based scarcity	17	2,061	0.20	-0.01-	0.41	1.89	.		
Medium									
Demand-based scarcity	39	3,666	0.19	0.01-	0.37	2.06	*	5.70	*
Supply-based scarcity	26	1,781	0.54	0.31-	0.77	4.66	***		
Brand familiarity									
Low									
Demand-based scarcity	20	2,129	0.38	0.19-	0.58	3.88	***		
Supply-based scarcity	20	1,397	0.50	0.29-	0.70	4.65	***	1.48	
Time-based scarcity	6	818	0.26	-0.07-	0.60	1.45			
High									
Demand-based scarcity	22	2,452	0.15	-0.03-	0.34	1.64	.		
Supply-based scarcity	7	1,096	0.52	0.21-	0.84	3.27	***	4.01	
Time-based scarcity	12	1,364	0.26	0.01-	0.51	2.06	*		

NOTE.—k = number of effect sizes; N = number of participants in the original studies; δ = reliability corrected inverse variance-weighted standardized mean difference; CI = lower and upper limit of the 95% confidence interval around the reliability corrected inverse variance-weighted standardized mean difference; z = test of null (two-tailed); Q = test of difference between moderator levels.

. $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

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Chapter Four

Conclusion

This thesis set out to explore, theoretically and empirically, two important theories in consumer behaviour. First, I sought to understand what products consumers should buy when seeking to maximise happiness and well-being; and second, to examine how scarcity affects consumers when making decisions about which products to purchase.

In paper one, I integrated literature from consumer and social psychological perspectives testing the theory that consuming experiences delivers greater happiness and satisfaction than consuming material goods (Van Boven and Gilovich 2003). I developed an overarching conceptual model and tested this by meta-analysing 412 effect sizes from 128 published and unpublished studies. My results show that consuming experiences delivers greater happiness and satisfaction than consuming material goods, and this increased happiness and satisfaction stems from four psychological processes: experiences are more open to positive re-interpretation, are more central to consumers' identities, have greater story-telling value, and are less likely to engender social comparisons. The meta-analysis results also highlight a number of moderators of the experiential advantage: age, education, ethnicity, price, design of study, and time of study. I then examined happiness ratings as a function of identity centrality and the World Happiness Report and offer an explanation for the decline in worldwide happiness levels. Recent experiences are less central to consumer identities compared to former experiences, which decreases the proportional contribution of experiences to the construction of the self, in turn reducing the experiential advantage. I end paper one with seven propositions for future researchers.

In paper two, I explore a common tactic used in marketing to influence purchase decisions made by consumers – scarcity. First, I synthesized over fifty years of literature published since Brock's (1968) commodity theory that has been used to explain the psychological effects of scarcity. I then expanded Lynn's (1991) meta-analysis of 51 effect sizes to include 416 effect sizes examining the relationship between scarcity and value. Importantly, I disentangle the effect of generalised unavailability into its three primary sources – demand, supply, and time-based scarcity – and expand the conceptualisation of value to include attitude, desirability, enjoyment, exclusivity, popularity, purchase intentions, quality, and willingness-to-pay. The results from the meta-analysis show a number of important moderators of the effect of scarcity on consumer behaviour: source of scarcity, product benefits, how the source of the scarcity cue is communicated, level of involvement with the product, design of study, country of data collection, and publication status. I then discuss the implications of these findings in a managerial context, showing that not all scarcity tactics are equal, and marketing managers need a clear understanding of their product's attributes in order to get the most impact from implementing scarcity tactics in their marketing campaigns.

In sum, this thesis confirms the intuition held by many consumers around the world. If you want to be happier, you should do things rather than buy things, regardless of how scarce they are.

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