When Not Having Enough Prompts Consumers to Show Off: Reminders of Resource Scarcity Prompt Narcissism

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ABSTRACT

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Laura Goodyear

Consumers often think and talk about "not having enough" resources (e.g., money, time, food, etc.). They are also often reminded of their lack of resources by their surroundings, such as when seeing their empty refrigerator, the low gas gauge in their car, an ad about whether they have saved enough money for retirement, or a magazine article about an impending resource shortage. This research examines the effect that reminders of resource scarcity have on consumers' personality state and resulting product preferences.

Resource scarcity has been shown to prompt consumers to become more selfish and less likely to share resources with others. Past research on narcissism has also demonstrated that this personality trait tends to be related to a selfish orientation. Bridging the gap between these two lines of work, this thesis proposes that reminders of resource scarcity will prompt consumers to become more narcissistic. Further, narcissists tend to prefer high-prestige and conspicuous products, as they help signal higher status to their peers. Consequently, this thesis further proposes that reminders of resource scarcity will shift consumers' preferences toward more conspicuous products.

Across three experiments, this thesis demonstrates that reminders of resource scarcity increase consumers' narcissistic tendencies, and that narcissism mediates the effect of reminder of resource scarcity on selfishness. Further, this thesis shows that reminders of resource scarcity prompt consumers to prefer luxury products with more prominent brand logos as a result.

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TABLE OF CONTENTS

LIST OF FIGURES

Introduction

Imagine a consumer is shopping for a new bag and she is debating between two bags from the same designer. One of the bags has a small, subdued brand logo, while the other has a large noticeable brand logo. While she considers her choices, the consumer remembers that there is not enough gas in her car to get her home, so she will need to stop on the way to fill the tank. She also gets a text from her partner to let her know that there is nothing in their fridge for dinner, so she will also have to pick up groceries on the way home. Would these scarcity-related thoughts impact the consumer's designer bag preferences in any way? This is the central question this thesis seeks to answer.

When thinking about resource scarcity, impoverished countries lacking the necessary resource needed for survival may come to mind. However, resource scarcity is a common part of everyday life, as consumers can be reminded of the limited availability of a resource even in resource abundant environments (Mullanaithan & Shafir, 2013). Whether consumers may actually be experiencing scarcity, in the form of an empty refrigerator for example, or simply reminded of scarcity by, for instance, reading a news story about a potential bacon shortage (Bayly, 2017), scarcity cues are pervasive in our environment.

Prior research has demonstrated that considerations of resource scarcity can result in increased selfishness and a decreased willingness to share resources with others (Aarøe & Petersen, 2013; Petersen et al., 2014, Levontin et al., 2015, Roux et al., 2015). These behaviors are also central to those exhibited by individuals possessing a narcissistic personality (Campbell & Foster, 2007; Campbell et al., 2002; Campbell et al., 2005; Cisek et al., 2008; Emmons, 1987). Relatedly, narcissism – along with other personality traits, such as Machiavellianism and psychopathy – has been shown to develop as a response to environmental uncertainty, such as

resource scarcity experienced during childhood (Jonason et al., 2016). Further, past research suggests that this personality trait can vary and arise as a result of environmental or situational cues, which are referred to as personality states (Fleeson, 2007). However, no research to date has examined the link between resource scarcity and an increase in state narcissism.

Reminders of resource scarcity have further been shown to prompt consumers to compensate for their perceived lack of resources through the consumption of material goods (Hill et al., 2012; Chaplin et al., 2014; Walasek & Brown, 2015), among others. Prior work on narcissistic consumers has also shown that narcissists use products in a compensatory manner (Lee et al., 2013; Lee & Sidel, 2012; Sedikides et al., 2007). More specifically, narcissists tend to prefer products that have a greater symbolic value, such as luxury products, to garner attention and signal higher status to their peers (Lee et al., 2013; Lee & Sidel, 2012; Sedikides et al., 2007). Recent work on brand prominence, or the conspicuousness of a brand's mark or logo on a product, has further demonstrated that consumers high in need for status can use luxury goods with prominent brand logos for status signaling purposes (Han et al., 2010). While there are clear similarities between the compensatory consumption behaviors of those reminded of scarcity and narcissistic consumers, no research to date has examined the effect of reminders of resource scarcity on consumers' preferences for high status signaling luxury goods, such as those possessing prominent brand logos.

In sum, given the similarities between the effects of resource scarcity and narcissism on selfishness and compensatory consumption, this thesis investigates whether and how these constructs are related. Specifically, I first propose that reminders of resource scarcity will prompt consumers to express higher narcissistic tendencies. Second, I propose that this narcissistic personality state shift will help explain the effect of resource scarcity cues on selfishness. Third,

I propose that reminders of resource scarcity will prompt status seeking compensatory consumption similar to the one exhibited by narcissists.

The remainder of this thesis is organized as follows. First, I will present an overview of the literature on reminders of resource scarcity and two important behavioral consequences: a selfish orientation and compensatory consumption. I will next discuss how narcissism produces similar behaviors. I will then argue that reminders of resource scarcity prompt narcissistic tendencies, which result in an increased selfish orientation and product preferences similar to those of narcissistic consumers. These predictions will then be tested across three studies. Finally, I will conclude with a discussion of the findings and the practical implications of this work, along with potential future research directions.

Theoretical Background

Consumers across various levels of socioeconomic status can experience resource scarcity. Every day, various cues can remind consumers that they are personally lacking resources (e.g., no money in their wallet) or that resources are more generally lacking (e.g., high unemployment rate). Given that scarcity is a shared human experience and a pervasive part of everyday life, it is critically important to understand the consequences of experiencing resource scarcity. Even if the current literature does not have a commonly agreed upon definition of resource scarcity, this work relies on the definition provided by a recent review article: "resource scarcity involves sensing or observing a discrepancy between one's current level of resources and a higher, more desirable reference point" (Cannon et al., 2018, p. 2).

Prior research has shown that resource scarcity, no matter whether it is objectively experienced (e.g., low income; Shah et al., 2012) or subjectively prompted (e.g., reading a news story about an economic recession; Griskevicius et al., 2013), can have important behavioral

consequences. Cannon, Goldsmith and Roux (2018) have suggested that the various behavioral outcomes of resource scarcity can be explained using the theory of self-regulation. When reminded of resource scarcity, consumers seek to reduce or eliminate this unfavorable discrepancy using self-regulatory mechanisms (Cannon et al., 2018). Specifically, the authors have identified two routes that consumers can take to address this discrepancy: i) a scarcity-reduction route, by holding on to or acquiring resources, and ii) a control-restoration route, by behaving in ways that restore feelings of control when there is no opportunity to directly reduce the discrepancy (Cannon et al., 2018). The remainder of this thesis will focus on the control-restoration route, as two effects related to this route are of focal interest: selfishness and compensatory consumption.

Resource Scarcity Prompts Selfish and Compensatory Behavior

When consumers experiencing resource scarcity are unable to restore the resources they feel are scarce, they can try first to regain control by advancing their own welfare through selfish behaviors, such as a decreased willingness to share resources with others (Aarøe & Petersen, 2013; Petersen et al., 2014; Levontin et al., 2015; Roux et al., 2015). For example, when Aarøe and Petersen (2013) manipulated participants' actual level of hunger, they found that hungry (vs. satiated) participants were more likely to support social welfare programs and, at the same time, less likely to allocate financial resources to an unknown other. These authors' work demonstrates that, when individuals are experiencing resource scarcity and are unable to address the felt discrepancy (i.e., by eating food), they support redistributive programs that may benefit them in some way. However, when tasked with redistributing financial resources themselves, they chose to advance their own welfare by not sharing with others (Aarøe & Petersen, 2013). Additionally, Petersen and colleagues (2014) show that when hungry, participants display increased selfish

behaviors, but also self-report that they are more cooperative, than participants that are not experiencing hunger. Participants in this study arrived to the lab hungry (vs. satiated) and were asked to participate in a "taking game," where they had to take an amount from an unknown other, but if they took more than the other had stated they could take, both would be left with nothing. Participants then completed a self-report measure of agreeableness, which was used to assess their cooperativeness. The authors found that hungry participants took significantly more than satiated participants, but also reported they were more agreeable and thus cooperative (Petersen et al., 2014). Roux and colleagues (2015) demonstrate a similar pattern of behavior. These authors manipulated participants' feelings of resource scarcity using a recall task, where they were asked to describe a time where they felt their resources were scarce (vs. things they did in the past week). Participants were then presented with a scenario about charitable giving in their place of work. The scenario involved having to make either a private or a public donation, and participants were asked about their likelihood of making a donation. Roux and colleagues (2015) found that when reminded of resource scarcity, participants were less likely to donate when the donation context was private, as donating would not advance their own welfare. However, when the donation was public, participants were more likely to donate, as demonstrating such generosity could potentially advance their own welfare through social signaling (Roux et al., 2015). Overall, these studies demonstrate that individuals, when faced with resource scarcity, are prompted to behave in a selfish manner, even if it may seem generous at face value, to advance their own welfare.

Second, consumers can use compensatory consumption to cope with the threat of resource scarcity, as it has been shown to help restore feelings of personal control (Elliott et al., 1996; Woodruffe, 1997). Compensatory consumption has been defined as "any purchase, use, or

consumption of products or services motivated by a desire to offset or reduce a self-discrepancy" (Mandel et al., 2017, p. 2). Consumers can thus use material possessions as a means to engage in self-regulatory efforts aimed at restoring the self from an aversive state, caused by a perceived self-discrepancy, to a more desirable state. Similarly, consumers experiencing scarcity and who cannot directly resolve the resource discrepancy can engage various forms of compensatory consumption, such as symbolic self-completion and fluid compensation, to try to attend to the discrepancy without directly addressing its source (Mandel et al., 2017). For example, Chaplin and colleagues (2014) found that less affluent children preferred material possessions more so than affluent children. Specifically, using children participants' zip codes, they were matched with their area's median household income to assess their level of wealth. The children were then asked to create a collage of what made them happy. The authors found that children from impoverished areas had significantly more images of material items in their collages than those from wealthier areas, suggesting that poor children were trying to attend to their lack of resources by desiring material items, or achieving a desirable end state (Chaplin et al., 2014). Further, Walasek and Brown (2015) found that higher levels of income inequality, measured at the state level, resulted in an increase in search terms for status goods. Specifically, the authors found that states with greater income inequality were more likely to use search terms related to status goods, such as designer brands, jewelry and luxury clothing, than states with lower income inequality. A similar pattern of results has also been found at the individual level. For example, women who viewed a slideshow titled "The New Economics of the 21st Century: A Harsh and Unpredictable World" (vs. a slideshow about academic achievement) then expressed a greater desire for expensive self-enhancement products, such as designer jeans and makeup, as they help

increase their attractiveness to high resource mates (e.g., wealthy potential partners), but not for everyday products (e.g., e.g., electronics, household items; Hill et al., 2012).

