

Lonely Consumers:
When, How, and Why Does Loneliness Influence Consumer Behavior?

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Dissertation submitted to the faculty of the Virginia Polytechnic Institute and State
University in partial fulfillment of the requirements for the degree of

Doctor of Philosophy
In
Business, Marketing

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March 23, 2017
Blacksburg, Virginia

Keywords: Loneliness, Emotion Regulation, Consumer Behavior

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ABSTRACT

Although the advance of social media has enabled people to build social connections much more easily than ever before, loneliness—an aversive feeling of being isolated and disconnected—persists in modern society. In this dissertation, I examine when, how, and why loneliness influences consumer behavior. First, I develop an experimental method to induce loneliness and identify a circumstance that experimenters can obtain a successful loneliness priming effect. Across three experiments, I demonstrate that the same loneliness primes produce different loneliness responses based on the availability of cognitive resources. Specifically, participants who are cognitively depleted tend to rely on responses evoked by the loneliness primes (showing the intended loneliness priming effect) while those with abundant cognitive resources are not affected by the loneliness primes. Building on the findings from Experiments 1-3, I investigate how loneliness affects consumer behaviors in two different marketing contexts, nostalgic product consumption and charitable giving by focusing on how consumers cope with loneliness through consumption. In Experiments 4-5, I demonstrate that consumers who lack cognitive resources tend to form positive attitudes toward nostalgic products when experiencing loneliness. In Experiments 6-7, I show that lonely consumers with limited cognitive resources are likely to donate money to a charitable organization. Additionally, I find that consumers can regulate feelings of loneliness by spending money either for themselves (i.e., nostalgic products) or for others (i.e., charitable giving). This dissertation contributes to our understanding of loneliness in marketing by identifying a circumstance in which such emotional distress significantly influences consumer behavior and by showing how consumers spend money to cope with loneliness.

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GENERAL AUDIENCE ABSTRACT

Although the advance of social media has enabled people to build social connections more easily than ever before, loneliness—an unpleasant feeling of isolation and disconnection—persists in modern society. The purpose of this dissertation is to expand our understanding of how consumers behave when faced with the unpleasant feeling of loneliness. Specifically, in this dissertation, I examine when, how, and why loneliness influences consumption behaviors such as preference for nostalgic products and charitable giving. First, I identify a way to experimentally manipulate consumers' feelings of loneliness. I then apply this methodology in order to investigate behavioral differences between more and less lonely participants. Specifically, I demonstrate that lonely consumers are likely to prefer nostalgic products. This effect occurs because nostalgic consumption is associated with an expectation of positive emotions that consumers may seek out in part to reduce feelings of loneliness. In a similar vein, I show that loneliness can increase consumers' intentions to donate to a charity. Importantly, such intentions to donate are differentially impacted by the types of charitable organizations represented. Specifically, lonely consumers are more likely than less lonely consumers to donate money to a charity supporting a person-related cause (e.g., helping children). Such an effect occurs due to the expected psychological benefits such donations will yield, such as anticipated positive emotions from helping others, which may help lonely consumers overcome their negative feelings. This dissertation contributes to our understanding of loneliness in marketing by showing that consumers may strategically spend money, either on products or via donations, to cope with their emotional distress. Several implications for marketing researchers and practitioners are discussed.

ACKNOWLEDGEMENTS

First, I would like to express my sincere gratitude to my advisor, Dr. Paul M. Herr, for his support and encouragement during my years in the Ph.D. program at Virginia Tech. I would also like to express my deep appreciation to Dr. Eloise Coupey, the co-chair of this dissertation, for her thoughtful suggestions and cheerful guidance throughout this process.

I would like to thank my committee, Dr. Rajesh Bagchi, Dr. David Brinberg, and Dr. Frank D. May, for their constructive and valuable comments on this research. My special thanks are extended to my officemate, Rebecca Rabino, for her support and friendship during the doctoral program. In addition, I thank my fellow graduate students, Daniel Villanova, Yegyu Han, Debjit Gupta, Vivian Xie, and Deasy Priadi, for their help and warm support.

I am also thankful to my former advisor, the late Moonkyu Lee, who led me to pursue this journey. His guidance and encouragement will not be forgotten.

I am deeply grateful to my wife, Yujin Lee, for her unwavering encouragement and love. In addition, I am very thankful to my brother, Jungkwon Kim, for his support. Lastly, I wish to express my deepest appreciation to my parents for their endless love and emotional support. Without their support, I could not have completed this work. With all my heart, I dedicate this dissertation to my parents.

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CHAPTER 1. GENERAL INTRODUCTION

Recent advances in social media have enabled people to make social connections with others more easily than ever before. Paradoxically, the number of Americans suffering from chronic loneliness has skyrocketed in the last two decades (Cacioppo and Patrick 2008; McPherson 2006). Since retention of strong and stable interpersonal relationships is a fundamental human need (Baumeister and Leary 1995), a failure to establish and maintain social connections may cause people to feel loneliness.

Loneliness is defined as feelings of social isolation and dissatisfaction with one's social interactions (Russell et al. 1980). Both quantity and quality of social contacts significantly impinge on how people perceive a discrepancy between desired and actual social relationships (Hays and DiMatteo 1987; Russell et al. 1980), though the quality of social relationships is generally considered more closely associated with loneliness (Masi et al., 2011). Loneliness may be a danger signal to persons with relatively few social connections that motivates (re)connection with others (Hawkely and Cacioppo, 2010). Similar to other essential needs (e.g., hunger and thirst), people experiencing loneliness may engage in a variety of activities to avoid such emotional pain. One way to resolve one's deficit of social connectedness is to increase opportunities to make a new relationship with others, such as participating in community work (Masi et al. 2011). However, these opportunities may not be readily available for people with social pain if they not only are shy and introverted, but also lack social skills (Cacioppo et al. 2006). Additionally, recent research proposed that loneliness could lead people to have preventive motivation (Park and Baumeister 2015). In the context of social relationships, this implies that lonely individuals may have difficulties with establishing a new relationship with

others. In such circumstances, people can replenish their social needs by connecting with non-human objects (Deci and Ryan 2000; Epley, et al. 2007; Epley et al. 2008). This suggests that individuals may be able to reduce feelings of loneliness through product consumption (Pieters 2013).

The impact of loneliness on mental and physical health has been widely studied in psychology and neuroscience. Prior work has revealed that loneliness can influence various health conditions, such as increased blood pressure, depression, and diminished immune response (Cacioppo et al. 2002; Cacioppo et al. 2010; Kiecolt-Glaser et al. 1984). Moreover, lonely individuals are more vulnerable to social threats (e.g., others' negative evaluations), creating negative biases (e.g., paying more attention to others' negative evaluation) in social interactions. This maladaptive social cognition creates a vicious cycle, leading lonely individuals to remain isolated (Cacioppo and Hawkley 2009; Newall et al. 2009). Given that loneliness substantially affects one's psychological and physical well-being, successful coping with loneliness seems to play a critical role in maintaining one's healthy life.

Despite its remarkable influences on human behavior, consumer researchers have paid little attention to *when*, *why*, and *how* loneliness impacts consumer behavior. Moreover, how lonely consumers cope with their emotional distress through consumption remains to be demonstrated. Because peoples' self-concepts are often reflected in their consumption (Belk 1988), loneliness may be manifest in consumer behavior as a coping mechanism. For example, recent studies in consumer research have demonstrated the impact of loneliness on shopping patterns (Wang, Zhu and Shiv 2012) and impulsive consumption (Sinha and Wang 2013).

This prior work, however, has mainly focused on how lonely consumers differ from non-lonely consumers in the context of product consumption. In addition, these studies have treated

loneliness as a measured variable using the UCLA loneliness scale. Though the work extends our understanding of the role of loneliness in consumer behavior, a causal relationship between loneliness and consumption is left uncertain. Furthermore, it may be difficult to capture how a chronic and a state loneliness differently influence consumer behavior, when relying solely on the loneliness scale. Experimentally inducing loneliness is challenging because this emotional pain is perceived to be an extremely undesirable and aversive emotional state. Thus, participants may spontaneously regulate experimentally-induced loneliness and not show differences on self-report scales. Nevertheless, it seems necessary to establish a causal link between loneliness and consumer behavior to fully understand the role of loneliness in marketing. In this dissertation (Experiments 1-3), I attempt to develop an experimental method to induce feelings of loneliness using priming techniques and to identify when the loneliness priming effect can be successfully detected.

A large body of priming literature has demonstrated that both positive and negative emotions can be successfully primed experimentally and, as a result, researchers can study a variety of behavioral consequences of the primed emotions. This experimental technique has been widely used in consumer research, too (Janiszewski and Wyer 2014). For instance, previous research on emotion has employed either conscious or unconscious priming to induce specific types of emotion (e.g., guilt), as well as diffused mood states (Berridge and Winkielman 2003; Lerner and Keltner 2000; Zemack-Rugar, Bettman, and Fitzsimon 2007). It is also well documented that people behave in different ways based on the recent activation of emotion concepts (Zemack-Rugar, Bettman, and Fitzsimon 2007). Although the literature on emotion priming is well documented across various topics in consumer research, there is little work

focusing specifically on loneliness. Can loneliness, one of the most undesirable emotional states, also be primed with experimental methods?

Because loneliness may be considered extremely aversive and undesirable, measuring the effects of priming loneliness also may be especially difficult. Specifically, participants may automatically and spontaneously regulate experimentally induced loneliness, even before asked to respond to questions measuring their level of loneliness (Gyurak, Gross, and Etkin 2011; Koole and Rothermund 2011; Mauss, Bunge, and Gross 2007). Thus, participants may either consciously or unconsciously respond to loneliness-related primes before any loneliness-relevant dependent measure is collected. In such cases, researchers are unable to detect whether the primed emotion (i.e., loneliness) has even been activated. The question then arises: under what circumstances can a loneliness priming effect be detected?

Prior work on priming has suggested that cognitive resources influence participants' response to primes (Bargh and Thein 1985; Bertrams et al. 2015; Logan 1979; Davis and Herr 2014; Morewedge and Kahneman 2010). In addition, the literature on emotion regulation has suggested that cognitive resources can play a critical role in regulating either positive or negative emotions (Ochsner and Gross 2005; Gross 2001; Joormann and Gotlib 2010). This suggests that people can successfully regulate emotions using emotional regulation strategies, such as counter-argument, reappraisal, or suppression, when they have sufficient cognitive resources. In other words, it is conceivable that one's behavior is more likely to be under the influence of his/her emotional states when cognitive resources are depleted. I argue that this notion can be applied to the case of affective priming. Thus, emotional responses induced by priming may also depend on cognitive resources. If primed emotions are negative, the role of cognitive resources may become especially critical because participants may consciously or unconsciously resist the emotional

responses elicited by the prime. Therefore, in the present research, I propose that the success of the loneliness manipulation procedure will depend on the degree to which participants have cognitive resources available. That is, the consequence of the same loneliness manipulation may differ based on the availability of cognitive resources. In Experiments 1-3, I demonstrate that those whose cognitive resources are depleted are likely to rely on automatic (emotional) responses induced by the loneliness primes and thus would report a higher loneliness score on the scale. In contrast, those who have available cognitive resources may counter-argue against the loneliness primes and so would report a lower loneliness score.

If this proposition is true, one's behavior may or may not be influenced by feelings of loneliness depending on whether s/he has enough *internal* resources to regulate the emotion. When consumers are able to successfully control negative emotions by utilizing cognitive resources, it seems reasonable to predict that they may not need to spend money to regulate such emotional distress. This implies that the impact of loneliness on consumer behavior may not be manifest. However, lonely consumers may want to spend money to regulate feelings of loneliness when they were unable to do so using their internal resources. From this perspective, in Experiments 4-7, I examine how loneliness influences consumer behavior in two different marketing contexts, nostalgic consumption and charitable giving. Additionally, I demonstrate why lonely consumers want to spend money on nostalgic products and donate money to charitable organizations.

In Experiments 4-5, I investigate the impact of loneliness on nostalgic product consumption. Prior research has suggested that nostalgia, "a sentimental longing for the past", has a restorative function in response to loneliness (Wildschut et al. 2006; Zhou et al 2008). Because nostalgic appeals are frequently employed in various marketing communications (e.g.,

product design, advertisement, or marketing messages) (Schindler and Holbrook 2003), it is important to understand how lonely consumers respond to nostalgic appealing marketing messages and utilize nostalgic products to regulate feelings of loneliness. Indeed, Loveland, Smeesters, and Mandel (2010) have proposed that people experiencing social exclusion tend to prefer a nostalgic product because nostalgic consumption can enhance a sense of belongingness. Though the authors examined the effect of social exclusion on nostalgic product preferences, it remains unclear whether loneliness, an emotional response aroused by social disconnection, can create this unique preference pattern. Moreover, the main argument in this prior work did not focus on how consumers' feelings of loneliness directly relate to nostalgic consumption, but on how a belongingness goal leads to nostalgic product preferences.

In the current research, I focus on feelings of loneliness, rather than social exclusion, and examine how consumers utilize nostalgic products to regulate this emotional distress. I expect that products with nostalgic features (e.g., product design or advertising messages) will be favorably viewed by lonely consumers because a hint of nostalgia may help them alleviate feelings of loneliness. More importantly, I show that consumers who are unable to regulate feelings of loneliness using mental resources are more likely to form favorable attitudes toward nostalgic products while those with abundant regulatory resources may not find the products beneficial for them to cope with feelings of loneliness. Presumably, in this case, loneliness would not play a significant role in making judgment about nostalgic products. In sum, I contend that the effect of loneliness on nostalgic consumption will be stronger (or will only emerge) with cognitive constraints.

Similarly, in Experiments 6-7, I demonstrate that lonely consumers regulate their emotional distress by helping others (i.e., financial contribution to a charitable organization). It

has been well understood that one's prosocial behavior can be motivated by egoistic, rather than purely altruistic, reasons ("joy-of-giving"; Andreoni 1989, 1990). That is, people can expect at least some either internal or external rewards when they attempt to help others. A recent study (Dunn, Aknin and Norton 2008) further demonstrated that spending money on prosocial activities (e.g., gift giving and donation to charity) increase one's feelings of happiness (i.e., Do you feel happy in general?). This stream of research may support a theory that helping behavior can be used for regulating one's negative emotions (Cialdini et al. 1987; Hoffman 1981; Gross 2002).

Building on this prior work, I demonstrate that lonely consumers may engage in donation behavior as a form of emotion regulation. That is, they can regulate feelings of loneliness, which is one of the most aversive and negative emotional states, by giving money to charity. More importantly, I show that those with lack of cognitive resources are likely to donate money to charity because such behavior can help them alleviate feelings of loneliness. However, I argue that, as proposed in Experiments 4 and 5, consumers with sufficient cognitive resources would not donate money because they can successfully regulate feelings of loneliness using their own "costless and easily available" internal resources. Additionally, I explore a boundary condition where lonely consumers differently make a donation decision based upon their motivations to regulate feelings of loneliness. Because one's donation decision is often subject to his or her self-interest (Ratner, Zhao, and Clarke 2011), lonely individuals may differentially respond to charities' messages. Moreover, lonely individuals, whose social needs are threatened, may exhibit heightened social monitoring (e.g., increased attention to others or enhanced sensitivity to others' non-verbal cues) (Gardner et al. 2000). If feelings of loneliness lead individuals to pay attention to social information, how do they influence one's donation decision? A charity ad

containing social cues, such as helping *other people* in need (vs. helping endangered animals) may be more appealing to lonely individuals. I argue that the amount of psychological pleasure they would gain in exchange for helping may differ when donating charities addressing either “human” or “non-human” causes. This suggests that consumers who want to regulate feelings of loneliness may be more likely to pay attention to a charity addressing “human” causes (e.g., helping children, solving poverty, or providing education) than “non-human” causes (e.g., protecting environment or anti-poaching). Thus, lonely consumers should show increased likelihood of donation to the charity supporting “human” cause. With this in mind, I demonstrate how a type of charity differentially influences lonely consumers’ intention to donate in Experiment 7. Combining two domains of research (emotion regulation and charitable giving), I argue that those who cannot regulate feelings of loneliness using cognitive resources are more (vs. less) likely to financially contribute to a charity addressing a “human” (vs. “non-human”) cause. In addition, I demonstrate that consumers who have plenty of cognitive resources may not need to regulate feelings of loneliness by donating money to a charity.

CHAPTER 2. THEORETICAL DEVELOPMENT

What is Loneliness? Does It Matter?

The need for belonging is one of the most fundamental human needs essential for human survival (Baumeister and Leary 1995). A failure to satisfy this need leads people to experience either transitory or chronic loneliness. Prior work has defined loneliness as a painful feeling of being isolated (Ernst and Cacioppo 1999; Masi et al. 2011; Russell et al. 1980; Weiss 1973). This unpleasant feeling may stem from a discrepancy between desired and actual social relationships, implying that loneliness is essentially based on one's subjective perceptions about relational deficits (Holt-Lunstad et al. 2015). For instance, one person may experience acute loneliness when surrounded by others, while another person does not feel lonely at all when alone. The latter is described as solitude, a not necessarily unpleasant and voluntarily chosen state of being alone (Hawkley and Cacioppo 2010; Storr 2005).

Loneliness often motivates people to restore social connections with others, such as making new friends (Masi et al. 2011). In most cases, people are capable of coping with loneliness by engaging in various social activities. However, they are likely to suffer from chronic loneliness when failing to (re)connect with others. The literature on loneliness suggests that loneliness may give rise to various health problems. For example, Cacioppo and Hawkley (2009) demonstrated that loneliness not only increases cardiovascular health risk for young adults, but also influences systolic blood pressure for a middle-aged population. Moreover, a recent study found that loneliness makes people hypervigilant to social threats (Newall et al. 2009). This may be a peculiar characteristic of loneliness. More specifically, lonely individuals

who perceive the social world as threats tend to believe that others would negatively evaluate them, which in turn leads lonely people to stay away from potential social partners (Hawkley and Cacioppo 2010). This maladaptive cognitive function may severely influence lonely individuals' psychological and physical well-being. Further, this negative bias may reinforce a vicious loop of loneliness (Hawkley and Cacioppo 2010). In sum, a majority of the research on loneliness suggests that unregulated loneliness is a risk factor causing serious health problems.

Emotion Regulation and Consumer Behavior: How Do Lonely Individuals Cope with Loneliness?

Emotion strongly influences human behavior. Sometimes people actively regulate either positive or negative emotions to maintain “neutral” states (Gross 1998). People may act to successfully up- or down-regulate emotional states. However, emotions do not always trigger regulatory action and sometimes inhibit such action (Bagozzi et al. 1999). Imagine a person experiencing sadness due to her recent break-up. On one hand, in most cases, it is likely that she wants to elevate her current mood and to be happy to return to “ordinary” daily life. For instance, she can listen to up-tempo music to mitigate her sadness. On the other hand, she may want to listen to a sad song and ruminate on the current mood state (Andrade 2005; Lee, Andrade, and Palmer 2013). Prior work on affect's influence on behavior has suggested that people in negative affective states attempt to engage in promotive behavior based on their expectations about future affective states (Andrade 2005; Gross 1998). Specifically, Andrade (2005) has shown that participants who watched a sad video clip are more likely to intend to consume chocolates when they expected the product helps lift their mood states. However, they did not show such

behavioral patterns when the product does not have a mood-lifting cue. This indicates that people may *strategically* use a product to alter current (negative) emotional states. Furthermore, the literature on emotion regulation suggests that people engage not only in explicit and conscious processes, but also in implicit and unconscious processes to regulate current emotional states (Gyurak, Gross, and Etkin 2011), and hence may be aware or unaware of their regulation efforts. More importantly, it implies that consumer researchers may observe lonely consumers' distinguishable consumption behavior in the process of coping with loneliness.

In marketing research, scholars have been interested in how consumers cope with negative emotional states that range from ambient mood states to discrete emotions (e.g., guilt, anger, or regret, etc.). A recent study has proposed that consumers may have common coping strategies when psychological threats occur (Han, Duhachek, and Rucker 2015). The authors argue that consumers are likely to adopt problem-focused coping strategies when threats activate approach motivations. In contrast, consumers tend to utilize emotion-focused coping strategies when avoidance motivations are activated (Han, Duhachek, and Rucker 2015; Duhachek, Agrawal, and Han 2012). Yi and Baumgartner (2004) have further suggested that consumer coping strategies may vary depending on types of negative emotions experienced in consumption context. For example, consumers wanting to reduce consumption-related anger tend to use confrontive coping strategies (i.e., problem-focused coping) while those who experienced regret are inclined to employ acceptance or reinterpretation (i.e., emotion-focused coping) (Yi and Baumgartner 2004).

In line with the coping research, Mead et al. (2011) have shown that people who are socially excluded strategically spend money to affiliate with others. Specifically, they demonstrated that excluded consumers are likely to prefer a product favored by others, even if it

is unappealing to them. Duclos et al. (2013) have also demonstrated that socially excluded consumers tend to pursue riskier financial opportunities. The authors argued that excluded consumers are prone to take risky but potentially more lucrative financial options in exchange for popularity. Similarly, Lee and Shrum (2012) have shown that different types of social exclusion can produce different outcomes in the context of conspicuous consumption. Specifically, consumers are likely to engage in conspicuous consumption when efficacy needs (e.g., meaningful existence) are threatened. When relational needs are threatened, consumers tend to engage in prosocial behavior (e.g., donation). It is worth noting that these studies provide empirical evidence that consumers whose social needs are threatened actively cope with negative experiences and show discernable consumption behavior. Nevertheless, the authors did not directly examine how loneliness, as an emotional distress, drives such behavior.