Prior work has thus shown that both selfishness and compensatory consumption are displayed by consumers faced with resource scarcity. Of interest, these behaviors have also been shown to be exhibited by consumers with a narcissistic personality.

Narcissism Prompts Selfish and Compensatory Behaviors

Consumers who possess a narcissistic personality, as defined by the Diagnostic and Statistical Manual of Mental Disorders, "have a grandiose sense of self-importance" and "are interpersonally exploitative, e.g., takes advantage of others to achieve his or her own ends" (American Psychiatric Association, 2013). This definition applies both to "normal" or sub-clinical narcissistic individuals, as well as those possessing the pathological personality trait (Paulhus & Williams, 2002). Additionally, narcissism can be experienced as a trait, which is defined as a pervasive or enduring characteristic, or as a state, which refers to how an individual is at the moment, rather than how they are in general (Cattell et al., 1947; Fridhandler, 1986; Nesselroade, 1988; Schutte et al., 2003; Fleeson, 2007).

Past research on narcissism has demonstrated that individuals possessing elevated levels of this personality trait tend to be more selfish and display a decreased regard for others (Campbell & Foster, 2007; Campbell et al., 2002; Campbell et al., 2005; Cisek et al., 2008; Emmons, 1987). For example, Campbell and colleagues (2002) showed that, in relationships, narcissists behave more selfishly and seek to gain control over their partners. Specifically, the authors had couples complete booklets containing various measures that assessed love type, need for power, and need for autonomy, among others. They found that the partners who scored high (vs. low) on narcissism displayed a high need for power and autonomy, in order to maintain

control in the relationship and to advance their own welfare, if necessary. The authors also found that narcissists were less agape, or more selfish, in their love style with their partner (Campbell et al., 2002). In a similar vein, Campbell and colleagues (2005) presented a scenario to participants where they were required to hypothetically harvest timber in groups of two or four. Specifically, participants were told that they were representing a forestry company trying to acquire timber against other companies and that, in turns, they would be asked how much timber they wanted to harvest. Participants were also told that the forest only regrew at a rate of 10% per year. The goal of this hypothetical scenario was thus to maximize the harvest without destroying the forest. The authors found that narcissists, compared to non-narcissists, desired to profit more and, consequently, depleted the forest at a significantly faster rate. Additionally, groups with higher numbers of narcissists depleted the forest significantly faster than groups with only one or no narcissists (Campbell et al., 2005). Together, these studies suggest that narcissists, similar to individuals reminded of resource scarcity, behave selfishly to advance their own welfare.

Prior research has further shown that narcissists are more likely to engage in compensatory consumption than non-narcissistic consumers. Narcissists generally have a higher need for status and admiration from others, due to their grandiose sense of self (Campbell et al., 2002; Campbell & Foster, 2007; Kasser & Ryan, 1996). As a consequence, narcissistic consumers tend to prefer products that have a greater symbolic value, such as luxury products (Lee et al., 2013; Lee & Sidel, 2012; Sedikides et al., 2007). Therefore, narcissistic consumers prefer to buy high-prestige, exclusive, and scarce products that help distinguish them, in an attempt to garner attention and signal higher status to their peers and others around them (Lee et al., 2013; Lee & Sidel, 2012). For example, Lee and Sidel (2012) first had participants complete the Narcissistic Personality Inventory (NPI; Raskin & Hall, 1979), and then asked them to

indicate their purchase intentions and willingness to pay for a watch. The same watch was framed as either "Exclusive limited edition" or simply as a "New edition" (Lee & Sidel, 2012). The authors found that participants who scored higher (vs. lower) on the NPI expressed greater intentions to purchase and pay more for the exclusive, limited edition watch, but not the watch that was simply framed as new (Lee & Sidel, 2012). Further, Lee, Gregg and Park (2013) demonstrated that narcissistic consumers prefer exclusive products due to the uniqueness and status that they confer onto them. For instance, in one of the studies (Lee et al., 2013), participants were asked to evaluate two iPod accessories, where one of the accessories was described as a limited edition phone case with the option to customize it with a personal engraving, while the other option was an iTunes gift card of the same value. Participants were then asked to complete the NPI (Raskin & Terry, 1988) to determine their narcissistic tendencies. The authors found that narcissistic consumers preferred the distinctive, customizable phone case over the gift card because the uniqueness of the product would signal to others that they are, in fact, unique (Lee et al., 2013).

Of interest for this thesis, consumers who wish to signal status to others can use luxury products with prominent or conspicuous brand logos. Specifically, Han and colleagues (2010) show that consumers who are seeking status (vs. not) tend to prefer loudly (vs. quietly) branded luxury products. For instance, in one of the studies, the authors first measured participants' desire to signal status using the need-for-status scale (Eastman et al., 1999). Next, participants were asked to rank various handbags where the brand was stated (vs. not stated) and where their logo was loud (vs. quiet; Han et al., 2010). The authors found that status seeking participants were more likely to rank loudly branded luxury products higher than those with no logo when the brand was not stated. However, when the brand was stated, there was no difference in ranking

between the loud and quiet brand conditions for participants seeking status. In another study, participants seeking status also desired to purchase loudly branded luxury products more than those who were not seeking status (Han el at., 2010). This research demonstrates the importance of conspicuous luxury logos in consumers signaling behaviors, especially in real world settings where the brand is not always explicitly stated.

The similarities between the consequences of resource scarcity and narcissism on selfishness and compensatory consumption suggest that there may be a link between the two constructs. This thesis thus investigates whether there is a relationship between reminders of resource scarcity and narcissism, and whether narcissism plays a role in the effect of resource scarcity on selfish behavior. It further examines whether reminders of resource scarcity results in similar product preferences as those displayed by narcissistic consumers. The following section outlines the specific hypotheses tested in this thesis.

Resource Scarcity Prompts Narcissism

While the literature provides no direct evidence for the prediction that reminders of resource scarcity increase state narcissism, some indirect support can be found. For instance, research documenting the development of narcissism, psychopathy and Machiavellianism (hereafter referred to as the Dark Triad) finds that unpredictability during childhood, such as insufficient resources and irregularities in the childhood environment, lead to an increase in Dark Triad traits in adults (Jonason et al., 2016). Further, Cramer (2017) demonstrates that children who seek high levels of control are also more likely to develop narcissism as an adult. Prior work thus seems to suggest that narcissism can arise from experiences of resource scarcity.

Moreover, as mentioned previously, narcissism can be experienced either as a trait or as a state (Cattell et al., 1947; Fridhandler, 1986; Nesselroade, 1988; Schutte et al., 2003; Fleeson,

2007). Fleeson (2007) proposes that a personality state fluctuation occurs as a result of an adaptive response to situational or environmental cues. Nübold and colleagues (2017) proposed that there are certain situations under which a narcissistic personality state shift occurs. They suggested that individuals in competitive and stressful environments should display increased narcissistic state personality as an adaptive response to their environment (Nübold et al., 2017). Relatedly, prior work has shown that reminders of resource scarcity can activate a competitive orientation (Roux et al., 2015). In addition, Jonason and colleagues (2016) proposed that, while some aspects of the Dark Triad at the trait level are heritable, they are also adaptive responses to harsh and unpredictable environments, which also characterize scarcity-related environments (Griskevicius et al. 2013; Mittal & Griskevicius, 2016). Building on these findings, I first posit that reminders of resource scarcity will prompt state level narcissism.

H1: Reminders of resource scarcity (vs. control) will increase individuals' state level narcissism.

Further, as previously discussed, reminders of resource scarcity prompt consumers to display selfish behaviors that help advance their own welfare (Aarøe & Petersen, 2013; Petersen et al., 2014; Roux et al., 2015). A similar pattern of agentic behavior has also been found to be exhibited by consumers with a narcissistic personality (Campbell & Foster, 2007; Campbell et al., 2002; Campbell et al., 2005; Cisek et al., 2008; Emmons, 1987). Building on these similarities, I further posit that an increase in state narcissism will mediate the previously documented relationship between reminders of resource scarcity and selfishness.

H2: State narcissism will mediate the effect of reminders of resource scarcity on selfishness.

Finally, past research has demonstrated that both reminders of scarcity and narcissism can lead to compensatory behaviors. For instance, reminders of resource scarcity increase consumers' preferences for products that are self-enhancing (Hill et al., 2012). Similarly, consumers with narcissistic tendencies tend to prefer products that help distinguish themselves (Lee et al., 2013; Lee & Sidel, 2012). Building on these similarities, I posit that consumers exposed to reminders of resource scarcity (vs. control) will prefer status signaling luxury products, such as prominently branded ones, over luxury products with less status signaling power, such as those with smaller and less conspicuous brand logos.

H3a: Consumers reminded of resource scarcity (vs. control) will prefer prominently branded luxury products over luxury products that are less prominently branded.

I further hypothesize that this effect will hold only for brands and products that confer status signaling benefits. Said otherwise, I posit that consumers reminded of resource scarcity will show no preference differences for prominently branded non-luxury products, as compared to quieter non-luxury branded products.

H3b: Consumers reminded of resource scarcity (vs. control) will show no preference differences for prominently branded non-luxury products versus non-luxury products that are less prominently branded.