In fact, it is important to consider a potentially quite different relation between loneliness and social exclusion. Although loneliness is highly correlated with social exclusion, they are not the same psychological constructs. They may cause different effects on our behavior. Generally, social exclusion occurs based upon one's incompetence, deviance, and unattractiveness (Baumeister and Tice 1990). This indicates that a direction of exclusion generally stems from a group of others. However, people who feel lonely are not necessarily deviant, incompetent, or unattractive so that they are excluded by others. More importantly, lonely people may "exclude themselves" by withdrawal or rejection of others rather than by being rejected (Jones 1990; Jones and Carver 1991). Therefore, a direction of exclusion and its roots may not be the same as social exclusion. Then these differences can produce dissimilar emotional consequences. Specifically, individuals who are excluded by others perhaps show more diverse emotional responses, such as anger, anxiety, jealousy or aggression (Baumeister and Tice 1990; Chow, Tiedens, and Govan

2008; Leary 1990; Twenge et al. 2001; Seidel et al. 2013; Warburton, Williams, and Cairns 2006). Feelings of loneliness may be one of the potential emotional outcomes triggered by social exclusion, especially when the experience of being isolated persists over a long period of time (De Jong Gierveld, Tilburg, and Dykstra 2006; Jones 1990; Pickett and Gardner 2005). In addition, social exclusion should be considered an objective event that an individual *is excluded* from a group of others (e.g., being excluded or rejected from a desired social group), which in turn hurts one's need for belongingness. As a result of social exclusion, a person can be situated in a state of social isolation. Loneliness, however, is based on a subjective evaluation of one's social relationships, suggesting that social isolation does not necessarily produce feelings of loneliness (De Jong Gierveld, Tilburg, and Dykstra 2006). For instance, a college student wanting to join a fraternity or sorority may not feel lonely when s/he is excluded or rejected by group members, but feel anger or jealous instead. The current research, therefore, focuses on how feelings of loneliness influence consumer behavior, rather than the direct impact of social exclusion or social isolation.

Limited research has directly incorporated loneliness into consumer research. Wang, Zhu, and Shiv (2012) have examined how lonely consumers' preferences change based on information about the popularity of products (i.e., a majority- vs. minority-endorsed product). Specifically, lonely consumers preferred a minority-endorsed product when their product preferences were not subject to others' evaluations. Lonely consumers, however, changed product preferences in line with others' choices (i.e., a majority-endorsed product) in a public consumption setting. In addition to preference reversals, Sinha and Wang (2013) have proposed that consumers who experience emotional (vs. social) loneliness are more likely to engage in impulsive behavior when they view time as limited (vs. expanded) resources. Additional work is necessary to fully

understand a causal relationship, however. Further, the focus of the extant research is centered on how lonely consumers differ from non-lonely consumers. The current research attempts to fill this gap. Specifically, it aims to expand our knowledge about the impact of loneliness on consumer behavior by focusing on the perspective of emotion regulation. In this dissertation, I examine i) when loneliness significantly influences consumption behavior, ii) how loneliness makes differences compared to non-lonely individuals, and iii) why loneliness affects such consumption behavior.

Experimental Approach to Loneliness Research: Can Loneliness Be Manipulated?

A majority of loneliness research has been conducted using the UCLA Loneliness scale (Russell et al. 1980; Russell 1996). Presumably, it may be difficult to experimentally manipulate participants' feelings of loneliness. However, measuring loneliness also has potential limitations in that we cannot distinguish between temporary and chronic loneliness. In particular, we cannot assure how a consumer shows differences in their consumption behavior when the level of loneliness temporarily changes. Researchers also may not be able to fully understand the causal relationship between loneliness and variables of interest (Ernst and Cacioppo 1999).

Since loneliness is an extremely undesirable emotional state, experimental participants may counteract its induction by spontaneously engaging in a coping strategy and consequently underreact to the experimental induction of loneliness. Stemming from one's subjective appraisal of social isolation (De Jong Gierveld, Tilburg, and Dykstra 2006), loneliness may be subject to social norms (or social expectancies), resulting in social (un)desirability effects. That is, participants assigned to a loneliness induction may not only discount the induction, but also

believe that they shouldn't even experience such an emotion (Bastian et al. 2012; Bastian et al. 2015). Hence, due to the fundamentally undesirable nature of loneliness, participants may not only underreport but also simultaneously and perhaps automatically regulate loneliness-related emotional responses induced by the manipulations (De Jong Gierveld, Tilburg, and Dykstra 2006; Gyurak, Gross, and Etkin 2011; Mauss, Bunge, and Gross 2007). Consequently, experimenters may be unlikely to measure expected responses following loneliness induction.

A notable exception relevant to this discussion is Wildschut et al.'s (2006) Experiment 4. The authors demonstrated that situationally-induced feelings of loneliness can be manipulated by a mix of content and process priming. Specifically, by administering a false feedback personality test based on the UCLA Loneliness scale (Russell, Peplau, and Cutrona 1980) feelings of loneliness were fostered by modifying each statement (e.g., "I sometimes feel isolated" vs. "I always feel isolated"). In the high (vs. low) loneliness condition, participants responded to scale questions designed to create agreement (vs. disagreement) with scale items. After completing the scale, participants received bogus feedback regarding their loneliness scores. In the high loneliness condition, participants were told that they were "above average on loneliness". Those in the low loneliness condition were given feedback that they were "very low on loneliness". The authors' justification for this manipulation was that participants are likely to agree to each statement prefaced with "sometimes" because most people might have experienced loneliness at some point in their lives. Thus, those who were assigned to the high loneliness condition are likely to believe false feedback about the levels of loneliness. However, those in the low loneliness condition, who responded to the statement with "always", are likely to disagree and tend not to believe the false feedback. This seems quite plausible in the sense that "average" people who do not suffer from a severe chronic loneliness may not experience feelings of

loneliness all the time. Notably, in addition to providing bogus feedback, the authors asked participants to justify their loneliness score through an additional writing task. As a manipulation check, two items were used for measuring the current feelings of loneliness (“I am feeling lonely right now”; “At this moment, I feel a bit lonely”). This type of loneliness manipulation was successful in a few other studies (Zhou et al. 2008; Zhou et al. 2012) in the context of investigating nostalgia. This method seems quite plausible in the sense that participants could think of themselves as a lonely person compared to others, especially, when responding to questionnaires designed to agree with the scale.

Nonetheless, this manipulation method has some limitations. For example, this research was conducted with a majority of female college student population. Interestingly, Steptoe et al. (2016) and Singh and Misra (2009) report that females are more vulnerable than males to relational threats (such as loneliness) and tend to report higher loneliness scores, implying that female participants are perhaps more vulnerable to the loneliness manipulation. Importantly, negative feedback on their loneliness score may lead participants to re-evaluate the quality and quantity of their social contacts, resulting in not believing the feedback. This may be especially likely when participants are high in self-esteem or maintain self-protective views. As a result, this cognitive process may ironically increase accessibility of emotional responses that are generally evoked in socially satisfying situations. Moreover, because priming sometimes triggers either an assimilation or contrast effect depending on the extremity of primes, a contrast effect may occur in the context of loneliness priming (Herr, Sherman, and Fazio 1983; Herr 1986). This may be why the additional step requiring participants to justify their loneliness score and feedback about the score is needed to strengthen the manipulation (Wildschut et al. 2006; Zhou et al. 2008). The limited number of studies in which the level of loneliness is manipulated

suggests that researchers may benefit from a better understanding of the conditions under which the loneliness manipulation may be successful.

Assuming that an “anti-priming” counteractive process may exist (e.g., counter-arguing negative feedback about loneliness), it is conceivable that participants with sufficient cognitive resources are more likely to resist to the negative priming compared to those with a cognitive load. Indeed, prior priming research has demonstrated that self-control resources may play a role in detecting priming effects (Bertrams et al. 2015). Specifically, the authors demonstrated that cognitive resources moderate the effect of color priming on cognitive performance. For example, they proposed that the color red evokes implicit anxious responses, and this anxiety impairs participants’ cognitive performance (e.g., an arithmetic test or an intelligence test). Therefore, it suggests that people under cognitive load may be more likely to rely on automatic processes (vs. controlled, cognitively effortful processes) (Bargh and Thein 1985; Bertrams et al. 2015; Logan 1979; Davis and Herr 2014; Morewedge and Kahneman 2010).

Prior work on emotion regulation further supports the role of cognitive resource in affective priming. Because cognitive resources are often considered a coping resource for emotion regulation strategies (e.g., counter-argument, reappraisal, or suppression), it is likely that those who have abundant cognitive resources can successfully regulate negative emotional responses induced by primes (Oschner and Gross 2005; Gross 2001; Joormann and Gotlib 2010). To be specific, they may spontaneously counter-argue against the loneliness primes using cognitive resources *before* any loneliness-relevant dependent measure is collected, showing indifference in the level of loneliness on the scale. In contrast, those who do not have enough cognitive resources may be unable to control and thus rely on subtle emotional responses

induced by the loneliness primes. Consequently, experimenters can detect the changes in the level of loneliness.

Building on the literature on emotion regulation and affective priming, therefore, I propose that the successful experimental manipulation of loneliness may also depend on the availability of cognitive resources, because subtle negative emotional responses induced by primes may be more likely to be regulated when participants have sufficient internal resources. In Experiments 1-3, I test this hypothesis using different priming methods and show how the results of the same loneliness manipulation differ based on the availability of cognitive resources.

H₁: Participants whose cognitive resources are depleted will show the intended loneliness priming effect (i.e., higher loneliness scores on the scale) when primed with the high loneliness. However, participants will not show the loneliness priming effect when they have sufficient cognitive resources.

When, How and Why Does Loneliness Influence Consumer Behavior?

Given that responses to loneliness priming may differ based on cognitive constraints, the impact of loneliness on behavior may also vary accordingly. In other words, a consumer researcher is likely to observe an effect of loneliness only if cognitive load is imposed on participants when inducing feelings of loneliness. More generally, because consumers are able to successfully regulate negative emotions using cognitive resources, we expect that consumers

experiencing loneliness may show different consumption behavior (e.g., product preferences or charitable giving) depending on their possession and utilization of coping resources.

Compensatory consumption refers to a goal-directed behavior that may resolve psychological threats (e.g., social exclusion, identity threats, etc.) by consuming products/brands reinforcing a desired self-view (Lisjak et al. 2015; Kim and Rucker 2012; Lee and Shrum 2012). It has been shown that relational deficiencies can lead to compensatory consumptions. For example, Loveland, Smeesters, and Mandel (2010) showed that socially ostracized consumers prefer nostalgic products (e.g., a car popular in the past) because the consumption of nostalgic products remedies the threatened need for belongingness. In a similar vein, the affect regulation model (Andrade 2005; Andrade and Cohen 2007) suggests that one's motive for regulating negative emotions often determines his/her consumption behavior. In particular, this affect regulation mechanism is enhanced when one perceives a behavior as an effective upward regulation strategy (Andrade and Cohen 2007).

However, one's behavior is not always driven by the motivation of regulation. The affect evaluation model predicts that a person sometimes engages in an emotion-congruent behavior based on the evaluation of his/her current emotional states (e.g., helping others when one is in a positive mood; Andrade and Cohen 2007; Isen and Levin 1972). These two models indicate that an emotionally-driven decision making can produce opposite behavioral patterns. Although either the evaluation or regulation motive influences consumer behavior, the regulation motives are more likely to drive one's behavior when negative emotions are saliently experienced (Andrade and Cohen 2007). In sum, this prior work suggests that a consumer who feels lonely may be likely to show different consumption patterns, as compared to non-lonely consumers, in the process of regulating the emotional pain.

Loneliness and Nostalgic Consumption: An Instrumental Value of Nostalgia

Nostalgia is defined as “a sentimental longing for the past” (Wildschut et al. 2006; Routledge et al. 2011; Zhou et al. 2011). Marketing researchers have long been interested in how nostalgia influences consumer behavior, such as its impact on desire for money, brand heritage perceptions, or brand attachment (Holbrook 1993; Lasaleta, Sedikides, and Voh 2014; Merchant and Rose 2013; Muehling, Sprott, and Sultan 2014). It has also suggested that there are psychological antecedents of nostalgic consumption. For instance, consumers’ insecurity increases preferences for nostalgic products (Zhou et al. 2013). More importantly, Loveland, Smeesters, and Mandel (2010) have demonstrated that social exclusion, which was experienced in both ego-threatening and non-ego-threatening ways, increased consumers’ preference for nostalgic products. Specifically, the authors demonstrated that the consumption of nostalgic products, operationalized as a popular product in the past, may satiate consumers’ need for belongingness.

It is worth noting that the focus of prior work does not address loneliness per se, as a negative emotion, but social exclusion, a precursor to loneliness. As discussed earlier, social exclusion and loneliness need to be treated as different constructs producing dissimilar either emotional or behavioral consequences. Social exclusion or rejection may evoke a host of negative emotions (Baumeister and Leary 1995; Eisenberger, Lieberman, and Williams 2003). However, loneliness may be considered, by definition, an emotional distress of being isolated (Ernst and Cacioppo 1999; Masi et al. 2011; Russell et al. 1980; Weiss 1973). Furthermore, the authors focused on the active belongingness goal, and not on the regulation motivation of

negative emotions. This focus limits our understanding about the role of loneliness as a negative emotion in preference for nostalgic products.

Can loneliness itself produce a similar consumption pattern? Do consumers utilize nostalgic products to regulate feelings of loneliness? It seems plausible that a consumer who feels lonely may show preferences for nostalgic products because nostalgia has a restorative function in response to loneliness by fostering social connectedness or increasing meaning of life (Wildschut et al. 2006; Routledge et al. 2011; Zhou et al. 2011). Also, lonely consumers may be more likely to anticipate positive emotions from nostalgic product consumption compared to non-lonely consumers.

In this dissertation, I investigate a causal link between loneliness and nostalgic consumption. Based on the affect regulation model (Andrade 2005), I propose that consumers experiencing loneliness may want to prefer nostalgic products with anticipation of positive emotions. Additionally, as elaborated earlier, if there is a significant causal link between loneliness and preferences for nostalgic products, this effect may only be observed (or be stronger) when participants are cognitively depleted. Participants with sufficient cognitive resources may only be able to regulate feelings of loneliness but also be less likely to rely on automatic emotional responses evoked by experimental stimuli. Therefore, it is unlikely that those with sufficient internal resources necessarily cope with loneliness through nostalgic consumption in an experimental setting. Experiments 4-5 investigate psychological mechanisms that account for the impact of loneliness on preferences for nostalgic products. In summary, I hypothesize:

H₂: Participants with cognitive load will more (vs. less) favorably evaluate nostalgic products when they are primed with high (vs. low) loneliness but not when they have no cognitive load.

H₃: Anticipation of positive affective states will mediate the relationship between the primed loneliness and participants' evaluation of nostalgic products. This mediation effect will only emerge when participants' cognitive resources are depleted.

Loneliness and Charitable Giving: Spending Money for Others as Emotion Regulation

It has been well documented that prosocial behavior is driven by either egoistic or altruistic motivation (Andreoni 1989, 1990; Clary and Snyder 1999). Consistent with the affect regulation model (Andrade 2005), consumers may engage in prosocial behavior (e.g., donating their time or money for others in need) when they are in negative moods. There is sufficient evidence that helping per se has a hedonic value, supporting the notion that helping others can be used for a mood-repair strategy (Baumann, Cialdini, and Kenrick 1981; Cialdini, Darby, and Vincent 1973; Hoffman 1981; Gross 2002). A recent study further suggested that donating money indeed increases one's feelings of happiness (Dunn, Aknin, and Norton 2008). Do lonely individuals also help others to regulate feelings of loneliness?

Prior work on the impact of loneliness on prosocial behavior provides somewhat divergent empirical results. Although correlational, some researchers have suggested that loneliness may be negatively associated with helping others (Woodhouse, Dykas, and Cassidy 2012). However, a recent research has shown that loneliness does not necessarily have a negative effect on prosocial behavior (Huang, Liu, and Liu 2016). It seems that these competing findings

may be explained based on the affect regulation (vs. evaluation) model. According to the affect evaluation model, lonely individuals may not want to help others because they simply are not in a good mood to help others in need, supporting the negative correlations between loneliness and prosocial behavior. In contrast, the affect regulation model suggests that they possibly want to engage in prosocial behavior if helping may alleviate feelings of loneliness. Both predictions seem reasonable. Given that negative emotions tend to activate regulatory motives, however, it seems that the latter case is more likely (Andrade and Cohen 2007). From this perspective, in this dissertation, I examine the impact of loneliness on one's donation decision by focusing on the hedonic values of helping (i.e., feeling better after helping).

Assuming that lonely individuals want to spend money for others to regulate their emotional distress, would the type of charity play a role in their donation decision? Though helping per se can be an emotion regulation tool in general, it seems intriguing to examine whether lonely individuals equally benefit from donating money to any charities or a specific charity. Because loneliness makes people sensitive to social information (Gardner et al. 2000), lonely consumers may differentially respond to different types of charities. For instance, lonely individuals may consider a charity focusing on the cause directly related to other people in need (e.g., starving children) important and thus be likely to donate money to this type of charity. However, they may not think of a charity focusing on other causes (e.g., anti-poaching, environment protection, etc.) as critical as the one helping others in need. Thus, they may be less likely to donate money to a charity with an objective of solving other "non-human" related causes. Moreover, prosocial behavior has a basic social function, such as connecting to others (Penner et al. 2005). There might be a difference in the amount of hedonic value that lonely

consumers would gain in reciprocation of contributing to charity. Taken together, in Experiments 6-7, I test the following hypotheses.

H₄: Participants, whose cognitive resources are (vs. are not) depleted, are more (vs. less) likely to donate money to a charity when they primed with high (vs. low) loneliness.

H₅: Anticipation of positive affective states will mediate the effect of loneliness on participants' willingness to donate only when their cognitive resources are depleted. However, participants with sufficient cognitive resources will not be influenced by the loneliness priming. Thus, anticipation of positive affective states will not mediate the effect of loneliness on participants' intention to donate money to a charity.

H₆: Participants primed with high loneliness under cognitive load will be more likely to help others in need by donating money to a charity. However, they will be less likely to donate money to a charity for “non-human” cause (i.e., protecting environment). That is, the type of charity will moderate the conditional effect of loneliness on participants' donation behavior.

CHAPTER 3. THE DEVELOPMENT OF LONELINESS PRIMING: A ROLE OF COGNITIVE RESOURCES

EXPERIMENT 1

The objective of Experiment 1 is to examine the role of cognitive resources in the detection of an effect of loneliness priming. Specifically, in this experiment, I employed the loneliness induction method used in Wildschut et al. (2006; Experiment 4) to find initial evidence that support the role of cognitive resources in affective priming. As theorized, I posit that individuals' cognitive resources can be used for regulating feelings of loneliness.

If participants simultaneously regulate (resist) the negative emotional responses evoked by the loneliness prime, it is likely that their responses to feelings of loneliness, having been successfully regulated, will not be observed. Thus, participants with sufficient resources should report lower feelings of loneliness. In contrast, participants with few available cognitive resources should be unable to actively counter the loneliness prime, and hence should feel lonelier than their counterparts who possess abundant cognitive resources. Consequently, participants who lack cognitive resources and are primed with loneliness are expected to be less able to suppress the negative emotional responses evoked by the experimental stimuli (Najmi and Wegner 2008; Wegner et al. 1987).

Method and Procedure. Seventy-five undergraduate students participated in this study for course credit. They were told that they were participating in two ostensibly unrelated studies. First, participants took part in a lottery that required them to memorize a 7-digit (vs. 5-digit; i.e.,

1237543 vs. 12345) number; this served as the manipulation of cognitive load. Specifically, participants were told that they would be entered into a lottery if they correctly recorded the assigned number upon completion of the study. Thus, participants entered the numerical code following the completion of the task designed to induce feelings of loneliness.

Participants completed the loneliness manipulation used in prior work (Wildschut et al. 2006). Specifically, a modified version of the UCLA loneliness scale (Russell 1996) was presented to participants who were informed that they would be taking part in a personality test called the Virginia Tech Loneliness Scale in an attempt to better understand the nature of college students' social lives (see Appendix A for detail). This test was, in fact, designed to elicit participant agreement. Participants assigned to the high loneliness condition were asked to respond to a series of statements aimed at measuring their level of loneliness, such as “I sometimes feel a lack of companionship.” In contrast, those allocated to the low loneliness condition answered sentences prefaced with “I always” (e.g., “I always feel alone”). After completing the “personality test,” participants were given false feedback about their loneliness score. The feedback read:

The Virginia Tech Loneliness Scale has been administered to a large number of University students over the last five years. Based on the responses of over twelve hundred students, we have developed a scoring metric for your answers. This allows us to provide you with valid and detailed feedback regarding your level of loneliness.

Based on your responses, your estimated loneliness score is 87 (vs. 24). This score also indicates that you are in the 67th percentile (vs. the 18th percentile) of the loneliness distribution and that you are “well above average on loneliness (vs. very low on loneliness)” compared to other VT students. You can interpret this score as indicating that you are a person who feels lonelier (vs. less lonely) than other students.

Next, participants’ current feelings of loneliness were assessed via two items with scores ranging from 1 (strongly disagree) to 7 (strongly agree)—“I am feeling lonely right now” and “At this moment, I feel a bit lonely”—as measured by Wildschut et al. (2006). This measure was used as a dependent variable in this experiment.