Overview of Studies

Across three studies, I test for the proposed effect of reminders of resource scarcity on narcissism and product preferences using an experimental-causal-chain (Spencer, Zanna, & Fong, 2005). Study 1 provides initial evidence for the proposed effect of reminders of resource scarcity on state narcissism. Study 2 then provides support for the proposed mediating role of narcissism in the effect of scarcity on selfishness. Study 2 also replicates the effect found in

Study 1, in addition to conceptually replicating the previously demonstrated effect of resource scarcity on selfishness using a pictorial measure of selfishness. Finally, Study 3 provides evidence for the proposed effect of resource scarcity on consumers' preference for prominently branded luxury goods.

Study 1: Resource Scarcity Prompts Narcissism

The aim of Study 1 was to test the central prediction (H1) that reminding consumers of resource scarcity leads to an increase in their state level of narcissism.

Participants

Two hundred and forty participants (45.8% female; M_{age} = 36.6; SD = 11.86) were recruited using Amazon's Mechanical Turk (MTurk). MTurk participants have been shown to produce reliable results that replicate previous findings in decision making research (Goodman et al., 2013) and was thus used as the main platform to recruit participants across all three studies. Participants were compensated for their time with a nominal monetary fee. Preliminary cleaning of the data lead to the removal of one participant who did not complete all measures provided in the study (N = 239).

Research Design & Procedure

Participants were first randomly assigned to either a scarcity or a control condition. Participants in the scarcity condition were asked to list three things they would not be able to do if a resource was unavailable (e.g. water; Roux et al., 2015). Participants in the control condition were asked to list three things they would be able to do with the same resources. Across both conditions, five resources were displayed on individual pages (See Appendix 1 for detailed materials). Previous research has confirmed that this manipulation is effective for generating feelings of scarcity without influencing other factors (e.g., mood, affect, specific emotions; Roux

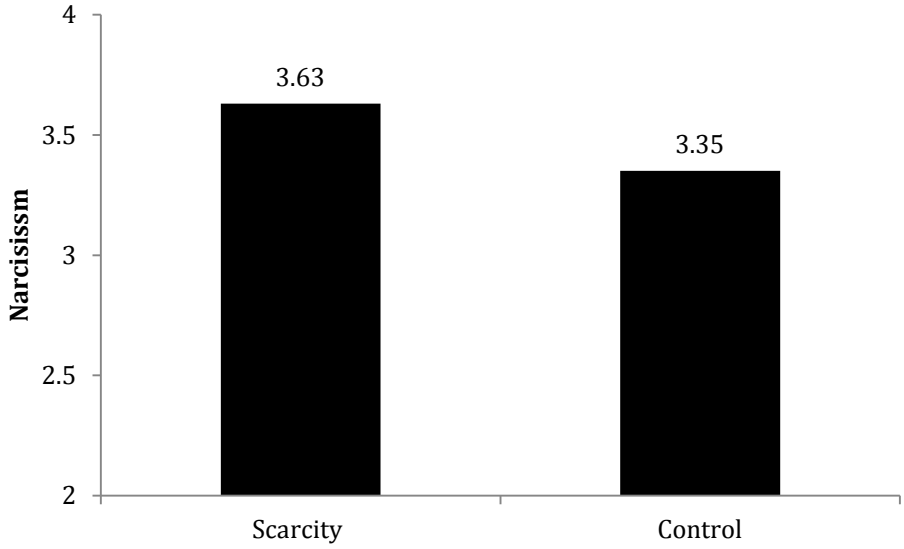
et al. 2015). All participants were then asked to complete the 9-item narcissism subscale of the Short Dark Triad (SD3; Jones & Paulhus, 2014). Participants indicated their agreement with the SD3 items on a 7-point Likert scale containing items such as "I like to get acquainted with important people" and "I have been compared to famous people" (1= "Strongly Disagree" to 7= "Strongly Agree"; see Appendix 2 for all scale items). This scale was utilized as it captures the grandiose sense of self that is central to narcissism (Maples et al., 2014). Participants then completed standard demographic questions, and were thanked and compensated for their participation.

Results

As per the scale's instructions (Jones & Paulhus, 2014), three items of the narcissism sub-scale of the SD3 were reverse coded before conducting the reliability analysis, which resulted in a Cronbach's alpha of .84. A narcissism score was then calculated for each participant by averaging the 6 original SD3 items and 3 reversed coded ones.

In line with H1, an ANOVA revealed that participants in the scarcity condition obtained significantly higher scores on the narcissism scale ($M_{Scarcity} = 3.63$, $SD = .10$) than those in the control condition ($M_{Control} = 3.35$, $SD = .09$; $F\,(1, 237) = 4.29$, $p = .04$).

Figure 1: Main Effect of Resource Scarcity on Narcissism



Discussion

The results from Study 1 provide support for my initial prediction that reminding consumers of resource scarcity increases their state level of narcissism. In line with my theorizing, participants exposed to reminders of resource scarcity take on personality traits that are captured by the narcissism sub-scale of the SD3. Study 2 will replicate and extend these findings by examining if an increase in state narcissism can help explain the previously documented relationship between resource scarcity and selfishness.

Study 2: Narcissism Mediates the Effect of Resource Scarcity on Selfishness

Study 2 was designed to investigate the mediating role of state level narcissism in the effect of reminders of resource scarcity on selfishness. Further, Study 2 was conducted to replicate the findings from Study 1 and conceptually replicate the previously documented relationship between resource scarcity and selfishness.

Participants

Two hundred and seven participants (50.7% female; M_{age} = 36.5; SD = 11.35) were recruited using Amazon's Mechanical Turk. Participants were compensated for their time with a

nominal monetary fee. Preliminary cleaning of the data lead to the removal of one participant who failed to properly complete the manipulation of resource scarcity ($N = 206$).

Research Design & Procedure

Participants were randomly assigned to either a scarcity or a control condition using the same manipulation as in Study 1. All participants were then asked to complete the 9-item narcissism subscale of the SD3 (Jones & Paulhus, 2014), as in Study 1. Next, all participants were asked to complete the Me Versus Other scale (Campbell et al., 2004). Specifically, participants were presented with a series of seven diagrams, which were comprised of one "me" circle that varied in size and three "other" circles that remained the same size (1 = a "me" circle much smaller than the "other" circles to 7 = a "me" circle much larger than the "other" circles). Participants were asked to select the diagram that best represented how they saw themselves compared to others (see Appendix 3 for measure). This measure was utilized to pictorially assess self-interest (vs. other-interest; Gerbasi & Prentice, 2013), as selfish individuals have a lack of regard for others and are primarily concerned with their own profit and pleasure (Campbell et al., 2004). Participants then completed standard demographic questions, and were thanked and compensated for their participation.

Results

Upon further examination of the data, 7 participants were removed for spending less than 2.5 seconds on the selfishness measure, and one participant whose age was three standard deviations above the mean (75 years old) was also removed ($N = 198$).

As in study 1, three items of the narcissism scale of the SD3 were reverse coded before conducting a reliability analysis ($\alpha = .84$) and computing an average narcissism score for each participant.

Main effects

To examine the main effects of reminders of scarcity on selfishness and state level narcissism, two ANOVAs were conducted. In line with prior work, participants in the scarcity condition displayed a significant increase in their selfish orientation ($M_{Scarcity}$ = 4.33, SD = 1.15) compared to those in the control condition ($M_{Control}$ = 3.97, SD = 1.19; F(1, 196) = 4.62, p = .03). Replicating the results from Study 1, participants in the scarcity condition also displayed a significant increase in narcissistic tendencies ($M_{Scarcity}$ = 3.60, SD = 1.10) than those in the control condition ($M_{Control}$ = 3.21, SD = 1.13; F(1, 196) = 5.17, p = .02).

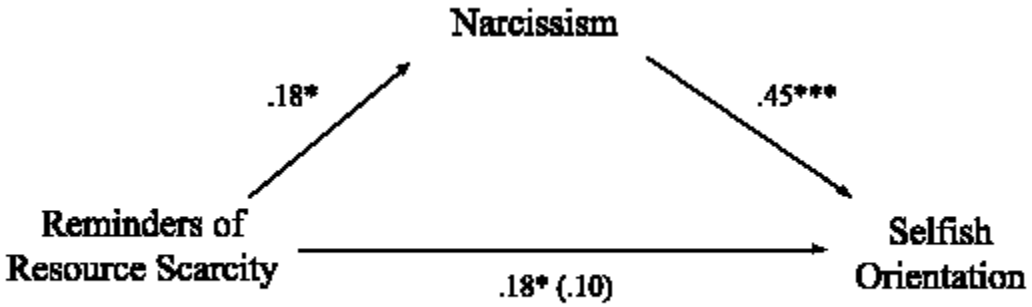
Figure 2: Main Effect of Resource Scarcity on Selfishness and Narcissism

Mediation analysis

Using PROCESS (Hayes, 2012) to examine the mediation effect, reminders of resource scarcity (vs. control) was entered into the model as the independent variable, selfish orientation was entered as the dependent variable, and mean narcissism scores were entered as the mediator. In support of H2, narcissism mediated the effect of scarcity on selfishness. The results, based on 5,000 bootstrapped samples, indicated that reminders of resource scarcity had a significant

positive impact on participants' narcissism score (β = .18; *SE* = .08; t = 2.27; p = .024), and that higher levels of narcissism had a significant positive impact on participants' selfish orientation (β = .45; *SE* = .07; t = 6.67; p < .001). Further, while the main effect of reminders of resource scarcity on selfish orientation was significant (β = .18; *SE* = .08; t = 2.15; p = .033), the direct effect, when narcissism was included in the model, was not (β = .10; *SE* = .08; t = 1.27; p > .2). The 95% bias corrected confidence interval for the indirect effect was significant, as the confidence interval did not include 0 ($\beta_{indirect}$ = .08; 95% *CI* = [.02, .17]). Narcissism therefore fully mediated the relationship between reminders of resource scarcity and a selfish orientation, thus providing support for H2. For the complete output, please see Appendix 4.