Results and Discussion. A 2 (cognitive load: high vs. low) \times 2 (loneliness induction: high vs. low) between-subject ANOVA on the combined loneliness index (Cronbach’s $\alpha = .97$) was conducted. Participants under cognitive load were expected to be less likely to successfully regulate negative emotional responses (i.e., feelings of loneliness) when assigned to the high loneliness condition, thus reporting higher feelings of loneliness. Participants with abundant cognitive resources were expected to report a lower loneliness score on the scale when assigned to the high loneliness condition. Importantly, participants without load were expected to express a loneliness score similar to those in the low loneliness condition, as they might be able to successfully counter negative emotional responses.

As predicted, a significant interaction between cognitive load and loneliness induction was obtained ($F(1, 71) = 4.00, p < .05$). No other effect emerged. Participants under high load in

the high loneliness condition reported the highest scores on the loneliness index when compared to the other three conditions ($M_{\text{high load-high lonely}} = 2.79$, $t(71) = 2.11$, $p < .05$). Importantly, participants without load in the high loneliness condition expressed a significantly lower score on the loneliness index ($M_{\text{low load-high lonely}} = 1.74$ vs. $M_{\text{high load-high lonely}} = 2.79$, $t(71) = 2.17$, $p < .05$; Table 1). This result may indicate that those assigned to the low cognitive load condition were able to successfully control the feelings of loneliness that were induced by the manipulations. In contrast, participants in the high cognitive load condition appear unable to counteract the experimentally induced feelings of loneliness and thus relied more heavily on the responses triggered by the manipulation. The result indicates that the availability of cognitive resources plays a critical role in obtaining the effects of manipulations.

This experiment provides initial evidence that one can use cognitive resources to regulate negative emotions induced by primes. Thus, the result suggests that the same loneliness priming method can produce opposite effects. Notably, in this experiment, no additional writing task (i.e., requiring participants to justify feedback about their loneliness score) was used to strengthen the manipulation. In Wildschut et al. (2006), it was unclear whether responding to the personality test or elaborating loneliness feedback produce the loneliness priming effect. These two separate tasks might have inevitably, at least to some extent, depleted participants' cognitive resources. The present experiment, however, disentangles a potential role of cognitive resources in obtaining the intended loneliness priming effect. Thus, I argue that there may be an interplay between the availability of cognitive resources and loneliness manipulation. Still, it seems that different manipulations may be required to concretely understand the finding in this experiment. In the following two experiments, I attempt to conceptually replicate this result using different (and more subtle) priming techniques.

TABLE 1. PARTICIPANTS' LEVELS OF LONELINESS (EXPERIMENT 1)

		Loneliness	
		High	Low
Cognitive Load	High	2.79 (1.87)	1.90 (1.45)
	Low	1.74 (1.24)	2.22 (1.32)

EXPERIMENT 2

Experiment 2 again examines the role of cognitive resources in loneliness priming. Thus, I attempt to replicate the results obtained in Experiment 1 in order to increase the generalizability of the current findings by employing different loneliness and cognitive load manipulation techniques. In this experiment, the revised UCLA loneliness scale (Russell 1996) was used to measure participants' level of loneliness. This measurement change may extend the findings of Experiment 1, as participants may be more likely to believe that the quality of their social relationships is low (i.e., they feel lonely) when loneliness-related emotion concepts are activated by priming. Additionally, it is likely that participants may use experimentally-induced feelings of loneliness as information when evaluating their levels of loneliness, thus leading them to report higher scores on the scale (Schwarz and Clore 1983). Therefore, I predict that participants will report a higher (vs. lower) loneliness score, as measured by the UCLA loneliness scale, when cognitive load is (vs. is not) imposed.

Method and Procedure. One hundred and twenty-seven participants were recruited from MTurk. They were told that they would be taking part in two separate studies. Before participants complete the manipulation tasks, I measured their current affective states using the Positive Negative Affective Schedule (PANAS; Watson, Clark, and Tellegen 1988).

Both cognitive load and loneliness manipulations were altered for this experiment. A scrambled sentence task was adopted to induce loneliness (Srull and Wyer 1979; see Appendix B for detail). This type of manipulation has been widely used in personality research as well as emotion research. Emotions are closely associated with various cognitions, and individuals' emotional experience (e.g., feeling lonely) are often subject to the activation of such emotional cognitions or schemata (Shachter and Singer 1962; Shaver et al. 1987). Moreover, one can either consciously or unconsciously perform emotion-specific behavior based on currently activated emotion concepts (Shachter and Singer 1962; Zemack-Rugar, Bettman, and Fitzsimons 2007). Considering the fact that one can may feel lonely based on one's subjective evaluations of his/her current relationships, simply activating loneliness emotion concepts seems to be appropriate to examine the effect of loneliness on consumer behavior.

The load manipulation was simultaneously administered via the introduction of a time pressure during the performance of the scrambled sentence task. This method may be useful when manipulating cognitive load in online experiments, thus increasing the generalizability of the findings to include different populations with various age groups (e.g., Amazon Mechanical Turk). For example, when asking online participants memorize 7-digit numeric code, researchers may be unsure whether participants indeed memorize the code or just write it down to receive a bonus. In this experiment, participants assigned to the high (vs. low) load condition were given 20 seconds (vs. no time pressure) to solve each sentence. A timer indicating this time pressure

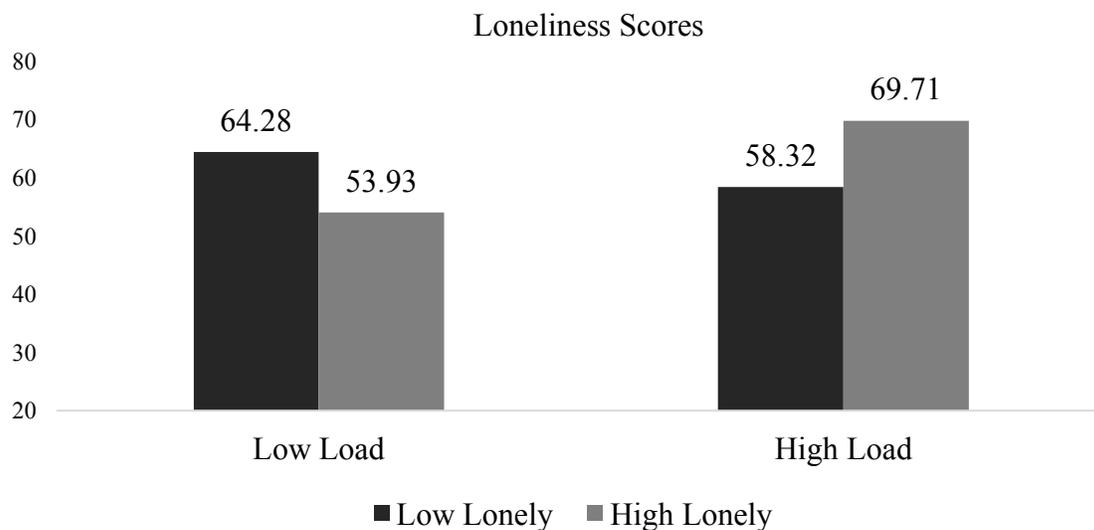
was displayed to participants in order to ensure that they completed the task as quickly as possible. Participants solved a total of 13 scrambled sentences, one by one. Nine sentences included a variety of words relevant to loneliness (e.g., alone, isolated, lonely, broken up, etc.). The remaining four scrambled sentences did not include any emotion words. After unscrambling the sentences, participants were asked to assess the difficulty level of the scrambled sentence task and rate the extent to which they exerted effort. These two items served as manipulation checks for the load manipulation procedure. Participants then responded to the revised UCLA loneliness scale (Russell 1996), which represented the main dependent variable.

Results and Discussion. An independent sample *t*-test revealed that the cognitive load manipulation (i.e., time pressure) was successful. Specifically, those in the load condition reported that the scrambled sentence task is more difficult ($M_{\text{high load}} = 3.21$ vs. $M_{\text{low load}} = 2.61$, $t(125) = 2.21$, $p < .03$) and it required more effort ($M_{\text{high load}} = 5.75$ vs. $M_{\text{low load}} = 4.75$, $t(125) = 3.31$, $p < .01$). A loneliness index was created by summing the responses to all 20 items of the revised UCLA loneliness scale, each anchored from 1 (never) to 7 (very often). Thus, the loneliness index ranged from 20 to 140. Before submitting a main analysis, I conducted a 2 (cognitive load: high vs. low) \times 2 (loneliness prime: high vs. low) ANOVA on pre-measured positive and negative affects to determine whether there were systematic differences in these potential covariates.¹ The data indicated that there is an unexpected interaction effect between

¹ To confirm whether this idiosyncratic pattern in two covariates indeed randomly occur, I conducted the same experiment using another sample from the same population ($N = 162$). As expected, a 2×2 ANOVA revealed a marginally significant interaction between the load and loneliness manipulations ($F(1, 158) = 2.97$, $p = .09$). Planned contrasts confirmed that those in the high load-high loneliness condition reported the highest loneliness score than those in the other three conditions ($t(158) = 2.22$, $p < .03$). Importantly, those primed with high loneliness showed a significant difference depending on the availability of cognitive resources ($M_{\text{high load-high lonely}} = 72.93$ vs. $M_{\text{low load-high lonely}} = 60.83$, $t(158) = 1.95$, $p = .05$). There was also a significant difference between the high and low loneliness conditions when cognitive resources were constrained ($M_{\text{high load-high lonely}} = 72.93$ vs. $M_{\text{high load-low lonely}} = 60.37$, $t(158) = 1.98$, $p < .05$).

conditions, thus these two measures were controlled in subsequent analyses. Again, a 2 (cognitive load: high vs. low) \times 2 (loneliness: high vs. low) between-subject ANCOVA on the loneliness index was conducted in order to replicate the load effect found in Experiment 1. The results confirmed the findings of Experiment 1 ($F(1, 121) = 6.09, p < .02$). Participants with load in the high loneliness condition reported significantly higher scores on the loneliness index as compared to the remaining conditions ($M_{\text{high load-high lonely}} = 69.71, t(121) = 2.17, p < .05$). More specifically, participants' expressed loneliness in the high loneliness condition differed depending on the cognitive load manipulation ($M_{\text{low load-high lonely}} = 53.93$ vs. $M_{\text{high load-high lonely}} = 69.71, t(121) = 2.56, p < .02$). No difference was obtained in the low-loneliness condition. Moreover, the loneliness index was influenced by loneliness priming only when a cognitive load was present ($M_{\text{high load-high lonely}} = 69.71$ vs. $M_{\text{high load-low lonely}} = 58.32, t(121) = 1.81, p = .07$).

FIGURE 1. PARTICIPANTS' RESPONSES ON THE UCLA LONELINESS SCALE (EXPERIMENT 2)



Interestingly, participants without load tended to show an opposite pattern in the loneliness index ($M_{\text{low load-low lonely}} = 64.28$ vs. $M_{\text{low load-high lonely}} = 53.93$, $t(121) = 1.69$, $p = .09$). These findings confirm that the effect of priming, especially for negative emotions, may be stronger for participants who are cognitively depleted. However, people with sufficient cognitive resources will be less likely to show the priming effect, as they may spontaneously regulate negative emotions such as loneliness. In the next study, I conduct the conceptually identical experiment to attest the robustness of my findings.

EXPERIMENT 3

The goal of Experiment 3 is to replicate the results found in previous two experiments to confirm the robustness of the results. This experiment employed different manipulation methods for both loneliness and cognitive load. A word search puzzle was used to prime loneliness, and the cognitive load manipulation was administered using a letter counting task. As in Experiment 2, participants' level of loneliness was measured using the UCLA loneliness scale (Russell 1996). Again, I expect that participant primed with high loneliness will show the intended loneliness priming effect only when they have a few cognitive resources. In contrast, those who have abundant cognitive resources will not show the same loneliness priming effect.

Method and Procedure. One hundred and thirty participants recruited from MTurk completed the current experiment. Participants were informed that they would complete two

separate experiments (i.e., the reading comprehension task and the word search puzzle). After reading a consent form, they began the experiments at their own pace.

First, they were randomly assigned to one of two cognitive load conditions (high vs. low). I asked participants to read a short story about the ancient library of Alexandria, which contains total 117 words. The cognitive load was manipulated through a letter counting task. Specifically, those in the high load condition were asked to count the letter “e” while reading the text. There were total 77 “e” letters. This manipulation has been prevalently used in prior work (Baumeister et al. 1998; Bertrams et al. 2015). In addition, this manipulation fits with the objectives of the current research in the sense that it can successfully deplete participants’ cognitive resources for emotion regulation. After completing the reading comprehension task, participants were given a few questions with regard to the content of reading as well as the number of the letter “e”. Low load participants were simply asked to read the story and completed subsequent questions.

Second, the loneliness manipulation was administered by asking participants to complete a word search puzzle (a 20 × 20 matrix of letters). Participants were again randomly assigned to one of two loneliness conditions (high vs. low). They were told to find total 13 words (8 prime words and 5 neutral words). Specifically, those in the high (vs. low) loneliness condition were asked to search 8 loneliness- (vs. non-loneliness-) related words, such as “unaccompanied”, “isolated”, “lonely”, and “nobody” (vs. “connected”, “group”, “accompanied”, and “together”; see Appendix C for detail). The remaining five words did not contain any emotional valence (e.g., “binder”, “school”, “paper”, “dove”, and “drive”).

Upon completion of the manipulation task, they answered a few questions related to the word search puzzle (e.g., how difficult do you think this task is?). Participants’ level of

loneliness was assessed via the revised UCLA loneliness scale (20 items; Russell 1996). Finally, they were thanked, debriefed, and paid.

Results and Discussion. Participants' responses to all 20 items of the loneliness scale was summed to create a loneliness index (1=never, 7= very often). A 2 (cognitive load: high vs. low) \times 2 (loneliness: high vs. low) between-subject ANOVA on the loneliness index was conducted. Once again, a marginally significant interaction between cognitive load and loneliness priming was emerged ($F(1, 126) = 3.19, p < .08$). The results are successfully replicated the findings of the previous two experiments, indicating that loneliness primes indeed show different effects depending on the availability of cognitive resources. Participants primed with high loneliness under cognitive load showed the highest loneliness score than those in the other three conditions ($M_{\text{high load-high lonely}} = 70.30, t(126) = 2.22, p < .03$). More importantly, planned contrasts revealed that there is a significant difference between two high loneliness conditions based on the load manipulation ($M_{\text{high load-high lonely}} = 70.30$ vs. $M_{\text{low load-high lonely}} = 56.03; t(126) = 2.27, p < .03$). In addition, participants' loneliness scores were marginally different when the cognitive load manipulation preceded ($M_{\text{high load-high lonely}} = 70.30$ vs. $M_{\text{high load-low lonely}} = 58.73; t(126) = 1.75, p = .08$). However, no significant difference was found between the high and low loneliness conditions when participants' cognitive resources were available ($M_{\text{low load-high lonely}} = 56.03$ vs. $M_{\text{low load-low lonely}} = 60.58; t(126) = -.74, p = .46$).

Thus far, three experiments, including the current experiment, demonstrated the robustness of the effect of cognitive resources on the loneliness priming. As theorized, the results suggest that participants differentially responded to the loneliness scale after the experimental manipulations depending on the availability of cognitive resources, confirming that there is

indeed a “anti-priming” counteractive processes when cognitive resources are available. More importantly, this may be evidence that participants tend to regulate feelings of loneliness induced by primes using cognitive resources. Furthermore, my finding suggests that loneliness may not always influence consumer behavior, but it may influence decision-making processes when consumers do not have enough *internal* coping resources. Building on the results from Experiments 1-3, I investigate the impact of loneliness on nostalgic consumption in the next experiments. I posit that loneliness will lead consumers whose cognitive resources are depleted to form a favorable attitude toward nostalgic products because the nostalgic products may help regulate feelings of loneliness.

FIGURE 2. PARTICIPANTS’ RESPONSES ON THE UCLA LONELINESS SCALE
(EXPERIMENT 3)



CHAPTER 4. THE IMPACT OF LONELINESS ON CONSUMER BEHAVIOR: COPING WITH LONELINESS THROUGH CONSUMPTION

EXPERIMENT 4

The focal objective of Experiment 4 is to uncover preliminary evidence that lonely individuals tend to prefer a nostalgic product. The literature on nostalgia has proposed that a nostalgic feeling, as a social emotion, has a restorative function in that it boosts social bonds and perceived social support (Sedikides et al. 2008; Zhou et al. 2012). Moreover, as noted, consumers tend to prefer nostalgic products when they are actively seeking to belong (Loveland, Smeesters, and Mandel 2010). Since nostalgia may trigger positive memories from the past, consumers encountering distressing events or feelings (e.g., social exclusion, anxiety, or loneliness) may express preferences for nostalgic products (Batcho 1995; Holbrook and Schindler 2003; Zhou et al. 2013). By consuming nostalgic products, these consumers may be able to recover a sense of belonging and thus successfully cope with distressing events (Loveland, Smeesters, and Mandel 2010).

If this proposition holds, consumers prefer nostalgic products to non-nostalgic products to regulate feelings of loneliness. More precisely speaking, it is likely that lonely consumers show more favorable attitudes toward nostalgic products and anticipate positive emotional states when using the products. Additionally, in this dissertation, I attempt to differentiate the impact of loneliness on nostalgic consumption by focusing on emotion regulation motives. That is, consumers may want to use a nostalgic product because it helps them regulate their current emotional distress. In Experiments 4-5, I test these hypotheses and provide initial evidence.

This experiment also has an exploratory purpose. Although prior work has revealed a causal link between threatened social needs and preference for nostalgic products, it is unclear whether lonely consumers differentially respond to nostalgic products based on product category. Recent research has proposed that consumers tend to avoid engaging in hedonic activities alone, such as watching a movie in a theater, because they believe that others may negatively infer their social network (Ratner and Hamilton 2015). Interestingly, this tendency was attenuated when inferential cues leading consumers to think about others' evaluation were eliminated by making an activity seem utilitarian. Similarly, lonely consumers are more prone to show their unique preference in private than in public consumption settings (Wang, Zhu, and Shiv 2012).

If this theory holds true, it is possible that consumers implicitly assume that their hedonic consumption will be evaluated by others. Given that lonely individuals tend to fear others' negative evaluations, they may be more likely to feel discouraged from pursuing hedonic goals. Additionally, other consumers may view nostalgic products as unusual. This may imply that lonely consumers believe that others will regard their preference for nostalgic products as "different." Considering that loneliness may lead people to adopt avoidance motivation hindering social interactions (Baumeister and Park 2015, Cacioppo et al. 2008), it is conceivable that they possibly do not show positive attitudes toward an object with inferential cues that may elicit similar feelings. Consistent with this theorizing, a recent study has shown that lonely consumers tend to show favorable attitudes toward utilitarian products which do not contain social cues (i.e., anthropomorphized product design) (Feng 2016). Taken together, I speculate that lonely consumers' nostalgic product preferences are more likely to be manifested in utilitarian (vs. hedonic) product categories.

The findings from Experiments 1-3 support the notion that this preference holds only for consumers under cognitive load, presumably because low-load participants may recognize loneliness as to-be-regulated negative emotion and have the cognitive resources to effectively counter the loneliness priming. In the present case, those who lack sufficient cognitive resources seem likely to cope with loneliness through nostalgic consumption. If consumers have abundant cognitive resources, in contrast, it is likely that they may not perceive a current feeling of loneliness as needing to be regulated, having spontaneously discounted their feelings of loneliness before even considering the use of nostalgic products. Thus, participants with no load should *not* exhibit greater preference for nostalgic products. More importantly, I expect that this preference for nostalgic products can be observed in the utilitarian product category, but not in the hedonic category.

Pretest. A separate group of participants ($N = 40$) from an online panel evaluated various products (e.g., video games, toy cars, end tables, eye glasses, etc.) to select experimental stimuli (see Appendix D for detail). To select nostalgic and non-nostalgic product stimuli, participants were presented with presented with retro and modern product images and were asked to rate the products in terms of 1) overall liking, 2) attractiveness, and 3) quality. Nostalgic perceptions were assessed using two items (i.e., how nostalgic do you think this particular product is?; to what extent do you think this particular product reminds you of the past?). Lastly, participants rated the extent to which they consider purchasing a product as for pleasure or for utility. All measures anchored from 1 (not at all; for pleasure) to 7 (very much; for utility). Among the tested products, an end table was selected as utilitarian and a video game as hedonic product category based on the results ($M_{\text{end table}} = 5.00$ vs. $M_{\text{video game}} = 1.78$, $t(39) = 10.56$, $p < .01$). An

evaluation index was created by combining three measures (liking, attractiveness, and quality). Two items measured nostalgic perception were also averaged to create a nostalgic index variable. For the end table, a paired-sample t-test revealed that there was no difference in participants' evaluations ($M_{\text{retro end table}} = 4.63$ vs. $M_{\text{modern end table}} = 4.33$, $t(39) = 1.03$, $p = .31$). Importantly, participants perceived a retro designed end table as more nostalgic than a modern designed end table ($M_{\text{retro end table}} = 3.36$ vs. $M_{\text{modern end table}} = 2.48$, $t(39) = 2.67$, $p < .05$). Similarly, participants' evaluation index about the video game indicated that there is no difference between a retro and a modern game ($M_{\text{retro game}} = 4.78$ vs. $M_{\text{modern game}} = 4.28$, $t(39) = 2.67$, $p = .10$). As expected, I found a significant difference in participants' nostalgic perception about the product ($M_{\text{retro game}} = 4.60$ vs. $M_{\text{modern game}} = 2.43$, $t(39) = 6.28$, $p < .01$). Other product categories were not qualified due to significant differences in either the evaluations or nostalgic perceptions.

Method and Procedure. One hundred twenty-one undergraduates took part in this experiment in exchange for course credit. They were told that they would be taking part in three unrelated experiments. After reading the informed consent, participants started taking the experiments at their own pace. They were randomly assigned to one of eight experimental conditions. The manipulation of loneliness is identical to that of Experiment 2 (i.e., a sentence unscrambling task), however the cognitive load manipulation was altered (see Appendix E for detail). Specifically, participants in the high load condition were asked to memorize a list of ten words (e.g., noir, balloon, grill, calling, agency, etc.) before performing the sentence unscrambling task (Drolet and Luce 2004). Those in the no load condition, in contrast, were not asked to memorize any words. Upon completing the sentence unscrambling task, participants took part in an ostensibly unrelated product evaluation study. In this task, participants were

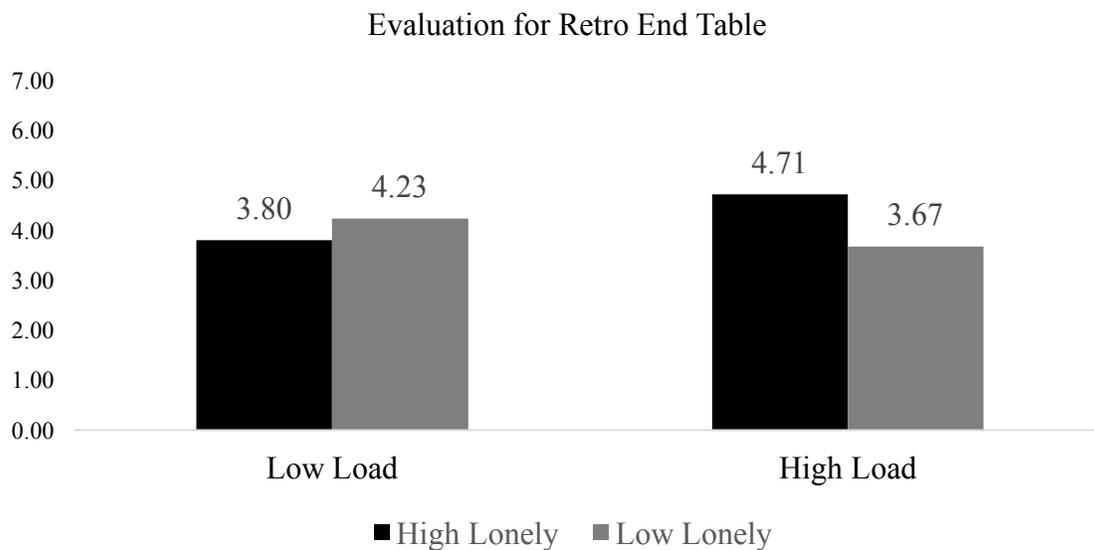
presented with product images of both retro and modern design from either a utilitarian or hedonic product category. Within the utilitarian product category, participants were shown a retro and a modern designed end table; in the hedonic product condition, participants were shown both retro and modern video games (Mario Tennis vs. Xenoblade Chronicles for the Nintendo Wii game console). After viewing the product image, participants rated both the retro and modern products. Product evaluation measures include 1) overall liking, 2) attractiveness, 3) likelihood to buy, and 4) willingness to pay for the product.

Results and Discussion. An evaluation index for the nostalgic products was created by averaging four measures (liking, attractiveness, likelihood to buy, and willingness to pay; Cronbach's $\alpha = .90$). This evaluation index served as a dependent variable. A one-way ANOVA on product category confirmed that participants in the utilitarian (vs. hedonic) category condition considered purchasing the product for utilitarian (vs. hedonic) purposes ($F(1, 119) = 387.25, p < .001$); this indicates that the manipulation of product category was successful.

A 2 (cognitive load: high vs. low) \times 2 (loneliness: high vs. low) \times 2 (product category: utilitarian vs. hedonic) ANOVA on the evaluation index was conducted to better understand participant preferences for nostalgic products. The results revealed a significant three-way interaction ($F(1, 113) = 7.87, p < .01$). Specifically, within the utilitarian category, participants with load in the high loneliness condition more favorably evaluated the retro end table than did participants in the other three conditions ($M_{\text{high load-high lonely}} = 4.71, t(113) = 2.23, p < .03$, Figure 3A). More importantly, participants with load more positively evaluated the retro end table, while those without load showed no difference based on the loneliness manipulation ($M_{\text{high load-high lonely}} = 4.71$ vs. $M_{\text{high load-low lonely}} = 3.67, t(113) = 2.40, p < .02$; $M_{\text{low load-high lonely}} = 3.80$ vs. $M_{\text{low load-low lonely}} = 3.80, t(113) = 0.00, p = .99$).

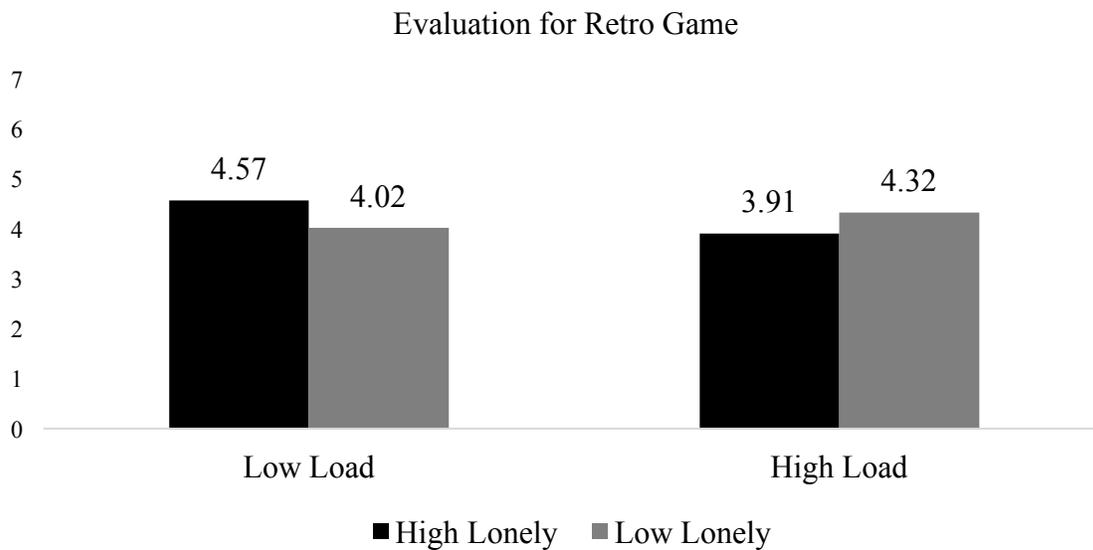
load-low lonely = 4.23, $t(113) = -.95, p = .34$). Further, participants primed with high loneliness showed a significant difference in their evaluations for the retro end table based on the load conditions ($M_{\text{high load-high lonely}} = 4.71$ vs. $M_{\text{low load-high lonely}} = 3.80, t(113) = 2.11, p < .05$). These results are consistent with the hypothesis that the same loneliness manipulation leads to different behavioral consequences (i.e., a preference for a retro product) according to cognitive load. As predicted, within the hedonic product category, participants did not show any differences in their preference for a retro video game based on the loneliness and load manipulations (all $ps > .10$; Figure 3B).

FIGURE 3A. PARTICIPANTS' EVALUATIONS FOR THE RETRO END TABLE (EXPERIMENT 4)



The same analysis was performed on the evaluation index for modern products (Cronbach's $\alpha = .93$). No significant three-way interaction effect was observed ($F(1, 113) = .64, p > .40$). Though unexpected, contrasts showed that participants with load rated the modern end table more favorably when primed with loneliness as opposed to their no-load counterparts ($M_{\text{high load-high lonely}} = 3.63$ vs. $M_{\text{high load-low lonely}} = 2.63, t(113) = 2.12, p < .05$). Further, participants' ratings of the modern designed end table were higher when loneliness was induced with the cognitive load manipulation ($M_{\text{high load-high lonely}} = 3.63$ vs. $M_{\text{low load-high lonely}} = 2.70, t(113) = 1.96, p = .05$). No other effect emerged.

FIGURE 3B. PARTICIPANTS' EVALUATIONS FOR THE RETRO VIDEO GAME (EXPERIMENT 4)



EXPERIMENT 5

The purpose of Experiment 5 is twofold: first, to replicate the findings that lonely consumers are inclined to favorably evaluate nostalgic products and second, to examine how one's emotion regulation motive mediates the impact of loneliness on preference for nostalgic products.

One could argue that the product stimuli used in Experiment 4 may be heavily influenced by one's personal preference or experiences. For example, someone may perceive a non-nostalgic end table as a nostalgic one if they have been exposed to the product (slick and glossy round-shaped end table) in their early days. In this experiment, I try to rule out such potential issue by manipulating the context of print ads. By doing so, I expect that participants' nostalgic perception of the same product may be influenced by a reminder of the past (e.g., a list of songs popular in the year 2000).

In addition, I investigate a psychological mechanism that underlies lonely consumers' favorable attitudes toward a nostalgic product. As theorized, I argue that a consumer may regulate feelings of loneliness using a product with nostalgic features. Then a lonely consumer would expect positive emotional states when s/he considers using a nostalgic product. I suggest that this anticipated positive emotion may lead him/her to form a positive attitude toward the nostalgic product. Experiment 5 tests this hypothesis.

Pretest. A pretest conducted on a separate group of participants recruited from MTurk (N = 59). They were told that they would evaluate a camera product (i.e., a fake brand called "Optimax") presented on a print ad. After reading an informed consent, participants were

randomly assigned to one of two conditions (i.e., the past-focused (year 2000) vs. the present-focused (year 2017) advertising). They were shown the ad and asked to provide their opinions toward the advertised product (e.g., overall liking, quality, design, etc.). Nostalgic perception of the product was manipulated through a few reminders of the past (Ju et al. 2016). Specifically, the ad featured the most popular movies and songs. For example, four most popular movie titles, which is drawn from the year chart on www.imdb.com, were embedded in the ad (i.e., “Gladiator”, “Snatch”, “Memento”, and “Bring It On”; see Appendix F for detail). In contrast, the ad focused on the present year (i.e., the year 2017) had “La La Land”, “Rogue One: A Star Wars Story”, “Sing”, and “Hidden Figures”. With these reminders, participants were shown a product image with advertising messages (i.e., Where are (vs. were) you? Save your memory with Optimax). Nostalgic perception was assessed using two items (i.e., How nostalgic do you think Optimax is? To what extent do you think Optimax reminds you of the past?).

This experimental setting is realistic in the sense that nostalgic advertising frequently employs songs, events, or temporal marks to elicit positive reactions (Pascal, Spratt, and Muehling 2002). Further, this method seems appropriate to vary nostalgic perception while controlling for individual aesthetic preference. An index of nostalgic perception was created by averaging two items. The results verify that participants indeed perceive the past-focused camera ad as nostalgic ($M_{\text{year2000}} = 4.93$ vs. $M_{\text{year2017}} = 3.74$, $t(57) = 2.48$, $p < .02$). However, there was no significant difference in participants’ ratings (overall liking: $M_{\text{year2000}} = 4.57$ vs. $M_{\text{year2017}} = 4.28$; quality perception: $M_{\text{year2000}} = 4.73$ vs. $M_{\text{year2017}} = 4.86$; design perception: $M_{\text{year2000}} = 4.70$ vs. $M_{\text{year2017}} = 4.86$, all $ps > .35$).

Method and Procedure. Two hundred and sixteen participants recruited from MTurk took part in this experiment in exchange for nominal compensation. Participants were randomly assigned to one of eight between-subject experimental conditions. They first completed the memory recall task, which is in fact designed to manipulate cognitive load. In this task, participants were asked to memorize six 3 x 3 matrices (vs. one 3 x 3 matrix) with some randomly placed dots (see Appendix G for detail). They then recalled three matrices (vs. one matrix) that they saw on previous screen. After answering the recalling question(s), participants rated 1) the difficulty levels of the task and 2) the levels of effort they exerted; these two items were combined and served as manipulation check for cognitive load. Upon completing the first task, participants were asked to solve the word search puzzle used in Experiment 3 for the loneliness induction. The procedure for this task was identical to Experiment 3. Lastly, they completed the product evaluation task. Based on the pretest results, two conditions were generated (i.e., year 2000 vs. year 2017). As mentioned earlier, each print ad contains a list of popular movies, songs, and a camera image. The camera ad was presented to participants at the beginning of the experiment. Attitudes toward the product was assessed using four measures (i.e., overall liking, attractiveness, likelihood to buy, and willingness to pay). Next participants reported how much they expect that the product elicits positive feelings on a scale from 1 (not much at all) to 7 (very much). This measure served as a mediator in the analysis. Finally, they provided demographic information and were thanked and debriefed.

Results and Discussion. An independent t-test revealed that the load manipulation was successful ($M_{\text{high load}} = 5.72$ vs. $M_{\text{low load}} = 1.45$, $t(214) = 31.07$, $p < .01$). I predicted that participants in the high loneliness condition would show more favorable attitude toward a

nostalgic product than those in the low loneliness condition when their cognitive resources are depleted. However, I did not expect that the differences in attitudes would emerge when cognitive resources are available. Further, the impact of loneliness on their favorable attitudes would be driven by anticipation of positive feelings. That is, a consumer may be motivated to regulate feelings of loneliness using nostalgic products. To test these hypotheses, I first created an evaluation index by averaging four measures (i.e., liking, attractiveness, likelihood to buy, and willingness to pay; Cronbach's $\alpha = .89$). A 2 (cognitive load: high vs. low) \times 2 (loneliness: high vs. low) \times 2 (advertising: year 2000 vs. year 2017) between-subject ANOVA on the evaluation index revealed a significant three-way interaction ($F(1, 215) = 4.67, p < .05$).

Consistent with my prediction, participants primed with high loneliness under load showed more favorable attitude toward the product than those in the other conditions ($M_{\text{high load-high lonely-y2000}} = 4.16, t(208) = 2.26, p < .05$). Within the high cognitive load condition, more importantly, participants in the high loneliness conditions evaluated the camera featured in the nostalgic ad more positively than those evaluated the product in the present-focused ad ($M_{\text{high load-high lonely-y2000}} = 4.16$ vs. $M_{\text{high load-high lonely-y2017}} = 3.62, t(208) = 1.71, p = .09$). In addition, when the cognitive load manipulation preceded, participants primed with the high loneliness reported greater positive evaluations toward the camera advertised within the context of the past than those primed with the low loneliness ($M_{\text{high load-high lonely-y2000}} = 4.16$ vs. $M_{\text{high load-low lonely-y2000}} = 3.52, t(208) = 2.05, p < .05$). Next, planned contrasts revealed that there was a significant difference in participants' attitudes toward the camera in the past-focused ad between two high loneliness conditions based on the cognitive load manipulation ($M_{\text{high load-high lonely-y2000}} = 4.16$ vs. $M_{\text{low load-high lonely-y2000}} = 3.32, t(208) = 2.70, p < .01$). The evaluation for the camera in the nostalgic ad was higher in the high loneliness and high cognitive load condition compared to the evaluation in the

low loneliness and low cognitive load conditions ($M_{\text{high load-high lonely-y2000}} = 4.16$ vs. $M_{\text{low load-low lonely-y2000}} = 3.51$, $t(208) = 2.12$, $p < .05$).

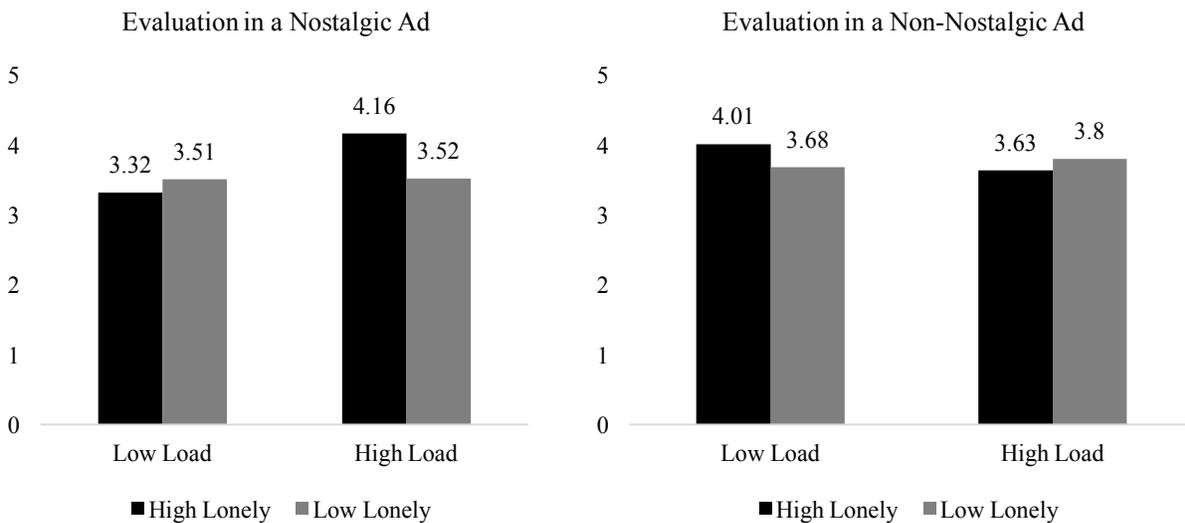
Though unexpected, I found a significant difference in participants' attitude toward the camera, depending on its nostalgic perception, between the high loneliness conditions when no cognitive load manipulation was administered ($M_{\text{low load-high lonely-y2000}} = 3.32$ vs. $M_{\text{low load-high lonely-y2017}} = 4.01$, $t(208) = 2.19$, $p < .05$). This pattern seems quite possible. Presumably, consumers may have a naïve belief that a camera (one of the most high-tech products) advertised in the present-focused ad is better because the context of ad may well fit with "high-tech" product images (e.g., technological advancement). No other significant difference was found among other conditions.

In order to test a conditional indirect effect of loneliness on participants' responses to the nostalgic product, a moderated mediation analysis was conducted using PROCESS macro (Model 11; Hayes 2012). Specifically, participants' anticipation of positive feelings was submitted to the analysis as a mediator with the cognitive load (high vs. low) and the ad type (nostalgic vs. non-nostalgic) as two moderators. As expected, the loneliness manipulation significantly affected participants' attitude to the camera in the nostalgic ad via anticipation of positive feelings, only when cognitive resources were depleted (10,000 bootstraps, indirect effect = .19, 90% CI: .008 to .372). This result supports my hypothesis that consumers regulate feelings of loneliness through nostalgic consumption when they do not possess available internal regulatory resources.

Building on the prior experiments, the results of Experiment 5 demonstrate that the impact of loneliness on consumer evaluations about a nostalgic product. More importantly, the data suggest that loneliness significantly influences consumers' responses to nostalgic products

only if they do not have cognitive resources. Generally speaking, the results indicate that lonely consumers can strategically use nostalgic products to regulate their current emotional distress when they were not able to control emotions using cognitive resources. If this emotion regulation motivation indeed plays a role, it is conceivable that other types of consumption behavior evoking positive emotions may help lonely consumers alleviate such negative emotion. In the next experiment, I extend these findings to charitable giving contexts in which consumers spend money for others to regulate feelings of loneliness.

FIGURE 4. PARTICIPANTS' EVALUATIONS OF A CAMERA IN A NOSTALGIC (VS. NON-NOSTALGIC) AD (EXPERIMENT 5)



EXPERIMENT 6

Experiment 6 examines the impact of loneliness on charitable giving. The results from Experiments 4 and 5 show that consumers may want to spend money on nostalgic products, which is basically considered “spending for themselves” to regulate feelings of loneliness. Experiment 6, however, focuses on how consumers regulate feelings of loneliness by “spending for others”. It seems that the former may provide more materialistic benefits (e.g., having a product), but the latter may provide more psychological benefits (e.g., feeling better). As reviewed earlier, prior work has demonstrated that helping can substantially increase one’s happiness and evoke positive feelings (Andreoni 1989; Cialdini et al. 1987; Dunn, Aknin and Norton 2008). From the emotion regulation perspective, those in a negative mood (or experiencing a specific negative emotion) can engage in prosocial behavior to alleviate negative emotional states (Andrade 2005; Andrade and Cohen 2007; Gross 2002). Building on this prior work, I argue that loneliness, one of the most aversive and negative emotions, may be regulated through helping others in need.

This experiment also builds on my findings in Experiments 1-3. That is, consumers whose cognitive resources are depleted may be more likely to donate money to a charity in expectation of positive affective states following their donation behavior. Those who have enough cognitive resources, however, are less likely to financially contribute to a charity because they may not need to regulate feelings of loneliness. They may regulate such emotional pain using internal resources, and so do not need to spend money for an upward emotion regulation.