Figure 3: Narcissism Mediates the Effect of Resource Scarcity on Selfishness



NOTE: *p < .05; **p < .01; ***p < .001

Discussion

The results from Study 2 first replicated the findings from Study 1, as reminding consumers of resource scarcity again increased their state level of narcissism, as well as conceptually replicated the prior finding found in the literature that reminders of resource scarcity prompt a selfish orientation. Of interest, Study 2 provided support for H2, by revealing that an increase in individuals' state level narcissism helps explain the relationship between

reminders of resource scarcity and an increased selfish orientation. Having provided evidence for the effect of resource scarcity on narcissism in Studies 1 and 2, Study 3 will examine if reminding consumers of resource scarcity leads to similar product preferences as those expressed by consumers with higher levels of narcissism.

Study 3

The purpose of Study 3 was to examine the effect of reminding consumers of resource scarcity on their preference for prominently (vs. quiet) branded luxury and non-luxury products.

Participants

One hundred and twenty five participants (51% female; M_{age} = 33.74; SD = 11.03 were recruited using Amazon's Mechanical Turk. Participants were compensated for their time with a nominal monetary fee.

Research Design & Procedure

Study 3 employed a 2 (between: scarcity vs. control) x 2 (within: luxury vs. non-luxury) mixed design. Participants were first randomly assigned to either a scarcity or a control condition, using the same manipulation as in Study 1. Next, participants were asked to indicate their gender, in order to present them with gender-matched products. Participants were then sequentially shown three pairs of pictures of the same product that varied in terms of brand prominence. Two pairs of pictures were of established luxury brand products (see Figure 4 for stimuli), while one pair depicted non-luxury products (See Figure 5 for stimuli). Specifically, female participants were shown two Louis Vuitton purses and two pairs of Gucci shoes, while male participants saw two Burberry watches and two Ralph Lauren shirts, for the luxury products. For the non-luxury products, female participants were shown two Adidas sweaters, and male participants were shown two Nike hats. Each pair of product pictures were show in a

counterbalanced manner (i.e., the brand prominent product was shown on the left of the pair for half the participants, and on the right for the other half) to minimize potential order effects. For all product choices, participants were asked to indicate which product they preferred on a 7-point Likert scale (1 = "definitely product A" to 7 = "definitely product B"; see Appendix 5 for an example). Participants were also asked to indicate their liking of the various brands used in the study to ensure that baseline brand preferences did not account for the proposed effect. Participants then completed standard demographic questions, and were thanked and compensated for their participation.

Figure 4: Luxury Product Choice; Study 3

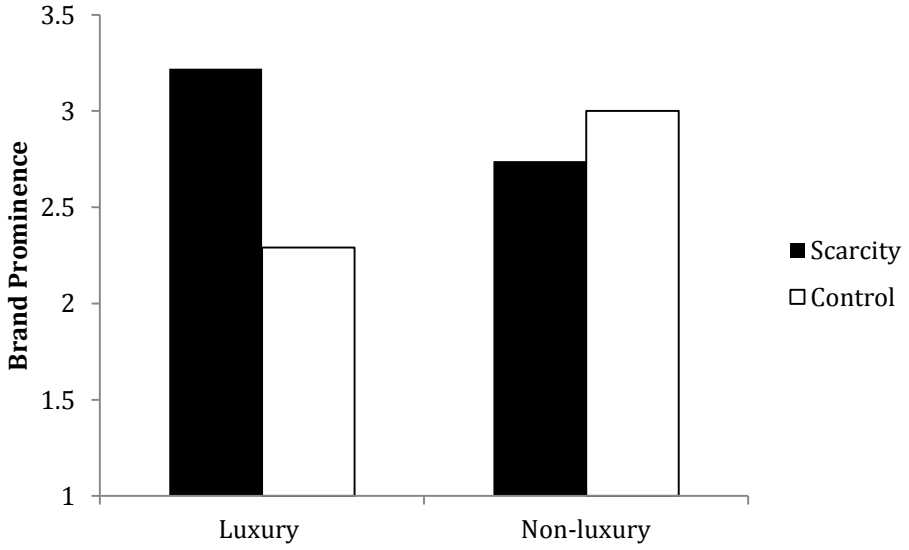
Figure 5: Non-Luxury Product Choice; Study 3

Results

Upon further examination of the data, 16 participants were removed for spending more than two standard deviations above the average total duration of the study (M_{Time}= 426.5; *SD* = 213.34) while completing the questionnaire (*N* = 109). Of note, baseline brand preferences did not affect or improve the results when added as covariates in the model.

To examine the effects of reminders of resource scarcity on participants' preferences for prominently branded luxury (vs. non-luxury) products, a repeated-measures ANOVA was conducted. Preferences scores for the luxury and non-luxury products were first matched across gender, based on their presentation order and product type, to create the dependent variables for the analysis (e.g., the purse and watch preferences scores were matched as the first luxury product presented to participants). In support of hypotheses 3a and 3b, the analyses revealed a significant interaction between the scarcity and product type manipulations ($F(1, 107) = 5.45$, $p = .021$; see Appendix 6 for full results). Specifically, participants in the scarcity condition expressed significantly greater preferences for luxury products with prominent logos ($M_{scarcity}$ = 3.22; *SD* = 2.30) than those in the control condition ($M_{control}$ = 2.29; *SD* = 1.79; $F(1, 107) = 5.56$, $p = .02$), thus providing support for H3a. For non-luxury brands, however, there was no significant differences between the scarcity ($M_{scarcity}$ = 2.74; *SD* = 2.25) and the control condition ($M_{control}$ = 3.00; *SD* = 2.30; $F(1, 107) < .1$, $p > .50$; see Appendix 7 for all results), thus providing support for H3b

Figure 6: Interaction Effect of Resource Scarcity and Product Type on Preferences for Brand Prominent Products



Note that the above results were computed using only the matched watches/purses and sweaters/hats dependent variables, as the results including the shoes/polo shirts dependent variable were not as strong, and their specific pairwise comparison was not significant (see Appendix 8 for results). In hindsight, the polo shirts may have looked more like a non-luxury product than a luxury one, given their sporty look. Repeated-measure ANOVAs using the watches/purses and the sweaters/polo shirts pairs, and the shoes/watches and the sweaters/hats pairs as dependent variables replicate the results from the main analyses, which provide support for my intuition that the polo shirts may not have been perceived as luxury products (see Appendix 9 for results). Additionally, the difference between participants' preferences for loudly branded luxury and non-luxury products was significant in the control condition (See Appendix 10 for results). Specifically, participants in the control condition significantly preferred loudly branded non-luxury products to luxury products. While, to my knowledge, no prior research can help explain this finding, I believe that these participants may have preferred the loudly branded

non-luxury products because Nike and Adidas currently are very popular athletic brands (Lango, 2018; Manning, 2018).

Discussion

The results of Study 3 produce support for my prediction that reminding consumers of resource scarcity increases their preference for prominently branded luxury products (H3a), but not for non-luxury products, as they do not provide any status signaling benefits (H3b). This study further provides indirect evidence for the proposed effect of reminders of resource scarcity on narcissism, in that the product preferences of consumers reminded of resource scarcity mimic the previously documented preferences of narcissistic consumers.

General Discussion

Several similarities can be observed between the findings from the scarcity and the narcissism literatures. The literature on resource scarcity demonstrates that consumers who experience scarcity, or who are reminded of resource scarcity, are more likely to display agentic behaviors, such as a decreased regard for others and increased selfishness (Aarøe & Petersen, 2013; Petersen et al., 2014, Levontin et al., 2015, Roux et al., 2015). The literature on narcissism has also demonstrated that narcissists are more likely to adopt an agentic orientation, where they display selfish behaviors aimed at advancing their own welfare (Campbell & Foster, 2007; Campbell et al., 2002; Campbell et al., 2005; Cisek et al., 2008; Emmons, 1987). Additionally, consumers reminded of resource scarcity tend to use compensatory consumption as a means to restore their feelings of control when they cannot address the scarcity directly (Hill et al., 2012; Walasek & Brown, 2015; Chaplin et al., 2014). Similarly, narcissistic consumers have been shown to use the consumption of luxury products as a means to confer status onto themselves

(Lee et al., 2013; Lee & Sidel, 2012; Sedikides et al., 2007). As such, this thesis examined whether and how narcissism and resource scarcity may be related.

Across three studies, I found support for all of my hypotheses. Specifically, Study 1 showed that participants reminded of resource scarcity scored higher on a narcissism scale than those in a control condition. Study 2 revealed that narcissism mediated the effect of reminders of resource scarcity on selfishness. Study 2 also replicated the findings from Study 1 and conceptually replicated the selfishness findings from previous scarcity-related research (Aarøe & Petersen, 2013; Petersen et al., 2014; Levontin et al., 2015; Roux et al., 2015). Finally, Study 3 demonstrated that participants reminded of resource scarcity preferred prominently branded luxury products, but not loud non-luxury products, more than those in the control condition, lending further support to the proposed effect of resource scarcity on state narcissism.

Theoretical Contributions and Managerial Implications

Theoretically, this research contributes to the literature on resource scarcity by demonstrating that reminders of resource scarcity have an effect beyond consumers' behavior, by showing that they can also temporarily affect consumers' narcissistic personality state. This is the first research to show that reminders of resource scarcity prompt consumers to become more narcissistic and engender behavioral consequences similar to those of narcissistic consumers. While this effect needs to be examined further, this is an important step toward advancing our understanding of why consumers adopt an agentic orientation when they are reminded of resource scarcity. Given that narcissism is one of three traits assessed by the SD3 scale (Jones & Paulhus, 2014), future research could also investigate whether reminders of resource scarcity induce other, related personality states, such as Machiavellianism.

This research also contributes to the literature on narcissism, by demonstrating that it can be contextually primed by reminders of resource scarcity. It further contributes to the work on how environmental cues can shape peoples' personality states (Fleeson, 2007), especially given the prevalence of scarcity-related cues in consumers' everyday lives. Future research could investigate whether other environmental cues may temporarily prompt people to exhibit more narcissistic tendencies, such as competitive and stressful environments, as suggested by Nübold and colleagues (2017).