Method and Procedure. One hundred and twenty-nine participants from MTurk took part in this experiment in return for nominal payment. Participants were informed that they would complete three unrelated experiments. After reading the informed consent, they started the first experiment at their own pace. Participants were randomly assigned to one of four experimental conditions. In this experiment, I employed the identical experimental methods used in Experiment 3 to manipulate both cognitive load and loneliness. Thus, participants were first told that they would complete a reading comprehension task, and those in the high load condition were asked to count all the letter “e” in a short text. In the low load condition, participants were not required to count any letters, but to read the text. When completing the first task, participants were asked to find total 13 words in a word search puzzle. This priming technique was utilized to manipulate levels of loneliness (i.e., high vs. low loneliness). On the completion of two manipulation tasks, participants were given the focal experiment. First, participants were told that they would evaluate a charity ad from a specific charitable organization and make a donation decision based on the ad. The charity information and advertising format was borrowed from Macdonnell and White (2015) and slightly modified to fit in the current experiment contexts. Specifically, the charity ad for the United Way was presented with a photo of a smiling child in need. The ad contains information about their donation program (i.e., providing breakfast to a child in need; see Appendix H for detail). Next, I asked participants to answer a question, “how likely are you to donate your money to the United Way?” (1 = Not likely at all, 7= Very likely), serving as a key dependent variable. After indicating donation intentions, they were responded to several questions about their donation decision. Importantly, anticipation of positive emotion was assessed using four measures (i.e., feeling good, pleasure, happy, and feel connected). For example, they responded to questions, “to what extent do you think helping children would make

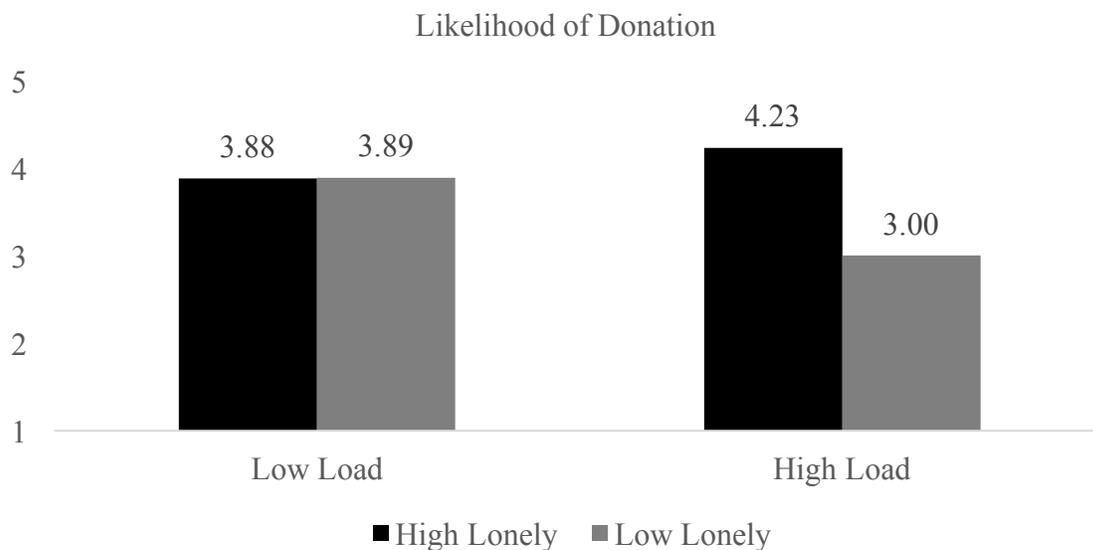
you feel good?” “how much pleasure do you think you would get by contributing to the United Way?” These four measures were averaged and used as a mediator in the analysis. Finally, respondents were asked to complete demographic measures (i.e., gender and age).

Results and Discussion. Building on the findings in previous experiments, I expected that participants are more likely to donate to the United Way when primed with high (vs. low) loneliness under high (vs. low) cognitive load. Furthermore, I predicted that the increased likelihood of donation is driven by participants’ anticipation of positive emotional states associated with contributing to the United Way. First, a 2 (cognitive load: high vs. low) \times 2 (loneliness: high vs. low) between-subject ANOVA on the likelihood of donation was conducted to test whether loneliness significantly affects participants’ donation decision. As expected, the analysis revealed a significant interaction between the cognitive load and loneliness induction ($F(1, 125) = 3.73, p = .06$). Specifically, those primed with high loneliness reported greater intention to donate to the United Way when cognitive resources are depleted than those in other three conditions ($M_{\text{high load-high lonely}} = 4.23, t(125) = 1.71, p = .09$). More importantly, participants’ likelihood of donation was significantly influenced by the loneliness priming within the high cognitive load conditions ($M_{\text{high load-high lonely}} = 4.23$ vs. $M_{\text{high load-low lonely}} = 3.00, t(125) = 2.61, p < .05$). However, the likelihood of donation was almost identical between the high and the low loneliness condition when the cognitive load manipulation was absent ($M_{\text{low load-high lonely}} = 3.88$ vs. $M_{\text{low load-low lonely}} = 3.89, t(125) = .76, p > .44$).

Next, I conducted a mediation analysis to examine whether the conceptually same mediator (i.e., anticipation of positive emotional states) as in Experiment 5 drives the effect of loneliness on the likelihood of donation to the United Way. Specifically, a conditional indirect

effect of loneliness on the likelihood of donation was tested using PROCESS macro (Model 7, Hayes 2012). The cognitive load was submitted to the analysis as a moderating variable, and the mediator was participants' anticipation of positive emotional states as in Experiment 5. The result confirmed that the effect of loneliness on the dependent variable was conditional on the level of cognitive load manipulation (10,000 bootstraps, 95% CI: .032 to .600), suggesting a significant mediating role of anticipation of positive emotional states.

FIGURE 5. THE LIKELIHOOD OF DONATION BASED ON THE LONELINESS AND AVAILABILITY OF COGNITIVE RESOURCES (EXPERIMENT 6)



In sum, the result of Experiment 6 provides initial evidence that loneliness can significantly influence one's donation decision. Notably, this effect only emerges when participants have few cognitive resources. Through the mediation analysis, this experiment also supports the notion that lonely consumers may want to regulate feeling of loneliness by helping

others in need. Then the question arises. Do lonely consumers equally feel better when donating money to charities addressing different causes? For instance, one may be happier if s/he helps other people, but may not be equally happy when supporting other types of causes (e.g., helping animals or protecting environment). It seems likely that lonely individuals pay more attention to information related to other people (Gardner et al. 2000) and thus decide to contribute to a person-related charity. In the next experiment, I examine this possibility.

EXPERIMENT 7

The objective of Experiment 7 is to investigate a boundary condition for the effect of loneliness on the likelihood of donation. Because an individual, generally speaking, is more likely to support a certain cause relevant to the self (Miller and Ratner 1996, 1998; Ratner, Zhao, and Clarke 2011 for review), it seems intriguing to examine whether lonely consumers differentially make a donation decision for different charities. Feeling lonely is an emotional signal indicating one's relational deficits. A person experiencing loneliness, therefore, may be considered to have a fundamental desire for (re)connect with other people. Prior work has suggested that this change in need for belongingness is a reason why people who lack social relationship becomes sensitive to social information (Gardner et al. 2000). Specifically, the authors demonstrated people whose need for belongingness is threatened tend to heighten social monitoring system and are likely to retain more social information (e.g, either positive or negative social events) than their counterparts (i.e., accepted individuals). Then how does this increased sensitivity plays a role in the impact of loneliness on charitable giving? I postulate that

lonely consumers are likely to pay more attention to a charity directly supporting other people than a charity addressing causes less directly relevant to people (e.g., saving endangered species by protecting wildlife habitat). Furthermore, I argue that the psychological benefits (i.e., “joy-of-giving”) from charitable contribution may differ for lonely individuals. That is, lonely individuals would feel better when contributing to a charity supporting a person-related (vs. non-person-related) cause. This prediction is consistent with the egoistic motivation examined in this dissertation; lonely individuals are not simply being more generous, but presumably care for themselves (i.e., alleviation of negative emotional states). In this experiment, I test this possibility by varying a type of charity (“human-cause” vs. “non-human cause”). Again, this experiment builds on my previous findings. Therefore, the motivation for regulating feelings of loneliness (and subsequent consequences on decision-making processes) is only activated when one’s cognitive resources are constrained.

Pretest. Two types of charity were selected. One was a charity called the People Against Poverty that aims at fighting for hunger resolution, providing shelter, and educating the poor. The other charity was Conservation International that focuses on environmental protection through cutting-edge science. These two charities’ goals are quite different. However, to eliminate potential issues in stimuli selection, a pretest included several measures that may affect participants’ likelihood of donation. A separate group of participants (N = 60) were recruited from MTurk and completed this pretest. Participants were randomly assigned to one of two conditions (i.e., the People Against Poverty vs. Conservation International). The charity advertisement was shown to participants at the beginning. They then answered a series of questions (i.e., likelihood of donation, interest in donating money to a charity, anticipation of

positive emotional states (four measures used in Experiment 6), attitudes toward a charity). Next, they provided demographic information, were thanked, and were compensated.

The data indicated that there is no significant difference in any of the measured variables (all p s > .15). Importantly, I found no difference in the likelihood of donation ($M_{\text{people}} = 4.23$ vs. $M_{\text{conservation}} = 3.87$, $p = .44$) and anticipation of positive emotional states ($M_{\text{people}} = 4.45$ vs. $M_{\text{conservation}} = 4.34$, $p = .81$) based on the type of charity. This result qualifies two charities for experimental stimuli to test my hypothesis in the focal experiment (in terms of comparing one's donation intention).

Method and Procedure. Three hundred and fourteen participants from MTurk took part in this experiment. Participants were told that they would complete three ostensibly different experiments. Participants were randomly allocated to one of eight experimental conditions. The cognitive load manipulation was identical to prior experiments. Participants in the high cognitive load condition were asked to memorize six “dot” matrices, and those in the low cognitive load condition were asked to memorize one matrix. Again, I employed a word search puzzle to prime loneliness. In the word search puzzle, participants needed to find 13 words (9 prime words, 4 neutral words). After completing two manipulation tasks, they were told that they would review a charity advertisement and provide their opinions. In the “human” (“non-human”) cause condition, an ad for the People Against Poverty (the Conservation International) was presented. Each advertisement contains a brief description about the charity and its logo (see Appendix I for detail). They reviewed the ad at their own pace and were asked to respond a series of questions. As in Experiment 6, first, participants' likelihood to donate money to a charity was assessed using one item (“how likely are you to donate money to this charity?”) anchored from 1 (not

likely at all) to 7 (very likely). This measure served as a focal dependent variable. They then answered four questions measuring anticipation of positive emotional states (i.e., feeling better, pleasure, happy, and feel connected); these four measures were combined and served as a mediator. Lastly, demographic information was collected. Participants were thanked, debriefed, and compensated upon the completion of third experiment.

Results and Discussion. I first predicted that participants induced feelings of loneliness are more likely to donate money to the People Against Poverty only if their cognitive resources are limited. However, this effect of loneliness was not expected to emerge for the Conservation International. Furthermore, I expected that participants with available cognitive resources would not be influenced by the loneliness priming, no matter what charities were presented. A 2 (cognitive load: high vs. low) \times 2 (loneliness: high vs. low) \times 2 (charity type: human vs. non-human) between-subject ANOVA was conducted to test hypotheses. Though a significant three-way interaction was expected, the results did not reach statistical significance ($F(1, 306) = 1.33, p = .25$). Because I expected that only one condition (i.e., the high lonely – high load condition) would show a greater intention of donation, I speculate that indifference in other conditions may cancel out a three-way interaction. In particular, because I did not expect to observe the impact of loneliness on participants' willingness to donate money to the Conservation International, the likelihood of donation could, theoretically, show no difference across four conditions depending on the load and loneliness manipulations. However, for the People Against Poverty, I should observe a significant loneliness effect on the dependent variable based on the availability of cognitive resources. Thus, in this experiment, I believe a planned contrast may provide more accurate information to test my hypotheses. To find a conditional effect of loneliness on the

likelihood of donation, I first separately analyzed the data based on the type of charity. Specifically, within the human-cause condition (i.e., the People Against Poverty), a significant two-way interaction between the cognitive load and loneliness priming ($F(1, 156) = 5.31, p < .05$). Those in the high loneliness conditions indeed reported a greater intention to donate money to the charity than other three conditions when the cognitive load manipulation preceded ($M_{\text{high load-high lonely}} = 4.26, t(156) = 1.95, p = .05$). More importantly, participants who lack cognitive resources showed a significantly higher intention of donation depending on the loneliness priming ($M_{\text{high load-high lonely}} = 4.26$ vs. $M_{\text{high load-low lonely}} = 3.34, t(156) = 2.13, p < .05$). In contrast, those with available cognitive resources did not show such pattern in accordance with the level of loneliness ($M_{\text{low load-high lonely}} = 3.48$ vs. $M_{\text{low load-low lonely}} = 3.93, t(156) = 1.10, p > .20$).

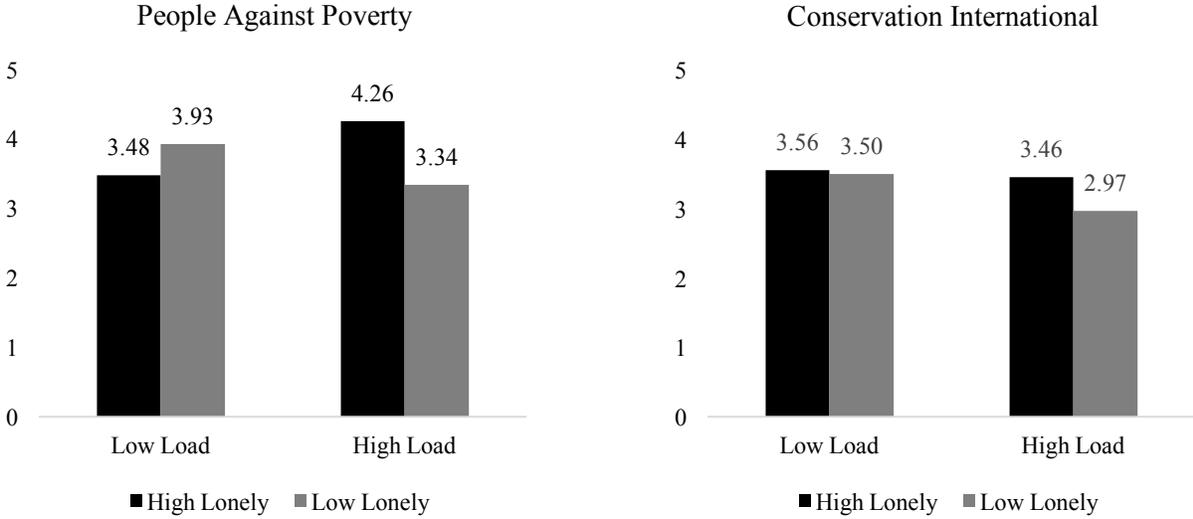
Additionally, the data supported that the same high loneliness manipulation can produce an opposite effect on the likelihood of donation depending on the availability of cognitive resources ($M_{\text{high load-high lonely}} = 4.26$ vs. $M_{\text{low load-high lonely}} = 3.48, t(156) = 1.87, p = .06$). For the non-human cause charity (i.e., the Conservation International), no difference was observed in the likelihood of donation between the high and low loneliness conditions when cognitive resources are limited ($M_{\text{high load-high lonely}} = 3.46$ vs. $M_{\text{high load-low lonely}} = 2.97, t(150) = 1.23, p > .20$). In addition, no significant difference was found in the low cognitive load conditions based on the loneliness priming ($M_{\text{low load-high lonely}} = 3.56$ vs. $M_{\text{low load-low lonely}} = 3.50, t(150) = .16, p > .85$). Participants primed with high loneliness also did not show a significant difference depending on the availability of cognitive resources ($M_{\text{high load-high lonely}} = 3.46$ vs. $M_{\text{low load-high lonely}} = 3.56, t(150) = .26, p > .75$). Notably, participants primed with high loneliness under cognitive load differentially responded to the charity ads based on a type of charity ($M_{\text{high load-high lonely-human}} = 4.26$ vs. $M_{\text{high load-high lonely-nonhuman}} = 3.46, t(150) = 1.91, p = .06$).

Taken together, these results confirm that participants' donation decisions are influenced by feelings of loneliness only if they were unable to utilize cognitive resources. The data further support the notion that lonely consumers are not equally likely to financially contribute to a charity if the charity does not focus on helping others in need. Next, I conducted a mediation analysis to investigate how anticipation of positive emotional state mediates the impact of loneliness on likelihood of donation.

Based on the results of Experiment 6 (and the current results), I predict that a significant mediation effect of anticipation of positive emotional states should be observed as shown in prior experiments. To test this hypothesis, I conducted two separate mediation analyses using the PROCESS macro (Model 7, Hayes 2012). First, a moderated mediation analysis was performed for the People Against Poverty using the cognitive load as a moderator and anticipation of positive emotions as a mediator. Specifically, the analysis revealed a significant conditional indirect effect of loneliness on the likelihood of donation (10,000 bootstraps, 95% CI: .075 to .617). This indicates that participants primed with high loneliness are more likely to financially contribute to the charity addressing a human cause as an emotional regulation strategy. Second, the same moderated mediation analysis was conducted to test whether a similar pattern exist for the Conservation International. As expected, no significant conditionally indirect effect of loneliness on the likelihood of donation was observed (all 95% CI included zero).

Overall, the results of Experiment 7 demonstrate that the impact of loneliness on charitable giving is observable only if a consumer does not possess sufficient cognitive resources. Most importantly, the data suggest that lonely consumers do not anticipate the same amount of psychological benefits from different types of charitable contributions, which in turn leads them to selectively react to a charity that directly helps other people in need.

FIGURE 6. THE LIKELIHOOD OF DONATION (EXPERIMENT 7)



CHAPTER 5. GENERAL DISCUSSION

Loneliness is a negatively-valenced emotion associated with one's deficit of social relations. Although unregulated loneliness causes various detrimental effects on people's mental and physical well-being, marketing researchers have paid little attention to the impact of loneliness on consumer behavior. In this dissertation, I explore *when, how, and why* it influences consumer behavior (i.e., nostalgic consumption and donation decision) by focusing on one's emotion regulation motivation. Across seven experiments, I demonstrate that loneliness significantly influences consumers' i) preferences for nostalgic products and ii) charitable contribution *only* when their cognitive resources are limited.

In Experiments 1-3, I identify a circumstance under which loneliness affects behaviors by focusing on the manipulation itself. Experimentally inducing loneliness is a difficult but necessary task in order to inform researchers of a causal effect of loneliness on consumer behavior. In this dissertation, three different priming methods were employed (i.e., a personality test with bogus feedback, a sentence unscrambling task, and a word search puzzle) to induce loneliness. I find that only individuals experiencing cognitive load (i.e. lacking cognitive resources) show the expected loneliness priming effect (i.e., higher scores on loneliness-related measures). In contrast, participants are not influenced by loneliness primes when they have abundant cognitive resources. I replicated this result using different manipulation methods, confirming its robustness.

Experiments 4-7 builds on the findings from the prior three experiments. Specifically, I found a conditional effect of loneliness on consumer behavior in both experiments. Experiments 4-5 demonstrate that individuals primed with loneliness show preference for nostalgic products

when they are unable to counter such emotional distress using their own cognitive resources. As theorized, the effect of loneliness on nostalgic product preference does not emerge when internal coping resources are not taxed. Experiment 5 provides evidence for a mediating role of anticipated positive affective states associated with nostalgic consumption, suggesting that one's emotion regulation motivation may drive the loneliness effect on nostalgic preference. These results suggest that lonely consumers do not *always* engage in an emotionally- driven consumption behavior, especially when they are able to cope with negative emotions through cognitive emotion regulation strategies (e.g., cognitive reappraisal or suppression; Gross 1998). In contrast, people may feel lonely, and thus the effect of loneliness is manifested as a coping mechanism under the circumstance that their cognitive resources are depleted. Imagine that one encounters a loneliness-related situation (e.g., being alone for a long time or lacking social interactions). If one has sufficient mental resources to cope with the associated negative emotions, she can readily reappraise the loneliness-evoking situations. Thus, she may not even consider loneliness as to-be-regulated emotion when making a purchase decision. In this case, nostalgic appeals (e.g., advertising or design) may not effectively attract her.

In line with these findings, I demonstrate that participants primed with loneliness under load are more likely to donate money to a charity in Experiments 6-7. Moreover, I introduce a boundary condition for the impact of loneliness on likelihood of donation, a type of charity. The results support the notion that lonely consumers are not simply being generous to every solicitation for help, but have egoistic motivation to regulate their own emotional distress. Specifically, by contributing a charity supporting other *people* in need, they anticipate positive affective states when making a donation decision. As shown in Experiment 5, the results further

demonstrate this anticipated positive affective state indeed drives the loneliness effect on donation-related decision, supporting my hypothesis.

Theoretical and Practical Implications

This dissertation provides both theoretical and practical implications in marketing research. First, the findings from the first three experiments contribute by expanding our understanding of negative affective priming. Past work has suggested that the same priming sometimes leads to different (or opposite) effects (Wheeler and Berger 2007; Herr, Sherman, and Fazio 1983). Building on prior work on affective priming and emotion regulation, I show that an availability of cognitive resource is another key factor that influences obtaining a loneliness priming effect. Because people lacking cognitive resources may not be able to counter unwanted thoughts/feelings relevant to loneliness induced by the experimental stimuli, I propose that the same loneliness manipulation can produce different outcomes based on cognitive load. In other words, detecting priming effects of negative emotions on cognition, emotion, and behavior may be contingent upon one's availability of cognitive resources, especially when the primed emotion is inconsistent with one's positive self-view. Moreover, consistent with prior work on emotion regulation, my findings provide further empirical evidence that people can use cognitive resources to regulate negative emotions. Though I did not directly examine *why* this occurs, it seems clear that participants' emotion regulation strategies played a role in obtaining the loneliness priming effect.

Second, prior research has paid less attention directly to loneliness priming. Experimentally inducing feelings of loneliness was considered extremely difficult, which might

explain the scarcity of loneliness manipulations (Russell 1996; Cacioppo and Hawkley 2005). This dissertation fills this gap. By developing loneliness priming methods, the current research opens research opportunities to explore how transient changes in feelings of loneliness affect consumer behavior. Stated differently, the current research may allow researchers to examine a difference between the impact of chronic and temporary loneliness on consumer behavior.