Further, this research contributes to the literature on compensatory consumption, by demonstrating that scarcity can lead to compensatory behaviors that mimic those of narcissistic consumers. This research also extends the work on brand prominence, by showing that prominent luxury (vs. non-luxury) brand logos can be used as a way to signal high status, and thus restore feelings of control, when experiencing resource scarcity. Future research should keep disentangling which types of products high in brand prominence can serve as a compensatory coping mechanism (e.g., green products; Griskevicius et al., 2010).

Managerially, this work has important implications for luxury brand managers. During times of economic downturn, resource shortages, or other situations where consumers may be reminded they "do not have enough," luxury brands may want to consider changing their product designs to include larger logos or more conspicuous patterns. Conversely, during times of economic prosperity, where reminders of resource scarcity are less likely to be encountered, brands may want to consider offering products that have less conspicuous patterns or logos. Overall, brand managers should be aware of scarcity-related environmental factors, as they can have a significant impact on consumers' product design preferences.

Additionally, this research has important public policy implications for consumers living in lower socioeconomic conditions. Not only are these consumers often reminded of resource scarcity, but their resources are also scarcer, which may make them particularly vulnerable to the proposed effects outlined in this research. Policy makers should thus focus on developing interventions that would help minimize the need for conspicuous products as a means to cope with resource scarcity to help prevent these consumers from overspending resources they may not have. Future research should try to find ways to attenuate the impact of reminders of resource scarcity on state narcissism to reduce or even eliminate these unintended consequences. For example, interventions that would help shift consumers' frame of mind, by reminding them to be grateful of what they currently have (Emmons & McCullough, 2003), could help attenuate the effect of scarcity on narcissism, and thus the resulting potentially harmful behavior.

Limitations and Future Research

The current research possesses several limitations that offer opportunities for future research. First, throughout all three studies in this thesis, the same manipulation of resource scarcity was utilized. The listing task manipulation was chosen for the current research as it was thoroughly pre-tested to ensure that it prompted feelings of resource scarcity without influencing other factors (e.g., mood, affect, specific emotions; Roux et al., 2015). However, future studies should include other manipulations of reminders of resource scarcity. For example, future research could use images depicting scarcity-related situations to prime feelings of resource scarcity (e.g. Griskevicius et al., 2013). Field experiments using simulated shopping experiences, where participants would be presented with an array of products and subtly reminded of resource scarcity (e.g., through a text appearing on their phone, as in the opening example), would greatly

help increase the external validity of the current results and provide more concrete evidence for the proposed effects.

The second limitation of this work relates to the dependent variables used in Study 3. This work first assessed preferences for pairs of similar products from the same brand in order to attempt to mimic real world choices, but the study design did not account for product preferences across various product types and brands evaluated simultaneously, given the constraints of online experiments. Future research should examine how reminders of resource scarcity affect product preferences in a more realistic setting, where participants would be faced with multiple options at once. Future research should also carefully pre-test all the products and brands used in a study, both in isolation (i.e., one by one) and in combination with the other products, in order to ensure an appropriate selection of compensatory consumption products (as opposed to the Ralph Lauren polo shirts used in Study 3). Future research could also examine if the effects found in this thesis hold for more affordable luxury brands, such as Michael Kors. Based on this work, loudly branded affordable luxury products should still be preferred as long as consumers perceives them as means to signal status.

The third limitation of this research is in regards to the measurement of narcissism. The narcissism sub-scale of the SD3 was chosen for Studies 1 and 2 mainly as it has been shown to be a reliable and valid measure of the central dimension of narcissism (i.e., grandiosity; Maples et al., 2014). However more exhaustive measures of the trait are also commonly used in the literature (e.g. NPI; Raskin & Hall, 1979). As narcissism is a multidimensional construct, future research could examine which facets of narcissism (e.g., grandiosity, exploitiveness, arrogance) are activated when consumers are reminded of resource scarcity. Future research could also

examine how long the effect of reminders of resource scarcity on consumers' narcissistic personality state lasts, as the longitudinal effect of this contextual cue is still unclear.

Moreover, this research examined status signaling from the perspective of the actor or signaler (i.e., the consumer purchasing the product). Future research could also examine this effect from the perspective of the observer (e.g., friends, co-workers, etc.), as using loudly branded luxury products to signal status could have a much different effect on observers than originally intended by the actor. Conspicuously branded luxury products may come off as being tacky or not unique (e.g., Juicy Couture sweatpants), which would defeat the purpose of using them for compensatory reasons.

In summary, the present thesis extends our understanding of how being exposed to scarcity-related cues affects consumers' personality states and, as a consequence, subsequent behavior. Across three studies, I demonstrate that reminders of resource scarcity prompt state narcissism, and that this shift help explains the relationship between resource scarcity and selfishness. I further show that consumers reminded of resource scarcity express product preferences similar to those of narcissists. Although additional research is necessary to fully understand the boundaries of these effects, this research provides an important step towards a better understanding of how resource scarcity shapes personality states and related behaviors.

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Appendices

Appendix 1: Listing Task Manipulation

Scarcity condition

Please list 3 things you would not be able to do without **gasoline**:

1	
2	
3	

Please list 3 things you would not be able to do without **sugar**:

1	
2	
3	

Please list 3 things you would not be able to do without **water**:

1	
2	
3	

Control condition

Please list 3 things you use **gasoline** for:

1	
2	
3	

Please list 3 things you use **sugar** for:

1	
2	
3	

Please list 3 things you use **water** for:

1	
2	
3	

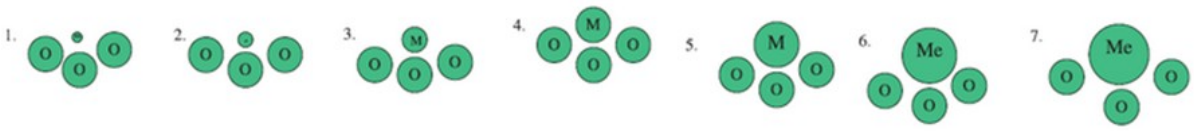
Appendix 2: Narcissism Sub-Scale of the Short Dark Triad (Jones & Paulhus, 2014)

Please indicate the extent to which you agree or disagree with the following statements:

	Strongly Disagree 1	2	3	4	5	6	Strongly Agree 7
People see me as a natural leader.	○	○	○	○	○	○	○
I hate being the center of attention.	○	○	○	○	○	○	○
Many group activities tend to be dull without me.	○	○	○	○	○	○	○
I know I am special because everyone keeps telling me so.	○	○	○	○	○	○	○
I like to get acquainted with important people.	○	○	○	○	○	○	○
	Strongly Disagree 1	2	3	4	5	6	Strongly Agree 7
I feel embarrassed if someone compliments me.	○	○	○	○	○	○	○
I have been compared to famous people.	○	○	○	○	○	○	○
I am an average person.	○	○	○	○	○	○	○
I insist on getting the respect I deserve.	○	○	○	○	○	○	○

Appendix 3: Me Vs. Other Scale (Campbell et al., 2004); Study 2

Click on the circle next to the diagram that best represents how you see yourself (Me) compared to others (O):



Appendix 4: Mediation Analysis, All Results; Study 2

```
************** PROCESS Procedure for SPSS Release 2.16 *******************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2013). www.guilford.com/p/hayes3

**************************************************************************
Model = 4
    Y = MeOthers
    X = Scarcity
    M = Narcissism

Sample size
        198

**************************************************************************
Outcome: Narcissism

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .1603      .0257     1.2478     5.1683     1.0000   196.0000      .0241

Model
              coeff         se          t          p       LLCI       ULCI
constant     3.3890      .0795    42.6368      .0000     3.2323     3.5458
Scarcity      .1807      .0795     2.2734      .0241      .0239      .3375

**************************************************************************
Outcome: MeOthers

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .4524      .2047     1.1259    25.0891     2.0000   195.0000      .0000

Model
                     coeff         se          t          p       LLCI       ULCI
constant     2.6159      .2420    10.8084      .0000     2.1386     3.0932
Narcissi      .4528      .0678     6.6737      .0000      .3190      .5866
Scarcity      .0975      .0765     1.2745      .2040     -.0534      .2484

******************** DIRECT AND INDIRECT EFFECTS *************************

Direct effect of X on Y
     Effect         SE          t          p       LLCI       ULCI
      .0975      .0765     1.2745      .2040     -.0534      .2484

Indirect effect of X on Y
             Effect    Boot SE   BootLLCI   BootULCI
Narcissi      .0818      .0390      .0150      .1714

******************** ANALYSIS NOTES AND WARNINGS *************************

Number of bootstrap samples for bias corrected bootstrap confidence intervals:
     5000

Level of confidence for all confidence intervals in output:
    95.00

------ END MATRIX -----
```

Appendix 5: Product Preferences Measure Example; Study 3

Which Burberry watch do you prefer?

(Please wait for the pictures to load.)

Watch A

Watch B

Definitely watch A ○ ○ ○ ○ ○ ○ Definitely watch B ○

Which Louis Vuitton purse do you prefer?

(Please wait for the pictures to load.)