Third, this dissertation sheds light on how and why loneliness influences consumer judgment and decision-making. Consistent with the literature on nostalgia, my research suggests consumers may want to use nostalgic products in order to regulate feelings of loneliness. Notably, I have only focused on feelings of loneliness and its impact on preference for nostalgic products from emotion regulation perspective. I argue that loneliness and social exclusion (or isolation) should be considered as different constructs, which in turn produce different consequences on consumer behavior. Therefore, this work extends Loveland et al.'s (2010) findings but also introduces a novel mediator (i.e., anticipation of positive affective states) by incorporating the emotion regulation literature.

Fourth, the current research suggests that loneliness does not necessarily hinder prosocial behavior. Though a few researchers have suggested that loneliness can positively influence one's prosocial behavior, it is generally believed that there is a negative relationship between loneliness and prosocial behavior (Huang, Liu, and Liu 2016, Woodhouse, Dykas, and Cassidy 2012). Building on the affect regulation model (Andrade and Cohen 2007), my findings further provide evidence that a specific negative emotion (i.e., loneliness) can increase likelihood of charitable giving when one's emotion regulation motive is activated. More importantly, I proposed a type of charity as a novel boundary condition for this pattern. Though many scholars have focused on psychological benefits of giving, little attention was directed to how consumers

differently respond to different types of charities based on their anticipation of invisible benefits. From this perspective, this dissertation not only expands our understanding of how negative emotions influence donation-related decisions, but also provides a new avenue that future work on charitable giving may pursue.

Finally, marketing practitioners may also benefit from the findings presented here. The results from Experiments 4-5 suggest that lonely individuals may be the best target consumers for a company utilizing retro or nostalgic marketing strategies. By understanding the characteristic of potential customers, I argue that practitioners may be able to deliver an effective marketing message catering to lonely consumers. Similarly, this dissertation further provides implications to marketers of non-profit organizations. My findings suggest not only that lonely consumers can be a potential target, but also that one's emotion regulation motivations play an important role in increasing intention of donation. Therefore, it may be worthwhile to consider emphasizing "joy-of-giving" in marketing messages. In other words, marketers can think of focusing on donors' egoistic motivation, rather than simply appealing to their altruistic motivation.

Limitations and Future Research

Though this work provides both theoretical and practical implications, some of the results in this dissertation should be interpreted with caution. It is important to note that I have particularly focused on loneliness. As a type of social emotion, it is quite different from other types of basic emotions in the sense that it requires a concrete mental representation (Richins 1997, Shaver et al. 1987). For instance, individuals feel lonely when they subjectively "evaluate"

their current quality and quantity of social relationships. Therefore, social (un)desirability issues arise when researchers attempt to accurately measure levels of loneliness. This subjective evaluation about one's relational quantity and quality may leave room for adopting emotion regulation strategies (e.g., counter-argument processes). Basic negative emotions, such as sadness or fear, do not necessarily require a person to "evaluate" his/her current relational states, but may be aroused immediately upon exposure to emotional stimuli. They may be usually evoked based on one's somatic responses. Thus, I postulate that a conditional priming effect of basic negative emotions is *not* expected to occur depending on availability of cognitive resources.

Although I demonstrated that the critical role of availability of cognitive resources in the loneliness priming, the current research is silent with respect to what specific psychological mechanisms underlie this conditional priming effect. What specific emotion regulation strategies did participants utilize among cognitive-reappraisal, suppression, or counter-argument? In addition, it is not clear whether working memory preoccupied with the load manipulation or depleted emotion regulatory resources drives the conditional priming effect. If the hypothesis of interrupted working memory comes into play, an order of cognitive load manipulation should *not* produce different responses on the subsequent loneliness-related measures. For example, the loneliness priming effect should be observed even if the load manipulation comes *after* the loneliness primes as long as priming responses are collected at the end. In this case, the load manipulation presumably interrupts participants' cognitive processes with regard to loneliness primes. If the depletion hypothesis is true, however, the load manipulation should always be conducted *before* the priming work. Though my experiment settings implicitly assumed the latter

to be the case, it would be intriguing research question needing further empirical support. Future research may need to tackle this issue and examine what precise mechanisms underlie this effect.

In this dissertation, I argue that one's emotion regulation motivation is crucial to observe the impact of loneliness on consumer behavior. Andrade and Cohen (2007) have suggested that regulatory motivation is generally activated when individuals experience negative emotions. As the affect evaluation model predicts, it may be possible that consumers experiencing loneliness may show emotion-congruent behavior, implying that lonely consumers do not adopt a mood-repair strategy. For example, lonely consumers may not want to consider others' unhappy situations and focus more on their own emotional states. This may result in a decrease in their likelihood of donation. Perhaps lonely individuals believe that they are simply not in a good mood to help others. When does loneliness motivate consumers to regulate their emotional distress? Conversely, when does it lead consumers to ruminate on their feelings and to show "loneliness-congruent" behavior? Investigating how lonely consumers show divergent behavior may prove fruitful.

Furthermore, it may be worthwhile to examine what triggers people to engage in either emotion regulation behavior or evaluation behavior. One variable that may discern such behavioral patterns is the type of loneliness. Previous research has shown that a conceptual representation of loneliness consists of three distinct dimensions (i.e., isolation, relational connectedness, and collective connectedness; Hawkley, Browne and Cacioppo 2005). Considering that consumers differently respond to the same negative event (e.g., social exclusion) depending on a type of threatened needs (i.e., existential vs. relational needs; Lee and Shrum 2012), it is conceivable that lonely consumers may show different behavior depending on the type or sources of evoking feelings of loneliness. That is, they may show mood-congruent

behavior, such as preference for a minority-endorsed product (Wang, Zhu, and Shiv 2012), when experiencing loneliness induced by isolation. When a “collective loneliness” is activated, however, lonely consumers may show mood-incongruent behavior (e.g., buying a majority-endorsed product) to regulate feelings of loneliness by affiliating with a desired group. Future research may examine this possibility.

In conclusion, this dissertation demonstrates a conditional effect of loneliness on consumer behavior (i.e., nostalgic consumption and charitable giving). Across seven experiments, I show that consumers may strategically use products or help others to regulate feelings of loneliness. In particular, consumers are likely to engage in this strategic consumption behavior only when they do not have internal coping resources to regulate feelings of loneliness. Several implications for marketing researchers and practitioners were discussed.

REFERENCES

- Andrade, Eduardo B. (2005), "Behavioral Consequences of Affect: Combining Evaluative and Regulatory Mechanisms," *Journal of Consumer Research*, 32 (December), 355-62.
- Andrade, Eduardo B. and Joel B. Cohen (2007), Affect-Based Evaluation and Regulation as Mediators of Behavior: The Role of Affect in Risk Taking, Helping, and Eating Patterns, In K.D. Vohs, R.F. Baumeister, and G. Lowenstein (Eds.), *Do Emotions Help or Hurt Decision Making? A Hedgefoxian Perspective* (p.35-68). New York: Russell Sage
- Andreoni, James (1989), "Giving with Impure Altruism: Applications to Charity and Ricardian Equivalence," *The Journal of Political Economy*, 97 (December), 1447-58.
- Andreoni, James (1990), "Impure Altruism and Donations to Public Goods: A Theory of Warm-Glow Giving," *The Economic Journal*, 100 (June), 464-77.
- Bagozzi, Richard P., Mahesh Gopinath, and Prashanth U. Nyer (1999), "The Role of Emotions in Marketing," *Journal of the Academy of Marketing Science*, 27 (March), 184-206.
- Bargh, John A. Roman D. Thein (1985), "Individual Construct Accessibility, Person Memory, and the Recall-Judgment Link: The Case of Information Overload," *Journal of Personality and Social Psychology*, 49 (November), 1129-46.
- Bastian, Brock, Peter Kuppens, Matthew J. Hornsey, Joonha Park, Peter Koval, and Yukiko Uchida (2012), "Feeling Bad About Being Sad: The Role of Social Expectancies in Amplifying Negative Mood," *Emotion*, 12 (February), 69-80.
- Bastian, Brock, Peter Koval, Yasemin Erbas, Marlies Houben, Madeline Pe, and Peter Kuppens (2015), Sad and Alone: Social Expectancies for Experiencing Negative Emotions Are

- Linked to Feeling of Loneliness,” *Social Psychological and Personality Science*, 6 (July), 496-503.
- Batcho, Krystine Irene (1995), “Nostalgia: A Psychological Perspective,” *Perceptual and Motor Skills*, 80 (February), 131-43.
- Baumann, Donald J., Robert B. Cialdini, and Douglas T. Kendrick (1981), “Altruism as Hedonism: Helping and Self-Gratification as Equivalent Responses,” *Journal of Personality and Social Psychology*, 40 (January), 1039-46.
- Baumeister, Roy F. and Dianne M. Tice (1990), “Point-Counterpoints: Anxiety and Social Exclusion,” *Journal of Social and Clinical Psychology*, 9 (2), 165-95.
- Baumeister, Roy F. and Mark R. Leary (1995), “The Need to Belong: Desire for Interpersonal Attachments as a Fundamental Human Motivation,” *Psychological Bulletin*, 117 (May), 497-529.
- Baumeister, Roy F., Ellen Bratslavsky, Mark Muraven, and Dianne M. Tice (1998), “Ego Depletion: Is the Active Self a Limited Resource?” *Journal of Personality and Social Psychology*, 74 (May), 1252-65.
- Belk, Russell W. (1988), “Possessions and the Extended Self,” *Journal of Consumer Research*, 15 (September), 139-68.
- Berridge, Kent and Piotr Winkielman (2003), “What is an Unconscious Emotion? The Case for Unconscious “Liking”,” *Cognition and Emotion*, 17 (2), 181-211.
- Bertrams, Alex, Roy F. Baumeister, Chris Englert, and Philip Furley (2015), “Ego Depletion in Color Priming Research: Self-Control Strength Moderates the Detrimental Effect of Red on Cognitive Test Performance,” *Personality and Social Psychology Bulletin*, 41 (March), 311-22.

- Cialdini, Robert B., Mark Schaller, Donald Houlihan, Kevin Arps, Jim Fultz, Arthur L. Beaman (1987), "Empathy-Based Helping: Is It Selflessly or Selfishly Motivated?" *Journal of Personality and Social Psychology*, 52 (April), 749-58.
- Cialdini, Robert B., Betty Lee Darby, and Joyce E. Vincent (1973), "Transgression and Altruism: A Case for Hedonism," *Journal of Experimental Social Psychology*, 9 (November), 502-16.
- Cacioppo, John T. and Louise C. Hawkley (2009), "Perceived Social Isolation and Cognition," *Trends in Cognitive Sciences*, 13 (October), 447-54.
- Cacioppo, John T., Louise C. Hawkley, Elizabeth L. Crawford, John M. Ernst, Mary H. Burleson, Ray B. Kowalewski, William B. Malarkey, Eve Van Cauter, Gary G. Bernstson (2002), "Loneliness and Health: Potential Mechanisms," *Psychosomatic Medicine*, 64 (May/June), 407-17.
- Cacioppo, John T., Louise C. Hawkley, John M. Ernst, Mary Burleson, Gary G. Bernstson, Bita Nouriani, and David Spiegel (2006), "Loneliness within A Nomological Net: An Evolutionary Perspective," *Journal of Research in Personality*, 40 (December), 1054-85.
- Cacioppo, John T., Louise C. Hawkley, and Ronald A. Thisted (2010), "Perceived Social Isolation Makes Me Sad: 5-Year Cross-Lagged Analyses of Loneliness and Depressive Symptomatology in the Chicago Health, Aging, and Social Relations Study," *Psychology and Aging*, 25 (June), 453-63.
- Cacioppo, John T. and William Patrick (2008), *Loneliness: Human Nature and the Need for Social Connection*, New York: W.W. Norton & Company.

- Chow, Rosalind M., Larissa Z. Tiedens, and Cassandra L. Govan (2008), "Excluded Emotions: The Role of Anger in Antisocial Responses to Ostracism," *Journal of Experimental Social Psychology*, 44 (May), 896-903.
- Clary, E. Gil and Mark Snyder (1999), "The Motivations to Volunteer: Theoretical and Practical Considerations," *Current Directions in Psychological Science*, 8 (October), 156-59.
- Davis, Derick F. and Paul M. Herr (2014), "From Bye to Buy: Homophones as a Phonological Route to Priming," *Journal of Consumer Research*, 40 (April), 1063-77.
- Deci, Edward and Richard M. Ryan (2000), "The "What" and "Why" of Goal Pursuits: Human Needs and the Self-Determination of Behavior," *Psychological Inquiry*, 11 (4), 227-68.
- Drolet, Aimee and Mary Frances Luce (2004), "The Rationalizing Effects of Cognitive Load on Response to Emotional Tradeoff Difficulty," *Journal of Consumer Research*, 31 (June), 63-77.
- Duhachek, Adam, Nidhi Agrawal, DaHee Han (2012), "Guilt Versus Shame: Coping, Fluency, and Framing in the Effectiveness of Responsible Drinking Messages," *Journal of Marketing Research*, 49 (December), 928-41.
- Duclos, Rod, Echo Wen Wan, and Yuwei Jiang (2013), "Show Me the Honey! Effects of Social Exclusion on Financial Risk Taking," *Journal of Consumer Research*, 40 (June), 122-35.
- Dunn, Elizabeth W., Lara B. Aknin, and Michael I. Norton (2008), "Spending Money on Others Promotes Happiness," *Science*, 319 (March), 1687-88.
- Eisenberger, Naomi I., Matthew D. Lieberman, and Kipling D. Williams (2003), "Does Rejection Hurt? An fMRI Study of Social Exclusion," *Science*, 302 (October), 290-92.
- Epley, Nicholas, Adam Waytz, and John T. Cacioppo (2007), "On Seeing Human: A Three-Factor Theory of Anthropomorphism," *Psychological Review*, 114 (October), 864-86.

- Epley, Nicholas, Scott Akalis, Adam Waytz, and John T. Cacioppo (2008), "Creating Social Connection Through Inferential Reproduction: Loneliness and Perceived Agency in Gadgets, Gods, and Greyhounds," *Psychological Science*, 19 (February), 114-20.
- Ernst, John M. and John T. Cacioppo (1999), "Lonely Hearts: Psychological Perspectives on Loneliness," *Applied and Preventive Psychology*, 8 (November), 1-22.
- Gardner, Wendi L., Cynthia L. Pickett, and Marilynn B. Brewer (2000), "Social Exclusion and Selective Memory: How the Need to Belong Influences Memory for Social Events," *Personality and Social Psychology Bulletin*, 26 (April), 486-96.
- Gross, James J. (1998), "The Emerging Field of Emotion Regulation: An Integrative Review," *Review of General Psychology*, 2 (September), 271-99.
- Gross, James J. (2001), "Emotion Regulation in Adulthood: Timing is Everything," *Current Directions in Psychological Science*, 10 (June), 214-19.
- Gross, James J. (2002), "Emotion Regulation: Affective, Cognitive, and Social Consequences," *Psychophysiology*, 39 (May), 281-91.
- Gyurak, Anett, James J. Gross, and Amit Etkin (2011), "Explicit and Implicit Emotion Regulation: A Dual-Process Framework," *Cognition and Emotion*, 25 (3), 400-12.
- Han, DaHee, Adam Duhachek, and Derek D. Rucker (2015), "Distinct Threats, Common Remedies: How Consumers Cope with Psychological Threats," *Journal of Consumer Psychology*, 25 (October), 531-45.
- Hawley, Louise C., Michael W. Browne, and John T. Cacioppo (2005), "How Can I Connect with Thee?" *Psychological Science*, 16 (October), 798-804.
- Hawley, Louise C. and John T. Cacioppo (2010), "Loneliness Matters: A Theoretical and Empirical Review of Consequences and Mechanisms," *Annals of Behavioral Medicine*,

- 40 (October), 218-27.
- Hayes, Andrew F. (2013), *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*, New York: Guilford Press.
- Hays Ron D. and M. Robin DiMatteo (1987), "A Short-Form Measure of Loneliness," *Journal of Personality Assessment*, 51 (March), 69-81.
- Herr, Paul M. (1986), "Consequence of Priming: Judgment and Behavior," *Journal of Personality and Social Psychology*, 51 (December), 1106-1115.
- Herr, Paul M., Steven J. Sherman, and Russell H. Fazio (1983), "On the Consequences of Priming: Assimilation and Contrast Effects," *Journal of Experimental Social Psychology*, 19 (July), 323-40.
- Hoffman, Martin L. (1981), "Is Altruism Part of Human Nature?" *Journal of Personality and Social Psychology*, 40 (January), 121-37.
- Holbrook, Morris B. and Robert M. Schindler (2003), "Nostalgic Bonding: Exploring the Role of Nostalgia in the Consumption Experience," *Journal of Consumer Behavior*, 3 (December), 107-27.
- Holt-Lunstad, Julianne, Timothy B. Smith, Mark Baker, Tyler Harris, and David Stephenson (2015), "Loneliness and Social Isolation as Risk Factors for Mortality: A Meta-Analytic Review," *Perspectives on Psychological Science*, 10 (March), 227-37.
- Huang, Heqing, Yanchun Liu, and Liu Xiaocen (2016), "Does Loneliness Necessarily Lead to a Decrease in Prosocial Behavior? The Role of Gender and Situation," *Frontiers in Psychology*, 7 (September), 1-9.
- Isen, Alice M. and Standley F. Simmonds (1978), "The Effect of Feeling Good on a Helping Task that Is Incompatible with Good Mood," *Social Psychology*, 41 (December), 346-49.

- Janiszewski, Chris and Robert S. Wyer Jr. (2014), "Content and Process Priming: A Review," *Journal of Consumer Psychology*, 24 (January), 96-118.
- Jong Gierveld, Jenny de, Theo van Tilburg, and Pearl A. Dykstra (2006), Loneliness and Social Isolation, In A. Vangelisti and D. Perlman (Eds.), *Cambridge Handbook of Personal Relationships* (p.485-500). Cambridge: Cambridge University Press.
- Jones, Warren H. (1990), "Loneliness and Social Exclusion," *Journal of Social and Clinical Psychology*, 9 (2), 214-20.
- Jones, Warren. H. and Margaret D. Carver (1991), The Experience of Loneliness: Adjustment and Coping Implications, In C.R. Snyder & D.R. Forsyth (Eds.), *Handbook of Social and Clinical Psychology: The Health Perspective* (p.395-415). New York: Pergamon.
- Joormann, Jutta and Ian H. Gotlib, "Emotion Regulation in Depression: Relation to Cognitive Inhibition," *Cognition and Emotion*, 24 (February), 281-98.
- Ju, Ilyoung, Yunmi Choi, Jon Morris, Hsiao-Wen Liao, and Susan Bluck (2016), "Creating Nostalgic Advertising Based on the Reminiscence Bump: Diachronic Relevance and Purchase Intent," *Applied Cognitive Psychology*, 30 (May/June), 465-71.
- Kiecolt-Glaser, Janice K., Warren Garner, Carl Speicher, Gerald M. Penn, Jane Holliday, Ronald Glaser (1984), "Psychosocial Modifiers of Immunocompetence in Medical Students," *Psychosomatic Medicine*, 46 (January/February), 7-14.
- Kim, Soo and Derek D. Rucker (2012), "Bracing for the Psychological Storm: Proactive Versus Reactive Compensatory Consumption," *Journal of Consumer Research*, 39 (December), 815-30.
- Koole, Sander L. and Klaus Rothermund (2011), "I Feel Better But I Don't Know Why: Implicit Emotion Regulation," *Cognition and Emotion*, 25 (3), 389-99.

- Lasaleta, Jannine D., Constantine Sedikides, and Kathleen D. Vohs (2014), "Nostalgia Weakens the Desire for Money," *Journal of Consumer Research*, 41 (October), 713-29.
- Leary, Mark R. (1990), "Responses to Social Exclusion: Social Anxiety, Jealousy, Loneliness, Depression, and Low Self-Esteem," *Journal of Social and Clinical Psychology*, 9 (2), 221-29.
- Lee, Chan Jean, Edurado B. Andrade, and Stephen E. Palmer (2013), "Interpersonal Relationship and Preferences for Mood-Congruency in Aesthetic Experiences," *Journal of Consumer Research*, 40 (August), 382-91.
- Lee, Jaehoon and L. J. Shrum (2012), "Conspicuous Consumption versus Charitable Behavior in Response to Social Exclusion: A Differential Needs Explanation," *Journal of Consumer Research*, 39 (October), 530-44.
- Lerner, Jennifer S. and Dacher Keltner (2000), "Beyond Valence: Toward a Model of Emotion-Specific Influences on Judgment and Choice," *Cognition and Emotion*, 14 (4), 473-93.
- Lisjak, Monika, Andrea Bonezzi, Soo Kim, and Derek D. Rucker (2015), "Perils of Compensatory Consumption: Within-Domain Compensation Undermines Subsequent Self-Regulation," *Journal of Consumer Research*, 41 (February), 1186-1203.
- Logan, Gordon D. (1979) "On the Use of a Concurrent Memory Load to Measure Attention and Automaticity," *Journal of Experimental Psychology: Human Perception and Performance*, 5 (May), 189-207.
- Loveland, Ketherine E., Dirk Smeesters, and Naomi Mandel (2010), "Still Preoccupied with 1995: The Need to Belong and Preference for Nostalgic Products," *Journal of Consumer Research*, 37 (October), 393-408.
- Macdonnell, Rhiannon and Katherine White (2015), "How Construals of Money versus Time

- Impact Consumer Charitable Giving,” *Journal of Consumer Research*, 42 (December), 55-63.
- Masi, Christopher M., His-Yuan Chen, Louise C. Hawkey, and John T. Cacioppo, “A Meta-Analysis of Interventions to Reduce Loneliness,” *Personality and Social Psychology Review*, 15 (August), 219-66.
- Mauss, Iris B., Silvia A. Bunge, and James J. Gross (2007), “Automatic Emotion Regulation,” *Social and Personality Psychology Compass*, 1 (November), 146-67.
- McPherson, Miller, Lynn Smith-Lovin, and Matthew E. Brashears (2006), “Social Isolation in America: Changes in Core Discussion Networks over Two Decades,” *American Sociological Review*, 71 (June), 353–75.
- Mead, Nicole L., Roy F. Baumeister, Tyle F. Stillman, Catherine D. Rawn, and Kathleen D. Vohs (2011), “Social Exclusion Causes People to Spend and Consume Strategically in the Service of Affiliation,” *Journal of Consumer Research*, 37 (February), 902–19.
- Miller, Dale T. and Rebecca K. Ratner (1996), The Power of the Myth of Self-Interest, In L. Montada and M. J. Lerner (Eds.), *Current Societal Concerns about Justice* (p.25-48). New York: Plenum Press.
- Miller, Dale T. and Rebecca K. Ratner (1998), “The Disparity Between the Actual and Assumed Power of Self-Interest,” *Journal of Personality and Social Psychology*, 74 (January), 53-62.
- Morewedge, Carey K. and Daniel Kahneman (2010), “Associative Processes in Intuitive Judgment,” *Trends in Cognitive Sciences*, 14 (October), 435-40.

- Najmi, Sadia and Daniel M. Wegner (2008), "The Gravity of Unwanted Thoughts: Asymmetric Priming Effects in Thought Suppression," *Consciousness and Cognition*, 17 (March), 114-24.
- Newall, Nancy E., Judith G. Chipperfield, Rodney A. Clifton, Raymond P. Perry, Audrey U. Swift, and Joelle C. Ruthig (2009), "Causal Beliefs, Social Participation, and Loneliness Among Older Adults: A Longitudinal Study," *Journal of Social and Personal Relationships*, 26 (March/May), 273-90.
- Ochsner, Kevin N. and James J. Gross (2005), "The Cognitive Control of Emotion," *Trends in Cognitive Sciences*, 9 (May), 242-49.
- Pascal, Vincent J., David E. Sprott, Darrel D. Muehling (2002), "The Influence of Evoked Nostalgia on Consumers' Responses to Advertising: An Exploratory Study," *Journal of Current Issues and Research in Advertising*, 24 (1), 39-47.
- Park, Jina and Roy F. Baumeister (2015), "Social Exclusion Causes a Shift Toward Prevention Motivation," *Journal of Experimental Social Psychology*, 56 (January), 153-59.
- Perlman, Daniel and Letitia Anne Peplau (1984), Loneliness Research: A Survey of Empirical Findings, In L. A. Peplau and S. E. Goldston (Eds.), *Preventing the Harmful Consequences of Severe and Persistent Loneliness* (p.13-46). DHHS Publication No. (ADM) 84-1312, Washington DC: U.S. Government Printing Office.
- Penner, Louis, John F. Dovidio, Jane A. Piliavin, and David A. Schroeder (2005), "Prosocial Behavior: Multilevel Perspectives," *Annual Review of Psychology*, 56 (February), 365-92.
- Pickett, Cynthia L. and Wendi L. Gardner (2005), The Social Monitoring System: Enhanced Sensitivity to Social Cues and Information as an Adaptive Response to Social Exclusion

- and Belonging Need, In K. Williams, J. Forgas, and W. von Hippel (Eds.), *The Social Outcast: Ostracism, Social Exclusion, Rejection, and Bullying* (p.321-32). New York: Psychology Press.
- Pieters, Rik (2013), "Bidirectional Dynamics of Materialism and Loneliness: Not Just a Vicious Cycle," *Journal of Consumer Research*, 40 (December), 615-31.
- Ratner, Rebecca K., Min Zhao, and Jennifer A. Clarke (2011), The Norm of Self-Interest: Implications for Charitable Giving, In D. M. Oppenheimer and C. Y. Olivola (Eds.), *The Science of Giving: Experimental Approaches to The Study of Charity* (p.113-31). Psychology Press, Taylor & Francis Group, New York.
- Ratner, Rebecca K. and Rebecca W. Hamilton (2015), "Inhibited from Bowling Alone," *Journal of Consumer Research*, 42 (August), 266-83.
- Richins, Marsha L. (1997), "Measuring Emotions in the Consumption Experience," *Journal of Consumer Research*, 24 (September), 127-46.
- Routledge, Clay, Jamie Arndt, Tim Wildshut, Constantine Sedikides, Claire M. Hart, Jacob Juhl, Ad J. J. M. Vingerhoets, and Wolff Schlotz (2011), "The Past Makes the Present Meaningful: Nostalgia as an Existential Resource," *Journal of Personality and Social Psychology*, 101 (September), 638-52.
- Russell, Dan (1996), "UCLA Loneliness Scale (Version 3): Reliability, Validity, and Factor Structure," *Journal of Personality Assessment*, 66 (February), 20-40.
- Russell, Dan, Letitia A. Peplau, and Carolyn E. Cutrona (1980), "The Revised UCLA Loneliness Scale: Concurrent and Discriminant Validity Evidence," *Journal of Personality and Social Psychology*, 39 (September), 472-80.

- Schachter, Stanley and Jerome Singer (1962), "Cognitive, Social, and Physiological Determinants of Emotional State," *Psychological Review*, 69 (September), 379-99.
- Schindler, Robert M. and Morris B. Holbrook, "Nostalgia for Early Experience as a Determinant of Consumer Preferences," *Psychology and Marketing*, 20 (April), 275-302.
- Schwarz, Nobert and Gerald L. Clore (1983), "Mood, Misattribution, and Judgments of Well-Being: Informative and Directive Functions of Affective States," *Journal of Personality and Social Psychology*, 45 (September), 513-23.
- Sedikides, Constantine, Tim Wildschut, Jamie Arndt, and Clay Routledge (2008), "Nostalgia: Past, Present, and Future," *Current Directions in Psychological Science*, 17 (October), 304-07.
- Seidel, E. M., G. Silani, H. Metzler, H. Thaler, C. Lamm, R.C. Gur, I. Kryspin-Exner, U. Habel, B. Berntl (2013), "The Impact of Social Exclusion vs. Inclusion on Subjective and Hormonal Reactions in Females and Males," *Psychoneuroendocrinology*, 38 (December), 2925-32.
- Shaver, Phillip, Judith Schwartz, Donald Kirson, and Cary O'Connor (1987), "Emotion Knowledge: Further Exploration of a Prototype Approach," *Journal of Personality and Social Psychology*, 52 (June), 1061-86.
- Sinha, Jayati and Jing Wang (2013), "How Time Horizon Perceptions and Relationships Deficits Affect Impulsive Consumption," *Journal of Marketing Research*, 50 (October), 590-605.
- Singh, Archana and Nishi Misra (2009), "Loneliness, Depression, and Sociability in Old Age," *Industrial Psychiatry Journal*, 18 (1), 51-55.

- Strull, Thomas K. and Robert S. Wyer (1979), "The Role of Category Accessibility in the Interpretation of Information About Persons: Some Determinants and Implications," *Journal of Personality and Social Psychology*, 37 (October), 1660-72.
- Step toe, Andrew, Aparna Shankar, Panayotes Demakakos, and Jane Wardie (2013), "Social Isolation, Loneliness, and All-Cause Mortality in Older Men and Women," *Proceedings of the National Academy of Sciences of the United States of America*, 110 (April), 5797-5801.
- Storr, Anthony (2005), *Solitude: A Return to the Self*, New York, Free Press.
- Twenge, Jean M., Roy F. Baumeister, Dianne M. Tice, and Tanja S. Stucke (2001), "If You Can't Join Them, Beat Them: Effects of Social Exclusion on Aggressive Behavior," *Journal of Personality and Social Psychology*, 81 (December), 1058-69.
- Wang, Jing, Rui (Juliet) Zhu, and Baba Shiv (2012), "The Lonely Consumer: Loner or Conformer?" *Journal of Consumer Research*, 38 (April), 1116-28.
- Warburton, Wayne A., Williams Kipling D., and David R. Cairns (2006), "When Ostracism Leads to Aggression: The Moderating Effects of Control Deprivation," *Journal of Experimental Social Psychology*, 42 (March), 213-20.
- Watson, David, Lee Anna Clark, and Auke Tellegen (1988), "Development and Validation of Brief Measures of Positive and Negative Affect: The PANAS Scales," *Journal of Personality and Social Psychology*, 54 (June), 1063-70.
- Waytz, Adam, John T. Cacioppo, and Nicholas Epley (2010), "Who Sees Human? The Stability and Importance of Individual Differences in Anthropomorphism," *Perspectives on Psychological Science*, 5 (May), 219-32.

- Wegner, Daniel M., David J. Schneider, Samuel R. Carter III, and Teri L. White (1987), "Paradoxical Effects of Thought Suppression," *Journal of Personality and Social Psychology*, 53 (July), 5-13.
- Weiss, Robert S. (1973), *Loneliness: The Experience of Emotional and Social Isolation*, Cambridge, MA, The MIT Press.
- Wildschut, Tim, Constantine Sedikides, Jamie Arndt, and Clay Routledge (2006), "Nostalgia: Content, Triggers, Functions," *Journal of Personality and Social Psychology*, 91 (November), 975-93.
- Wheeler, S. Christian and Jonah Berger (2007), "When the Same Prime Leads to Different Effects," *Journal of Consumer Research*, 34 (July), 357-68.
- Wheeler, Laad, Harry Reis, and John B. Nezlek (1983), "Loneliness, Social Interaction, and Sex Roles," *Journal of Personality and Social Psychology*, 45 (October), 943-53.
- Woodhouse, Susan S., Matthew J. Dykas, and Jude Cassidy (2012), "Loneliness and Peer Relations in Adolescence," *Social Development*, 21 (May), 273-93.
- Yi, Sunghwan and Hans Baumgartner (2004), "Coping with Negative Emotions in Purchase-Related Situations," *Journal of Consumer Psychology*, 14 (July), 303-17.
- Zemack-Rugar, Yael, James R. Bettman, and Gavan J. Fitzsimons (2007), "The Effects of Nonconsciously Priming Emotion Concepts on Behavior," *Journal of Personality and Social Psychology*, 93 (December), 927-39.
- Zhou, Xinyue, Constantine Sedikides, Tim Wildschut, and Ding-Guo Gao (2008), "Counteracting Loneliness: On the Restorative Function of Nostalgia," *Psychological Science*, 19 (October), 1023-29.

Zhou, Xinyue, Tim Wildschut, Constantine Sedikides, Kan Shi, and Cong Feng (2012),
“Nostalgia: The Gift That Keeps on Giving,” *Journal of Consumer Research*, 39 (June),
39-50.

Zhou, Ling, Tao Wang, Qin Zhang, and Yupeng Mou (2013), “Consumer Insecurity and
Preference for Nostalgic Products: Evidence from China,” *Journal of Business Research*,
66 (December), 2406-11.

TABLE 2: SUMMARY OF DESCRIPTIVE STATISTICS IN EXPERIMENTS 1-3

Experiment	N	Experimental Conditions	M	SD
Experiment 1	75	High Load - High Lonely	2.79	1.87
		High Load - Low Lonely	1.9	1.45
		Low Load - High Lonely	1.74	1.24
		Low Load - Low Lonely	2.22	1.32
Experiment 2	127	High Load - High Lonely	69.71	26.39
		High Load - Low Lonely	58.32	25.39
		Low Load - High Lonely	53.93	24.87
		Low Load - Low Lonely	64.27	33.66
Experiment 2*	162	High Load - High Lonely	72.93	25.59
		High Load - Low Lonely	60.37	30.36
		Low Load - High Lonely	60.83	28.65
		Low Load - Low Lonely	63.48	27.48
Experiment 3	130	High Load - High Lonely	70.3	30.89
		High Load - Low Lonely	58.73	25.77
		Low Load - High Lonely	56.03	24.42
		Low Load - Low Lonely	60.58	21.14

DV: Loneliness scores

* Reported as a footnote. A result of the separate experiment conducted without covariates. The identical experimental methods were used.

TABLE 3: SUMMARY OF DESCRIPTIVE STATISTICS IN EXPERIMENTS 4 (N = 121)

DV	Experimental Conditions	M	SD
Evaluation for Nostalgic Products	High Load - High Lonely - Utilitarian	4.71	1.32
	High Load - Low Lonely - Utilitarian	3.67	1.18
	Low Load - High Lonely - Utilitarian	3.80	1.23
	Low Load - Low Lonely - Utilitarian	4.23	1.18
	High Load - High Lonely - Hedonic	3.91	1.17
	High Load - Low Lonely - Hedonic	4.31	1.08
	Low Load - High Lonely - Hedonic	4.57	1.06
	Low Load - Low Lonely - Hedonic	4.02	1.27
Evaluation for Modern Products	High Load - High Lonely - Utilitarian	3.63	1.60
	High Load - Low Lonely - Utilitarian	2.63	1.04
	Low Load - High Lonely - Utilitarian	2.70	1.39
	Low Load - Low Lonely - Utilitarian	2.50	1.45
	High Load - High Lonely - Hedonic	2.47	1.44
	High Load - Low Lonely - Hedonic	1.95	1.04
	Low Load - High Lonely - Hedonic	2.30	1.12
	Low Load - Low Lonely - Hedonic	1.83	1.18

TABLE 4: SUMMARY OF DESCRIPTIVE STATISTICS IN EXPERIMENT 5 (N = 216)

DV	Experimental Conditions	M	SD
Camera Evaluation	High Load - High Lonely - Y2000	4.16	1.13
	High Load - Low Lonely - Y2000	3.52	0.94
	Low Load - High Lonely - Y2000	3.32	1.15
	Low Load - Low Lonely - Y2000	3.51	1.20
	High Load - High Lonely - Y2017	3.63	1.19
	High Load - Low Lonely - Y2017	3.80	1.25
	Low Load - High Lonely - Y2017	4.01	1.14
	Low Load - Low Lonely - Y2017	3.66	1.15
Anticipated Positive Feelings	High Load - High Lonely - Y2000	5.04	1.50
	High Load - Low Lonely - Y2000	4.38	1.24
	Low Load - High Lonely - Y2000	3.89	1.69
	Low Load - Low Lonely - Y2000	4.29	1.49
	High Load - High Lonely - Y2017	4.35	1.20
	High Load - Low Lonely - Y2017	4.30	1.71
	Low Load - High Lonely - Y2017	4.74	1.61
	Low Load - Low Lonely - Y2017	4.56	1.40

TABLE 5: SUMMARY OF DESCRIPTIVE STATISTICS IN EXPERIMENT 6 (N = 129)

DV	Experimental Conditions	M	SD
Likelihood of donation	High Load - High Lonely	4.23	1.89
	High Load - Low Lonely	3.00	1.68
	Low Load - High Lonely	3.88	1.75
	Low Load - Low Lonely	3.89	1.86
Anticipated positive affective states	High Load - High Lonely	5.11	1.58
	High Load - Low Lonely	4.27	1.50
	Low Load - High Lonely	4.41	1.45
	Low Load - Low Lonely	4.55	1.70

TABLE 6. SUMMARY OF DESCRIPTIVE STATISTICS IN EXPERIMENT 7 (N = 314)

DV	Experimental Conditions	M	SD
Likelihood of donation	High Load - High Lonely - Human	4.26	1.84
	High Load - Low Lonely - Human	3.34	1.95
	Low Load - High Lonely - Human	3.48	1.86
	Low Load - Low Lonely - Human	3.93	1.88
	High Load - High Lonely - Non-Human	3.46	1.86
	High Load - Low Lonely - Non-Human	2.97	1.80
	Low Load - High Lonely - Non-Human	3.56	1.76
	Low Load - Low Lonely - Non-Human	3.50	1.60
Anticipated positive affective states	High Load - High Lonely - Human	4.49	1.47
	High Load - Low Lonely - Human	3.57	1.74
	Low Load - High Lonely - Human	3.57	1.70
	Low Load - Low Lonely - Human	3.94	1.90
	High Load - High Lonely - Non-Human	3.36	1.75
	High Load - Low Lonely - Non-Human	3.13	1.73
	Low Load - High Lonely - Non-Human	3.76	2.00
	Low Load - Low Lonely - Non-Human	3.67	1.78

TABLE 7: MEDIATION RESULTS FROM EXPERIMENT 5

Conditional Indirect Effect of Loneliness on Camera Evaluation				
Mediator	Moderator A: Load	Moderator B: Ad Type	Indirect Effect	90% Confidence Interval
Anticipated Positive Affect	Low Load	Year 2017	.054	(-.139, .252)
Anticipated Positive Affect	Low Load	Year 2000	-.115	(-.317, .089)
Anticipated Positive Affect	High Load	Year 2017	.014	(-.178, .203)
Anticipated Positive Affect	High Load	Year 2000	.189	(.008, .372)

TABLE 8: MEDIATION RESULTS FROM EXPERIMENT 6

Conditional Indirect Effect of Loneliness on Likelihood of Donation by Cognitive Load			
Mediator	Moderator	Indirect Effect	95% Confidence Interval
Anticipated Positive Affect	High Load	.305	(.032, .600)
Anticipated Positive Affect	Low Load	-.049	(-.334, .204)

TABLE 9A: MEDIATION RESULTS FROM EXPERIMENT 7 (HUMAN TYPE)

Conditional Indirect Effect of Loneliness on Likelihood of Donation by Cognitive Load			
Mediator	Moderator	Indirect Effect	95% Confidence Interval
Anticipated Positive Affect	High Load	.333	(.075, .617)
Anticipated Positive Affect	Low Load	-.136	(-.396, .157)

TABLE 9B: MEDIATION RESULTS FROM EXPERIMENT 7 (NON-HUMAN TYPE)

Conditional Indirect Effect of Loneliness on Likelihood of Donation by Cognitive Load			
Mediator	Moderator	Indirect Effect	95% Confidence Interval
Anticipated Positive Affect	High Load	.080	(-.192, .355)
Anticipated Positive Affect	Low Load	.033	(-.257, .317)

APPENDIX A:

EXPERIMENTAL MATERIALS AND MEASURES (EXPERIMENT 1)

[Screen]

Personality Test

While advances in communication technologies (e.g., social media) decrease of the extent to which people feel socially excluded, several studies recently reported that more and more Americans have become lonelier in the last couple of decades.

A measurement instrument, called the Virginia Tech Loneliness Scale (VTLS), has been developed to understand how often students at Virginia Tech experience loneliness. This scale allows us to understand the level of one's loneliness, compared to other people. In this study, you will answer questions related to the scale. And you will receive feedback about your measured level of loneliness.

On the next screen, please read the instructions carefully and answer the related questions.

[Screen]

Instructions: Indicate how often you feel the way described in each of the following statements. Your responses will remain anonymous and be treated in aggregate fashion. Thus, for the best results, please provide your honest opinion on each statement. There is no right or wrong answer.

[Screen A: High in Loneliness]

To what extent do you agree with each of the following statements? [1= Strongly agree, 7= Strongly disagree]

1. I sometimes feel "in tune" with the people around me.*
2. I sometimes feel lack companionship.
3. I sometimes feel that there is no one I can turn to.
4. I sometimes feel alone.
5. I sometimes feel that I am part of a group of friends.*
6. I sometimes feel that I have a lot in common with the people around me.
7. I sometimes feel that I am no longer close to anyone.
8. I sometimes feel that my interests and ideas are not shared by those around me.
9. I sometimes feel outgoing and friendly.*
10. I sometimes feel close to people.*
11. I sometimes feel left out.
12. I sometimes feel that my relationships with others are not meaningful.
13. I sometimes feel that no one really knows me well.
14. I sometimes feel isolated from others.
15. I sometimes feel that I can find companionship when I want it.*
16. I sometimes feel that there are people who really understand me.*

17. I sometimes feel shy.
18. I sometimes feel that people are around me but not with me.
19. I sometimes feel that there are people I can talk to.*
20. I sometimes feel that there are people I can turn to.*

*Reverse coding

[Screen B: Low in Loneliness]

1. I always feel “in tune” with the people around me.*
2. I always feel lack companionship.
3. I always feel that there is no one I can turn to.
4. I always feel alone.
5. I always feel that I am part of a group of friends.*
6. I always feel that I have a lot in common with the people around me.
7. I always feel that I am no longer close to anyone.
8. I always feel that my interests and ideas are not shared by those around me.
9. I always feel outgoing and friendly.*
10. I always feel close to people.*
11. I always feel left out.
12. I always feel that my relationships with others are not meaningful.
13. I always feel that no one really knows me well.
14. I always feel isolated from others.
15. I always feel that I can find companionship when I want it.*
16. I always feel that there are people who really understand me.*
17. I always feel shy.
18. I always feel that people are around me but not with me.
19. I always feel that there are people I can talk to.*
20. I always feel that there are people I can turn to.*

*Reverse coding

[Screen]

The Virginia Tech Loneliness scale has been administered to a large number of university students over the last five years. Based on the responses of over twelve hundred students, we have developed a scoring metric for your answers. This allows us to provide you with valid and detailed feedback regarding your level of loneliness.

On the next screen, you will see an estimated loneliness score and the percentile associated with your level of loneliness.

[Screen: False feedback]

[Screen A: High Loneliness Condition]

*Based on your responses, your estimated loneliness score is 87. This score also indicates that you are in the **67th percentile** of the loneliness distribution and that you are **“well above average on***

loneliness” compared with other VT students. This score indicates that you are a person who feel lonelier than other students.

[Screen B: Low Loneliness Condition]

Based on your responses, your estimated loneliness score is 24. This score indicates that you are in the **18th percentile** of the loneliness distribution, compared with other VT students, and that you are **“very low on loneliness”**. This score indicates that you are a person who does not feel lonelier than other students.