Purse A

Purse B

Definitely purse A ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ Definitely purse B ○

Appendix 6: Repeated-Measure ANOVA; Study 3

*Results do not include the shoes/polo shirts pair

Within-Subjects Factors

Measure: MEASURE_1

Product	Dependent Variable
1	WatchPurseMatched
2	HatHoodieMatched

Between-Subjects Factors

		Value Label	N
ScarcityManip	0	Control	55
	1	Scarcity	54

Descriptive Statistics

	ScarcityManip	Mean	Std. Deviation	N
WatchPurseMatched	Control	2.2909	1.79168	55
	Scarcity	3.2222	2.30395	54
	Total	2.7523	2.10447	109
HatHoodieMatched	Control	3.0000	2.30137	55
	Scarcity	2.7407	2.25024	54
	Total	2.8716	2.26936	109

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Product	Pillai's Trace	.002	.199[b]	1.000	107.000	.656	.002
	Wilks' Lambda	.998	.199[b]	1.000	107.000	.656	.002
	Hotelling's Trace	.002	.199[b]	1.000	107.000	.656	.002
	Roy's Largest Root	.002	.199[b]	1.000	107.000	.656	.002
Product * ScarcityManip	Pillai's Trace	.048	5.446[b]	1.000	107.000	.021	.048
	Wilks' Lambda	.952	5.446[b]	1.000	107.000	.021	.048
	Hotelling's Trace	.051	5.446[b]	1.000	107.000	.021	.048
	Roy's Largest Root	.051	5.446[b]	1.000	107.000	.021	.048

a. Design: Intercept + ScarcityManip
Within Subjects Design: Product

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b]		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Product	1.000	.000	0	.	1.000	1.000	1.000

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept + ScarcityManip
Within Subjects Design: Product

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

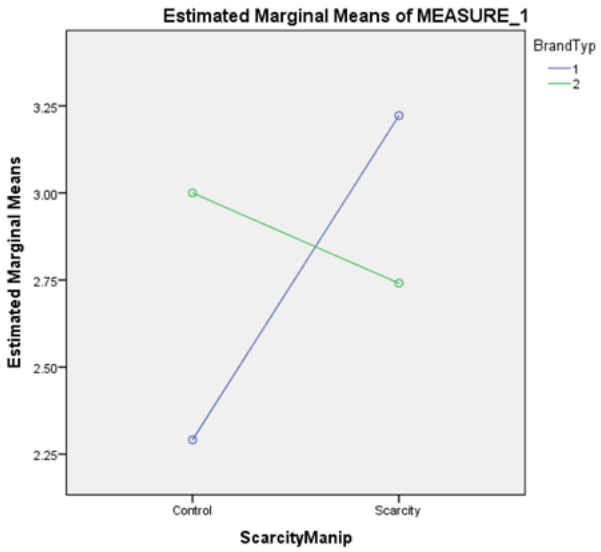
Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Product	Sphericity Assumed	.706	1	.706	.199	.656	.002
	Greenhouse-Geisser	.706	1.000	.706	.199	.656	.002
	Huynh-Feldt	.706	1.000	.706	.199	.656	.002
	Lower-bound	.706	1.000	.706	.199	.656	.002
Product * ScarcityManip	Sphericity Assumed	19.311	1	19.311	5.446	.021	.048
	Greenhouse-Geisser	19.311	1.000	19.311	5.446	.021	.048
	Huynh-Feldt	19.311	1.000	19.311	5.446	.021	.048
	Lower-bound	19.311	1.000	19.311	5.446	.021	.048
Error(Product)	Sphericity Assumed	379.413	107	3.546			
	Greenhouse-Geisser	379.413	107.000	3.546			
	Huynh-Feldt	379.413	107.000	3.546			
	Lower-bound	379.413	107.000	3.546			

Tests of Within-Subjects Contrasts

Measure: MEASURE_1

Source	Product	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Product	Linear	.706	1	.706	.199	.656	.002
Product * ScarcityManip	Linear	19.311	1	19.311	5.446	.021	.048
Error(Product)	Linear	379.413	107	3.546			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BrandTyp
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2
Estimated Marginal Means
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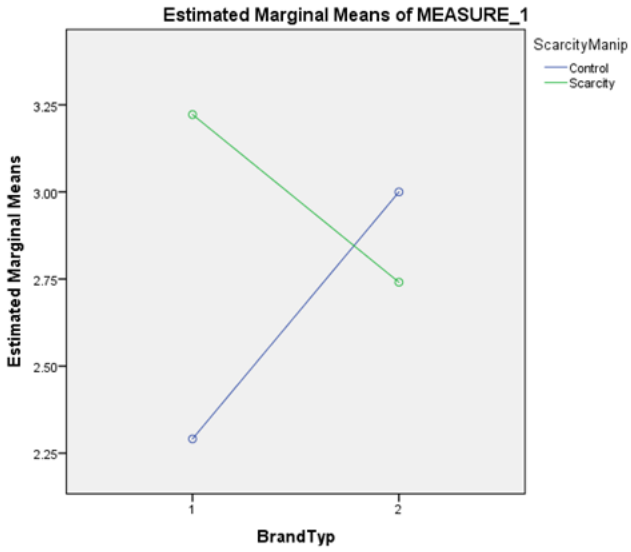
3.00
2.75
2.50
2.25
Control
Scarcity
ScarcityManip


Estimated Marginal Means of MEASURE_1
ScarcityManip
Control
Scarcity
Estimated Marginal Means
3.25
3.00
2.75
2.50
2.25
1
2
BrandTyp

Appendix 7: Pairwise Comparisons by Condition; Study 3

*Results do not include the shoes/polo shirts pair

Estimates

Measure: MEASURE_1

Product	ScarcityManip	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
1	Control	2.291	.278	1.740	2.842
	Scarcity	3.222	.281	2.666	3.778
2	Control	3.000	.307	2.392	3.608
	Scarcity	2.741	.310	2.127	3.355

Pairwise Comparisons

Measure: MEASURE_1

Product	(I) ScarcityManip	(J) ScarcityManip	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
						Lower Bound	Upper Bound
1	Control	Scarcity	-.931*	.395	.020	-1.714	-.148
	Scarcity	Control	.931*	.395	.020	.148	1.714
2	Control	Scarcity	.259	.436	.553	-.605	1.124
	Scarcity	Control	-.259	.436	.553	-1.124	.605

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Univariate Tests

Measure: MEASURE_1

Product		Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
1	Contrast	23.633	1	23.633	5.562	.020	.049
	Error	454.679	107	4.249			
2	Contrast	1.831	1	1.831	.353	.553	.003
	Error	554.370	107	5.181			

Each F tests the simple effects of ScarcityManip within each level combination of the other effects shown. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.

Appendix 8: Repeated-Measure ANOVA Including All Products; Study 3

Within-Subjects Factors

Measure: MEASURE_1

Product	Dependent Variable
1	WatchPurseMatched
2	HatHoodieMatched
3	PoloShoesMatched

Between-Subjects Factors

		Value Label	N
ScarcityManip	0	Control	55
	1	Scarcity	53

Descriptive Statistics

	ScarcityManip	Mean	Std. Deviation	N
WatchPurseMatched	Control	2.2909	1.79168	55
	Scarcity	3.2453	2.31970	53
	Total	2.7593	2.11302	108
HatHoodieMatched	Control	3.0000	2.30137	55
	Scarcity	2.7736	2.25867	53
	Total	2.8889	2.27269	108
PoloShoesMatched	Control	2.5091	2.14193	55
	Scarcity	2.8491	2.16969	53
	Total	2.6759	2.15228	108

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Product	Pillai's Trace	.006	.329[b]	2.000	105.000	.720	.006
	Wilks' Lambda	.994	.329[b]	2.000	105.000	.720	.006
	Hotelling's Trace	.006	.329[b]	2.000	105.000	.720	.006
	Roy's Largest Root	.006	.329[b]	2.000	105.000	.720	.006
Product * ScarcityManip	Pillai's Trace	.055	3.062[b]	2.000	105.000	.051	.055
	Wilks' Lambda	.945	3.062[b]	2.000	105.000	.051	.055
	Hotelling's Trace	.058	3.062[b]	2.000	105.000	.051	.055
	Roy's Largest Root	.058	3.062[b]	2.000	105.000	.051	.055

a. Design: Intercept + ScarcityManip
Within Subjects Design: Product

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Product	.842	18.025	2	.000	.864	.885	.500

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept + ScarcityManip
Within Subjects Design: Product

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Product	Sphericity Assumed	2.345	2	1.172	.385	.681	.004
	Greenhouse-Geisser	2.345	1.727	1.357	.385	.650	.004
	Huynh-Feldt	2.345	1.770	1.325	.385	.656	.004
	Lower-bound	2.345	1.000	2.345	.385	.536	.004
Product * ScarcityManip	Sphericity Assumed	18.826	2	9.413	3.089	.048	.028
	Greenhouse-Geisser	18.826	1.727	10.898	3.089	.055	.028
	Huynh-Feldt	18.826	1.770	10.636	3.089	.054	.028
	Lower-bound	18.826	1.000	18.826	3.089	.082	.028
Error(Product)	Sphericity Assumed	646.019	212	3.047			
	Greenhouse-Geisser	646.019	183.115	3.528			
	Huynh-Feldt	646.019	187.628	3.443			
	Lower-bound	646.019	106.000	6.095			

Tests of Within-Subjects Contrasts

Measure: MEASURE_1

Source	Product	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Product	Linear	.428	1	.428	.233	.631	.002
	Quadratic	1.917	1	1.917	.451	.504	.004
Product * ScarcityManip	Linear	5.094	1	5.094	2.769	.099	.025
	Quadratic	13.732	1	13.732	3.228	.075	.030
Error(Product)	Linear	195.031	106	1.840			
	Quadratic	450.989	106	4.255			

Tests of Between-Subjects Effects

Measure: MEASURE_1

Transformed Variable: Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	2499.520	1	2499.520	311.354	.000	.746
ScarcityManip	10.261	1	10.261	1.278	.261	.012
Error	850.958	106	8.028			

1. Product

Measure: MEASURE_1

Product	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1	2.768	.199	2.374	3.163
2	2.887	.219	2.452	3.322
3	2.679	.207	2.268	3.090

2. ScarcityManip

Measure: MEASURE_1

ScarcityManip	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Control	2.600	.221	2.163	3.037
Scarcity	2.956	.225	2.510	3.401

Estimates

Measure: MEASURE_1

Product	ScarcityManip	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
1	Control	2.291	.279	1.738	2.844
	Scarcity	3.245	.284	2.682	3.808
2	Control	3.000	.308	2.390	3.610
	Scarcity	2.774	.313	2.153	3.395
3	Control	2.509	.291	1.933	3.085
	Scarcity	2.849	.296	2.262	3.436

Pairwise Comparisons

Measure: MEASURE_1

Product	(I) ScarcityManip	(J) ScarcityManip	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
						Lower Bound	Upper Bound
1	Control	Scarcity	-.954*	.398	.018	-1.743	-.165
	Scarcity	Control	.954*	.398	.018	.165	1.743
2	Control	Scarcity	.226	.439	.607	-.644	1.097
	Scarcity	Control	-.226	.439	.607	-1.097	.644
3	Control	Scarcity	-.340	.415	.414	-1.163	.483
	Scarcity	Control	.340	.415	.414	-.483	1.163

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

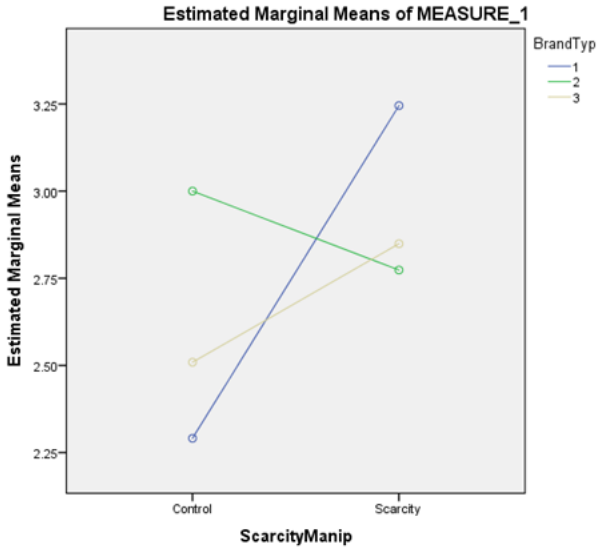
b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

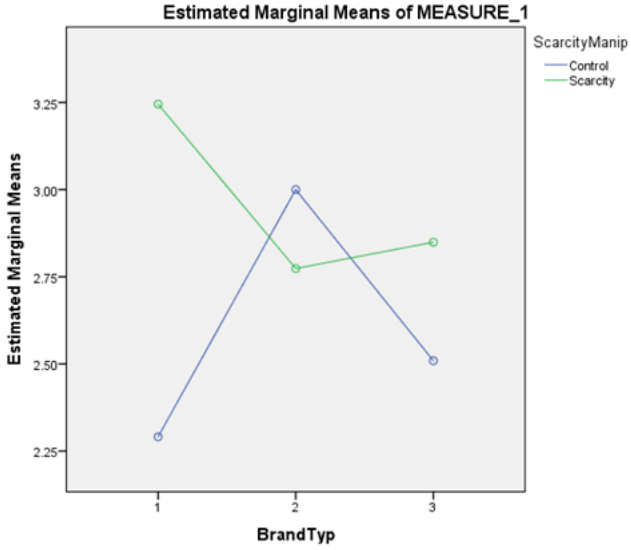
Univariate Tests

Measure: MEASURE_1

Product		Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
1	Contrast	24.584	1	24.584	5.751	.018	.051
	Error	453.157	106	4.275			
2	Contrast	1.384	1	1.384	.266	.607	.003
	Error	551.283	106	5.201			
3	Contrast	3.120	1	3.120	.671	.414	.006
	Error	492.538	106	4.647			

Each F tests the simple effects of ScarcityManip within each level combination of the other effects shown. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.


Estimated Marginal Means of MEASURE_1
BrandTyp
1
2
3
Estimated Marginal Means
3.25
3.00
2.75
2.50
2.25
Control
Scarcity
ScarcityManip


Estimated Marginal Means of MEASURE_1
ScarcityManip
Control
Scarcity
Estimated Marginal Means
3.25
3.00
2.75
2.50
2.25
1
2
3
BrandTyp

Appendix 9: Alternate Repeated-Measure ANOVAs; Study 3

* Compares the purses/watches to the sweaters/polo shirts product pairs

Within-Subjects Factors

Measure: MEASURE_1

BrandTyp	Dependent Variable
1	WatchPurseMatched
2	PoloHoodieMatched

Between-Subjects Factors

		Value Label	N
ScarcityManip	0	Control	55
	1	Scarcity	53

Descriptive Statistics

	ScarcityManip	Mean	Std. Deviation	N
WatchPurseMatched	Control	2.2909	1.79168	55
	Scarcity	3.2453	2.31970	53
	Total	2.7593	2.11302	108
PoloHoodieMatched	Control	2.4364	2.12362	55
	Scarcity	2.4151	2.17002	53
	Total	2.4259	2.13648	108

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
BrandTyp	Pillai's Trace	.025	2.725[b]	1.000	106.000	.102	.025
	Wilks' Lambda	.975	2.725[b]	1.000	106.000	.102	.025
	Hotelling's Trace	.026	2.725[b]	1.000	106.000	.102	.025
	Roy's Largest Root	.026	2.725[b]	1.000	106.000	.102	.025
BrandTyp * ScarcityManip	Pillai's Trace	.050	5.532[b]	1.000	106.000	.021	.050
	Wilks' Lambda	.950	5.532[b]	1.000	106.000	.021	.050
	Hotelling's Trace	.052	5.532[b]	1.000	106.000	.021	.050
	Roy's Largest Root	.052	5.532[b]	1.000	106.000	.021	.050

a. Design: Intercept + ScarcityManip
Within Subjects Design: BrandTyp

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b]		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
BrandTyp	1.000	.000	0	.	1.000	1.000	1.000

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept + ScarcityManip
Within Subjects Design: BrandTyp

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
BrandTyp	Sphericity Assumed	6.327	1	6.327	2.725	.102	.025
	Greenhouse-Geisser	6.327	1.000	6.327	2.725	.102	.025
	Huynh-Feldt	6.327	1.000	6.327	2.725	.102	.025
	Lower-bound	6.327	1.000	6.327	2.725	.102	.025
BrandTyp * ScarcityManip	Sphericity Assumed	12.846	1	12.846	5.532	.021	.050
	Greenhouse-Geisser	12.846	1.000	12.846	5.532	.021	.050
	Huynh-Feldt	12.846	1.000	12.846	5.532	.021	.050
	Lower-bound	12.846	1.000	12.846	5.532	.021	.050
Error(BrandTyp)	Sphericity Assumed	246.154	106	2.322			
	Greenhouse-Geisser	246.154	106.000	2.322			
	Huynh-Feldt	246.154	106.000	2.322			
	Lower-bound	246.154	106.000	2.322			

Tests of Within-Subjects Contrasts

Measure: MEASURE_1

Source	BrandTyp	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
BrandTyp	Linear	6.327	1	6.327	2.725	.102	.025
BrandTyp * ScarcityManip	Linear	12.846	1	12.846	5.532	.021	.050
Error(BrandTyp)	Linear	246.154	106	2.322			

Tests of Between-Subjects Effects

Measure: MEASURE_1

Transformed Variable: Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	1456.195	1	1456.195	221.969	.000	.677
ScarcityManip	11.750	1	11.750	1.791	.184	.017
Error	695.398	106	6.560			

1. ScarcityManip

Measure: MEASURE_1

ScarcityManip	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Control	2.364	.244	1.879	2.848
Scarcity	2.830	.249	2.337	3.323

2. BrandTyp

Measure: MEASURE_1

BrandTyp	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1	2.768	.199	2.374	3.163
2	2.426	.207	2.016	2.835

Estimates

Measure: MEASURE_1

ScarcityManip	BrandTyp	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Control	1	2.291	.279	1.738	2.844
	2	2.436	.289	1.863	3.010
Scarcity	1	3.245	.284	2.682	3.808
	2	2.415	.295	1.831	3.000

Pairwise Comparisons

Measure: MEASURE_1

BrandTyp	(I) ScarcityManip	(J) ScarcityManip	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
						Lower Bound	Upper Bound
1	Control	Scarcity	-.954*	.398	.018	-1.743	-.165
	Scarcity	Control	.954*	.398	.018	.165	1.743
2	Control	Scarcity	-.021	.413	.959	-.798	.840
	Scarcity	Control	-.021	.413	.959	-.840	.798

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

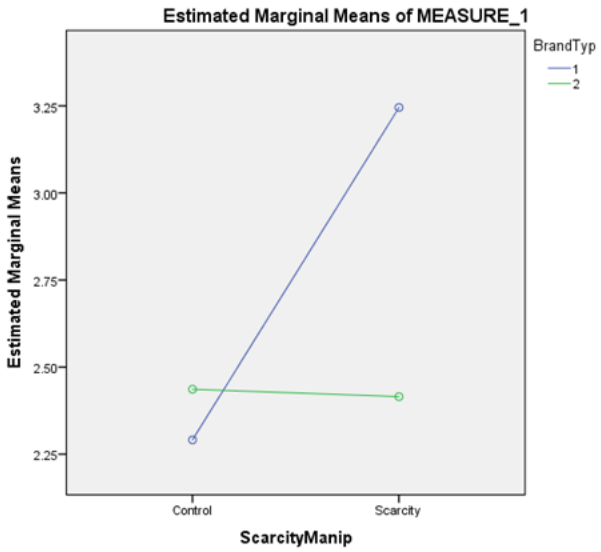
b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Univariate Tests

Measure: MEASURE_1

BrandTyp		Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
1	Contrast	24.584	1	24.584	5.751	.018	.051
	Error	453.157	106	4.275			
2	Contrast	.012	1	.012	.003	.959	.000
	Error	488.395	106	4.608			

Each F tests the simple effects of ScarcityManip within each level combination of the other effects shown. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.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BrandTyp
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Estimated Marginal Means
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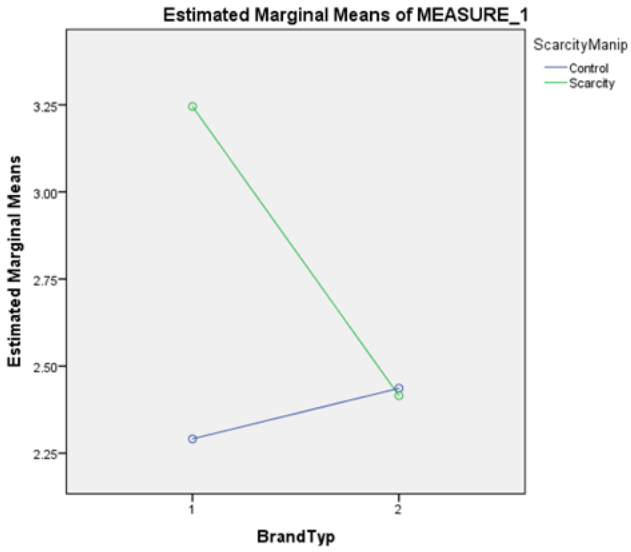
3.00
2.75
2.50
2.25
Control
Scarcity
ScarcityManip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ScarcityManip
Control
Scarcity
Estimated Marginal Means
3.25
3.00
2.75
2.50
2.25
1
2
BrandTyp

* Compares the shoes/watches to the sweaters/hats product pairs

Within-Subjects Factors

Measure: MEASURE_1

BrandTyp	Dependent Variable
1	WatchShoes Matched
2	HatHoodieMatched

Between-Subjects Factors

		Value Label	N
ScarcityManip	0	Control	55
	1	Scarcity	54

Descriptive Statistics

	ScarcityManip	Mean	Std. Deviation	N
WatchShoesMatched	Control	3.9091	2.53328	55
	Scarcity	4.6667	2.23184	54
	Total	4.2844	2.40790	109
HatHoodieMatched	Control	3.0000	2.30137	55
	Scarcity	2.7407	2.25024	54
	Total	2.8716	2.26936	109

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
BrandTyp	Pillai's Trace	.157	19.860[b]	1.000	107.000	.000	.157
	Wilks' Lambda	.843	19.860[b]	1.000	107.000	.000	.157
	Hotelling's Trace	.186	19.860[b]	1.000	107.000	.000	.157
	Roy's Largest Root	.186	19.860[b]	1.000	107.000	.000	.157
BrandTyp * ScarcityManip	Pillai's Trace	.023	2.572[b]	1.000	107.000	.112	.023
	Wilks' Lambda	.977	2.572[b]	1.000	107.000	.112	.023
	Hotelling's Trace	.024	2.572[b]	1.000	107.000	.112	.023
	Roy's Largest Root	.024	2.572[b]	1.000	107.000	.112	.023

a. Design: Intercept + ScarcityManip
Within Subjects Design: BrandTyp

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b]		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
BrandTyp	1.000	.000	0	.	1.000	1.000	1.000

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept + ScarcityManip
Within Subjects Design: BrandTyp

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type II Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
BrandTyp	Sphericity Assumed	108.789	1	108.789	19.860	.000	.157
	Greenhouse-Geisser	108.789	1.000	108.789	19.860	.000	.157
	Huynh-Feldt	108.789	1.000	108.789	19.860	.000	.157
	Lower-bound	108.789	1.000	108.789	19.860	.000	.157
BrandTyp * ScarcityManip	Sphericity Assumed	14.086	1	14.086	2.572	.112	.023
	Greenhouse-Geisser	14.086	1.000	14.086	2.572	.112	.023
	Huynh-Feldt	14.086	1.000	14.086	2.572	.112	.023
	Lower-bound	14.086	1.000	14.086	2.572	.112	.023
Error(BrandTyp)	Sphericity Assumed	586.125	107	5.478			
	Greenhouse-Geisser	586.125	107.000	5.478			
	Huynh-Feldt	586.125	107.000	5.478			
	Lower-bound	586.125	107.000	5.478			

Tests of Within-Subjects Contrasts

Measure: MEASURE_1

Source	BrandTyp	Type II Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
BrandTyp	Linear	108.789	1	108.789	19.860	.000	.157
BrandTyp * ScarcityManip	Linear	14.086	1	14.086	2.572	.112	.023
Error(BrandTyp)	Linear	586.125	107	5.478			

Tests of Between-Subjects Effects

Measure: MEASURE_1

Transformed Variable: Average

Source	Type II Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	2790.826	1	2790.826	515.934	.000	.828
ScarcityManip	3.383	1	3.383	.625	.431	.006
Error	578.791	107	5.409			

1. ScarcityManip

Measure: MEASURE_1

ScarcityManip	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Control	3.455	.222	3.015	3.894
Scarcity	3.704	.224	3.260	4.147

2. BrandTyp

Measure: MEASURE_1

BrandTyp	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1	4.288	.229	3.834	4.741
2	2.870	.218	2.438	3.303

Estimates

Measure: MEASURE_1

ScarcityManip	BrandTyp	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Control	1	3.909	.322	3.271	4.548
	2	3.000	.307	2.392	3.608
Scarcity	1	4.667	.325	4.022	5.311
	2	2.741	.310	2.127	3.355

Pairwise Comparisons

Measure: MEASURE_1

BrandTyp	(I) ScarcityManip	(J) ScarcityManip	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a]	
						Lower Bound	Upper Bound
1	Control	Scarcity	-.758	.458	.101	-1.665	.150
	Scarcity	Control	.758	.458	.101	-.150	1.665
2	Control	Scarcity	.259	.436	.553	-.605	1.124
	Scarcity	Control	-.259	.436	.553	-1.124	.605

Based on estimated marginal means

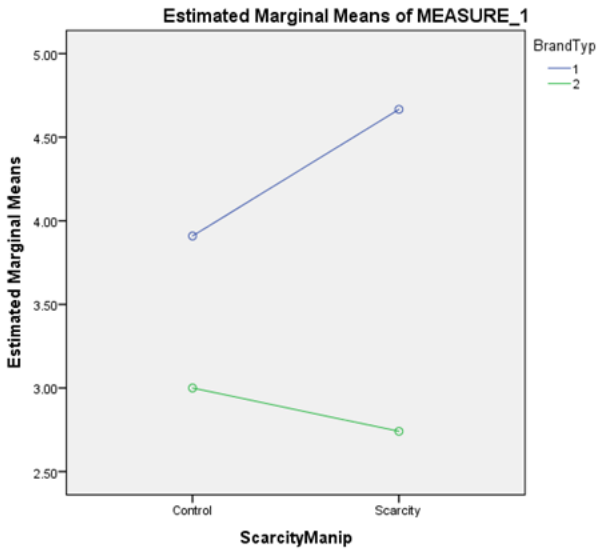
a. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

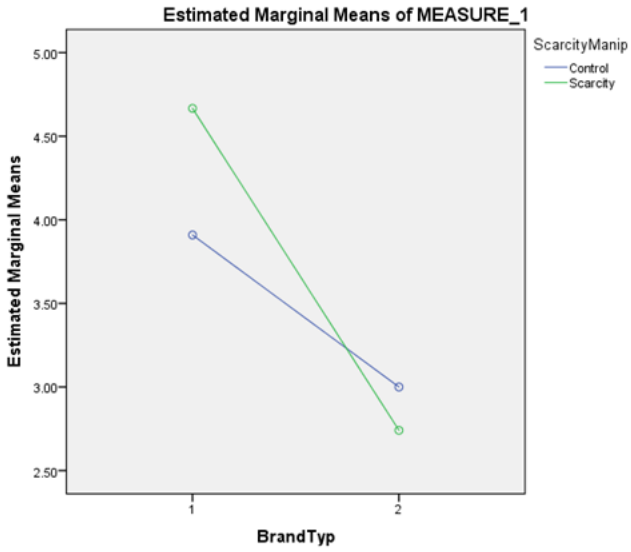
Univariate Tests

Measure: MEASURE_1

BrandTyp		Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
1	Contrast	15.638	1	15.638	2.741	.101	.025
	Error	610.545	107	5.706			
2	Contrast	1.831	1	1.831	.353	.553	.003
	Error	554.370	107	5.181			

Each F tests the simple effects of ScarcityManip within each level combination of the other effects shown. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.


Estimated Marginal Means of MEASURE_1
BrandTyp
1
2
Estimated Marginal Means
5.00
4.50
4.00
3.50
3.00
2.50
Control
Scarcity
ScarcityManip


Estimated Marginal Means of MEASURE_1
ScarcityManip
Control
Scarcity
Estimated Marginal Means
5.00
4.50
4.00
3.50
3.00
2.50
1
2
BrandTyp

Appendix 10: Pairwise Comparisons by Brand Type; Study 3

Within-Subjects Factors

Measure: MEASURE_1

BrandTyp	Dependent Variable
1	WatchPurseMatched
2	HatHoodieMatched

Descriptive Statistics

	Mean	Std. Deviation	N
WatchPurseMatched	2.4677	1.92241	62
HatHoodieMatched	3.1935	2.34583	62

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
BrandTyp	Pillai's Trace	.084	5.560[b]	1.000	61.000	.022	.084
	Wilks' Lambda	.916	5.560[b]	1.000	61.000	.022	.084
	Hotelling's Trace	.091	5.560[b]	1.000	61.000	.022	.084
	Roy's Largest Root	.091	5.560[b]	1.000	61.000	.022	.084

a. Design: Intercept
Within Subjects Design: BrandTyp

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b]		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
BrandTyp	1.000	.000	0	.	1.000	1.000	1.000

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: BrandTyp

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
BrandTyp	Sphericity Assumed	16.331	1	16.331	5.560	.022	.084
	Greenhouse-Geisser	16.331	1.000	16.331	5.560	.022	.084
	Huynh-Feldt	16.331	1.000	16.331	5.560	.022	.084
	Lower-bound	16.331	1.000	16.331	5.560	.022	.084
Error(BrandTyp)	Sphericity Assumed	179.169	61	2.937			
	Greenhouse-Geisser	179.169	61.000	2.937			
	Huynh-Feldt	179.169	61.000	2.937			
	Lower-bound	179.169	61.000	2.937			

Tests of Within-Subjects Contrasts

Measure: MEASURE_1

Source	BrandTyp	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
BrandTyp	Linear	16.331	1	16.331	5.560	.022	.084
Error(BrandTyp)	Linear	179.169	61	2.937			

Tests of Between-Subjects Effects

Measure: MEASURE_1

Transformed Variable: Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	993.556	1	993.556	158.680	.000	.722
Error	381.944	61	6.261