[Screen]

Please indicate the extent to which you agree with the following statements. [1= Strongly disagree, 7= Strongly agree]

I am feeling lonely right now.

At this moment, I feel a bit lonely.

[Screen]

How well do you think the feedback on your loneliness characterizes you? (1= Not at all, 7= Very well)

How credible do you think the Virginia Tech Loneliness Scale (VTLS) is? (1= Not credible at all, 7= Very credible)

To what extent do you believe that the questions in the VTLS are capable of measuring whether or not you are lonely? (1= Not at all, 7= A lot)

[Screen]

Thank you again for your participation. The objective of this study is to understand how people react to negative feedback. Specifically, this study investigates the impact of negative feedback on participants’ emotional responses. Therefore, the Virginia Tech Loneliness Scale you just completed was, in fact, designed for affecting respondents’ emotions (e.g., loneliness). The feedback about your loneliness score was RANDOMLY assigned to influence your affective states. Thus, the feedback you received in this study is FALSE and should not be accepted as a reflection of who you are, or how you should feel or behave. Should you have any questions or comments about this survey please directly contact the researcher (jhkim21@vt.edu). Also, if you have any questions about the protection of rights or safety related to this research, please contact Dr. Moore (moored@vt.edu).

If you fully understand this experimental procedure, please click “YES” to confirm.

YES/NO

APPENDIX B:

EXPERIMENTAL MATERIALS AND MEASURES (EXPERIMENT 2)

[Screen]

Problem Solving Test

Welcome! Thank you for taking part in this study. The objective of this study is to gauge intellectual ability to perform a difficult task. Specifically, we are interested in how quickly and accurately lay people solve a problem. In this study, therefore, you will be asked to solve a series of scrambled tasks. Any interruptions will significantly influence our data, so please try to complete the survey at one sitting. There is no right or wrong answer, so please provide your honest opinions.

This study will take you approximately 5-6 minutes to complete. Your participation is voluntary. Your responses will remain anonymous and will only be treated in aggregate fashion. We will provide \$XX based on prevailing rates on mTurk. Consent is implied with submission of the survey.

Please click the arrow button below to start.

[Screen]

Sentence Unscrambling Task

In this task, you will be asked to complete a scrambled sentences task consisting of 10 sets of scrambled words. For each set, you will choose at least three out of the five or more words listed on the screen to make a grammatically correct sentence.

For example, if you see the scrambled sentence "**dog the sudden barking is**", you would select four of the words to make the sentence "**the dog is barking.**"

Perform the practice round below:

Choose at least three words out of the words listed below to make a grammatically correct sentence. Enter your response in the space provided.

drove he car the if

[Screen]

The correct answer to the unscrambled sentence "**drove he car the if**" would be "**he drove the car**".

[Screen]

Before starting the sentence unscrambling task, we would like to understand your current emotional states. There is no right or wrong answer, so please provide your honest opinions.

[Screen]

This scale consists of a number of words that describe different feelings and emotions. Read each item and then click the number from the scale below next to each word. Indicate to what extent you feel this way right now, that is, at the present moment.

Interested
Distressed
Excited
Upset
Strong
Guilty
Scared
Hostile
Enthusiastic
Proud
Irritable
Alert
Ashamed
Inspired
Nervous
Determined
Attentive
Jittery
Active
Afraid

*1= Very slightly or Not at all, 7= Extremely

[Screen]

You will now begin the sentence unscrambling task. Remember, you will see 10 sets of scrambled sentences, presented one at a time. To begin, press the arrow button below.

[Screen]

Choose at least three words out of the words listed below to make a grammatically correct sentence. Enter your response in the space provided.

----Scrambled sentences were randomly presented here----

[In the high cognitive load condition, participants were given 20 seconds to solve each scrambled sentence. In the low cognitive condition, they were not given any time constraint.]

[Screen]

How difficult was the scrambled sentence task you've just completed? (1= Not difficult at all, 7= Very difficult)

How much effort did you exert to solve the scrambled sentence questions? (1= Not much at all, 7= A lot)

[Screen]

What is your gender? (1= Male, 2= Female)

What is your age in year? _____

What is your first language?

[Unscrambled sentence stimuli]

Condition	Scrambled Sentences
High Loneliness	LOAD GOTTEN I WORK LONELY FELT
	OFFICIAL I LIVE JOB ALONE LAPTOP
	IS I FEEL EVERY EXTENT ISOLATED
	MANY WORLD SHE ALONE WHAT STAYED
	BATTERY I HELPLESS WHY FELT YEARS
	TO FEW ME THAT THEY IGNORED
	NOBODY HER CULTIVATE UNDERSTANDS AND HOW
	LEFT HE ALTHOUGH FACTUAL ME PROLIFIC
	LECTURE WHILE SHE BROKE UP SIMPLE
	VOTE FLIES BIRD HAD THE DEFINE
	APPROVES INTERNATIONAL BORROW BOOKS I TEARS
	SUDDEN AN HE LIKES TO CARS
EUROPE NEPHEW TRAVELS APPETITE CAN SHE TO	
Low Loneliness	LOAD HAS HE MAKE FRIENDS GROW
	DO FELT I LAPTOP COMPANIONSHIP JOB
	IS FEEL I EXTENT CONNECTED EVERY
	MANY LIVE THEY THAT TOGETHER FEW
	WHOM LIKES HE BY TO ME
	HANGOUT FRIENDS SHINE FOOTAGE WITH DISPLAY
	SUDDEN ARE THERE BORROW FRIENDS NECESSARY
	DOWN MEETS SHE FRIENDS A SIMPLE
	NAPKIN ACCEPTED THEY THAT ME FEWER
	VOTE FLIES BIRD HAD THE DEFINE
	APPROVES INTERNATIONAL BORROW BOOKS I TEARS
	SUDDEN AN HE LIKES TO CARS
EUROPE NEPHEW TRAVELS APPETITE CAN SHE TO	

APPENDIX C:

EXPERIMENTAL MATERIALS AND MEASURES (EXPERIMENT 3)

[Screen]

Welcome! Thank you for taking part in this study. Your task is to complete the questions in the linked survey below (you should open it in a new window). There are two different surveys in this study. You will be automatically redirected to the second survey when you complete the first one.

In the first survey, you will be asked to a simple reading comprehension task. This task is designed to gauge lay people's cognitive ability to perform a reading task. So, you will be asked to read a short reading and to answer a few questions about it.

The second survey examines how lay people solve a difficult problem. While taking the second study, you will be asked to provide your current emotional states. If you have any kinds of mood disorder, you are not eligible for taking part in this study.

There is no right or wrong answer and your participation is voluntary. Your responses will remain anonymous and will only be treated in aggregate fashion. Please provide your honest opinions for each question. We will provide you with **\$XX** for your participation today. This study will take you approximately **10 minutes** to complete. It is very important to precisely follow the instructions. Any interruptions will significantly influence our data, so please try to complete the survey at one sitting. Consent is implied with submission of the survey.

If you are ready, please click the arrow button below to start.

[Screen A: High Load]

I. Reading Comprehension Task

Your task in this study is to read the text below and answer a few questions related to the text on the next page.

Very Important: The special feature of this task is that you should COUNT the letter "e" while reading the text. Please read the text below and COUNT the letters "e". Please do not skip anything and try to avoid easy mistakes.

The ancient library of Alexandria was the most significant and largest library of the ancient world. It was founded in the 3rd century BC by Ptolemy I and was said to possess up to 7,000,000 scrolls. The library's history is closely associated with the spread of the Greek culture within the Mediterranean area. The acting ruler Ptolemy I founded the library in 288 BC as a component of the so-called museion, a center of research and culture at the royal court. For approximately 3 centuries, all documents arriving in Alexandria have been copied by

permanently employed scribes. The master copies were retained and their former owners received copies in return. Foreign-language texts were specially translated into Greek.

[Screen B: Low Load]

I. Reading Comprehension Task

Your task in this study is to read the text below and answer a few questions related to the text on the next page.

The ancient library of Alexandria was the most significant and largest library of the ancient world. It was founded in the 3rd century BC by Ptolemy I and was said to possess up to 7,000,000 scrolls. The library's history is closely associated with the spread of the Greek culture within the Mediterranean area. The acting ruler Ptolemy I founded the library in 288 BC as a component of the so-called museion, a center of research and culture at the royal court. For approximately 3 centuries, all documents arriving in Alexandria have been copied by permanently employed scribes. The master copies were retained and their former owners received copies in return. Foreign-language texts were specially translated into Greek.

[Screen: High Load Condition]

How many of the letter "e" were in the text shown on the previous screen? Please enter the number of alphabet letter "e" in the box below.

What was the name of the ancient library in the reading passage? _____

How many scrolls did the library possess? _____

How difficult was it to count the letter "e" in the text? (1= Not difficult at all; 7= Very difficult)

How much effort did you exert to count the letter "e" in this task? (1= Not much at all; 7= Very much)

[Screen: Low Load Condition]

What was the name of the ancient library in the reading passage? _____

How many scrolls did the library possess? _____

[Screen]

You just have completed the first task.

Click the arrow button below to start the next study.

Please note that you should complete all the surveys to receive a credit for your participation.

[Screen]

II. Word Search Puzzle

Your task is to find listed words from a 20 x 20 matrix of letters. Please click each of the listed words in the puzzle. Please be sure to find all the words that you are asked to search.

Please click the arrow button below to start.

[Screen]

The word search puzzle was presented here.

[Screen]

How difficult do you think this task is? (1= Not difficult at all, 7= Very difficult)

How much effort did you exert to find the words? (1= Not much at all, 7= A lot)

How much time did you spend to find the words? (1= Not much at all, 7= A lot)

[Screen: the UCLA Loneliness Scale (20 items)]

Instructions: Indicate how often you feel the way described in each of the following statements. There is no right or wrong answer, so please provide your honest opinions. (1= Never, 7= Very often)

I feel "in tune" with the people around me.

I feel lack companionship.

I feel that there is no one I can turn to.

I feel alone.

I feel that I am part of a group of friends.

I feel that I have a lot in common with the people around me.

I feel that I am no longer close to anyone.

I feel that my interests and ideas are not shared by those around me.

I feel outgoing and friendly.

I feel close to people.

I feel left out.

I feel that my relationships with others are not meaningful.

I feel that no one really knows me well.

I feel isolated from others.

I feel that I can find companionship when I want it.

I feel that there are people who really understand me.

I feel shy.

I feel that people are around me but not with me.

I feel that there are people I can talk to.

I feel that there are people I can turn to.

[Screen]

Read each items and then click the number from the scale below next to each word. Indicate to what extent you feel this way right now, that is, at the present moment.

Interested
Distressed
Excited
Upset
Strong
Guilty
Scared
Hostile
Enthusiastic
Proud
Irritable
Alert
Ashamed
Inspired
Nervous
Determined
Attentive
Jittery
Active
Afraid

*1= Very slightly or Not at all, 7= Extremely

[Screen]

What is your gender? (1= Male, 2= Female)

What is your age in year? _____

What is your first language?

[Word Search Puzzle: High Loneliness Condition]

LONELY, ALIENATION, ALONE, ISOLATED, LEFT OUT, REJECTED, NOBODY,
UNACCOMPANIED, DOVE, SCHOOL, PAPER, BINDER, DRIVE

R	R	K	W	W	V	I	U	N	A	C	C	O	M	P	A	N	I	E	D
V	J	F	N	I	S	O	L	A	T	E	D	L	E	L	E	S	I	Z	S
D	S	H	S	X	C	E	M	K	D	C	P	S	A	C	R	O	E	M	V
U	L	N	G	D	R	I	V	E	D	L	I	O	A	Y	L	J	A	Z	L
E	O	C	S	F	J	M	W	E	T	A	C	L	E	F	T	O	U	T	D
Y	N	R	T	L	E	A	A	O	I	E	A	U	B	L	W	E	U	K	Y
A	E	N	B	F	Z	R	L	B	Z	S	M	M	R	O	G	N	T	A	O
B	L	B	F	R	B	T	O	K	P	Z	N	P	C	L	N	T	O	I	Z
A	Y	P	A	A	C	N	N	A	E	P	O	F	R	T	L	E	D	I	E
D	Z	N	N	R	D	O	E	K	Q	O	B	A	H	I	O	D	O	A	K
R	A	O	I	S	A	I	Q	R	S	A	O	L	M	E	T	T	V	N	J
T	D	E	A	A	T	N	Y	L	O	P	D	H	G	R	X	I	E	T	U
Z	J	P	O	N	G	D	Y	O	A	N	Y	R	B	L	M	H	K	N	T
L	A	R	E	J	E	C	T	E	D	A	M	S	G	A	A	E	E	P	A
A	R	A	J	U	H	Y	P	E	L	A	N	F	S	C	H	O	O	L	R
R	B	I	N	D	E	R	U	C	D	G	I	R	S	L	H	R	E	E	B
A	I	U	E	P	L	E	Y	M	L	A	E	I	O	N	A	R	H	L	F
J	P	E	T	C	A	L	I	E	N	A	T	I	O	N	R	G	K	D	J
I	Q	B	N	R	E	S	R	O	M	N	O	P	B	N	Y	S	G	M	N
P	A	P	E	R	N	G	Q	A	L	I	C	E	U	B	N	N	B	D	J

[Word Search Puzzle: Low Loneliness Condition]

ACCOMPANIED, FRIENDS, CONNECTED, TOGETHER, HANG OUT, ACCEPTED,
 SOCIAL, GROUP, BINDER, PAPER, DOVE, SCHOOL, DRIVE

R	R	K	W	W	V	I	N	N	A	C	C	O	M	P	A	N	I	E	D
V	J	F	N	F	R	I	E	N	D	S	X	L	E	L	E	S	I	Z	S
D	S	H	S	X	C	E	M	K	D	C	P	S	A	C	R	O	E	M	V
U	C	N	G	D	R	I	V	E	D	L	I	O	A	Y	L	J	A	Z	L
E	O	C	S	F	J	M	W	E	T	A	C	H	A	N	G	O	U	T	D
Y	N	R	T	L	E	A	G	O	I	E	A	U	B	L	W	E	U	K	Y
A	N	N	B	F	Z	R	R	B	Z	S	M	M	R	O	G	N	T	A	O
B	E	B	F	R	B	T	O	K	P	Z	S	P	C	L	N	T	O	I	Z
A	C	P	A	A	C	N	U	A	E	P	O	F	R	T	L	E	D	I	E
D	T	N	N	R	D	O	P	K	Q	O	C	A	H	I	O	D	O	A	K
R	E	O	I	S	A	I	Q	R	S	A	I	L	M	E	T	T	V	N	J
T	D	E	A	A	T	N	Y	L	O	P	A	H	G	R	X	I	E	T	U
Z	J	P	O	N	G	D	Y	O	A	N	L	R	B	L	M	H	K	N	T
L	A	T	O	G	E	T	H	E	R	A	M	S	G	A	A	E	E	P	A
A	R	A	J	U	H	Y	P	E	L	A	N	F	S	C	H	O	O	L	R
R	B	I	N	D	E	R	U	C	D	G	I	R	S	L	H	R	E	E	B
A	I	U	E	P	L	E	Y	M	L	A	E	I	O	N	A	R	H	L	F
J	P	E	T	C	A	C	C	E	P	T	E	D	X	L	R	G	K	D	J
I	Q	B	N	R	E	S	R	O	M	N	O	P	B	N	Y	S	G	M	N
P	A	P	E	R	N	G	Q	A	L	I	C	E	U	B	N	N	B	D	J

APPENDIX D:

EXPERIMENTAL MATERIALS AND MEASURES (PRETEST FOR EXPERIMENT 4)

[Screen]

Product Design Evaluation

The objective of this study is to examine how consumers evaluate product designs. Specifically, we are interested in how they evaluate various products and form attitudes toward those products. In this study, therefore, you will be asked to answer a series of questions related to product features, designs, and/or functions for each product. There is no right or wrong answer, so please provide your honest opinions.

This survey will take you approximately 5 minutes to complete. Your participation is voluntary. Your response will remain anonymous and will only be treated in aggregate fashion. We will provide \$XX based on prevailing rates on mTurk. Consent is implied with submission of the survey.

Please click the arrow button below to start.

[Screen]

Instructions: Please carefully review the product presented on the screen and answer the following questions.

---Product images were randomly presented here---

As an overall evaluation of this particular product, I think I will:

(1= Dislike it very much, 7= Like it very much)

How attractive do you think this particular product is? (1= Very unattractive, 7= Very attractive)

How good or bad do you think the quality of this particular product is? (1= Very bad, 7= Very good)

How nostalgic do you think this particular product is? (1= Not nostalgic at all, 7= Very nostalgic)

To what extent do you think this particular product reminds you of the past? (1= Not much at all, 7= Very much)

I may consider purchasing this particular product mainly for:

(1= Pleasure, 7= Utility)

[Product images]



APPENDIX E:

EXPERIMENTAL MATERIALS AND MEASURES (EXPERIMENT 4)

[Screen]

I. Memory Test

Thank you for taking part in this study. Your task is to memorize a list of words presented on the next screen. You will be given 2 minutes to memorize 10 words. You will be asked to recall the words during the experimental session. Please do not use any external sources to memorize the words.

Your participation is voluntary. Your responses will remain anonymous and will only be treated in aggregate fashion. Consent is implied with submission of the survey.

Please click the arrow button below to start.

[Screen: High Load]

NOIR
INSANITY
BARS
VINYL
DELETION
BALLOON
GRILL
BELLYFUL
ELEVATION
ASSEMBLY

[Screen]

Thank you. Please click the arrow button below to proceed.
You will be automatically redirected to the next study.

[Screen]

II. Problem Solving Task

The sentence unscrambling task used in Experiment 2 was presented here.

[Screen]

Choose at least three or four words out of the words listed below to make a grammatically correct sentence. Enter your response in the space provided.

----Scrambled sentences were randomly presented here----

[Screen]

How difficult was the scrambled sentence task you've just completed? (1= Not difficult at all, 7= Very difficult)

How much effort did you exert to solve the scrambled sentence questions? (1= Not much at all, 7= A lot)

[Screen]

You've completed the problem solving task.
Please click the arrow button below to start the second survey.

[Screen]

III. Product Evaluation

This study examines how consumers evaluate various products. We are interested in how they evaluate products and form attitudes toward those products. In this study, you will be asked to answer a series of questions related to product features, designs, and/or functions for each product. There is no right or wrong answer, so please provide your honest opinions.

This evaluation task will take you approximately 10 minutes to complete. Your participation is voluntary. Your response will remain anonymous and will only be treated in aggregate fashion. Consent is implied with submission of the survey.

Please click the arrow button below to start.

[Screen]

Instructions: Please carefully review the product presented on the screen and provide your answers to each of the questionnaires.

---Product images were presented here---

As an overall evaluation of this particular product, I think I will:

(1= Dislike it very much, 7= Like it very much)

How attractive do you think this particular product is? (1= Very unattractive, 7= Very attractive)

How likely are you to buy this particular product? (1= Not likely at all, 7= Very likely)

How much are you willing to pay for this particular product? (1= Not much at all, 7= A lot)

How good or bad do you think the quality of this particular product is? (1= Very bad, 7= Very good)

[Screen]

How nostalgic do you think this particular product is? (1= Not nostalgic at all, 7= Very nostalgic)

To what extent do you think this particular product reminds you of the past? (1= Not much at all, 7= Very much)

[Screen]

Instructions: Indicate how often you feel the way described in each of the following statements. There is no right or wrong answer, so please provide your honest opinions. (1= Never, 7= Very often)

I feel "in tune" with the people around me.

I feel lack of companionship.

I feel that there is no one I can turn to.

I feel alone.

I feel that I am part of a group of friends.

I feel that I have a lot in common with the people around me.

I feel that I am no longer close to anyone.

I feel that my interests and ideas are not shared by those around me.

I feel outgoing and friendly.

I feel close to people.

I feel left out.

I feel that my relationships with others are not meaningful.

I feel that no one really knows me well.

I feel isolated from others.

I feel that I can find companionship when I want it.

I feel that there are people who really understand me.

I feel shy.

I feel that people are around me but not with me.

I feel that there are people I can talk to.

I feel that there are people I can turn to.

[Screen]

Read each items and then click the number from the scale below next to each word. Indicate to what extent you feel this way right now, that is, at the present moment.

Interested

Distressed

Excited

Upset

Strong
Guilty
Scared
Hostile
Enthusiastic
Proud
Irritable
Alert
Ashamed
Inspired
Nervous
Determined
Attentive
Jittery
Active
Afraid

*1= Very slightly or Not at all, 7= Extremely

[Screen: High Load condition only]

Please try to recall as many words as possible and list the words you recalled in the box below.

[Screen]

Age: _____

Gender (check one): ___Male___Female

What is your first language?

Monthly Income (including allowances)-Please check one:

Less than \$1,000

\$1,001 – \$2,000

\$2,001 – \$5,000

More than \$5,000

APPENDIX F:

EXPERIMENTAL MATERIALS AND MEASURES (PRETEST FOR EXPERIMENT 5)

[Screen]

Product Evaluation

Welcome! Thank you for participating in this study. The objective of this study is to examine how consumers evaluate a product. Specifically, we are interested in how consumers evaluate an advertised camera and form attitudes toward the product. Your task in this study is to answer a series of questions about the product. There is no right or wrong answer, so please provide your honest opinions.

This survey will take you approximately **3 minutes** to complete, but the exact time depends on your individual performance. Your participation is voluntary. Your response will remain anonymous and will only be treated in aggregate fashion. The results of this study may be published in an academic journal. You have the freedom to withdraw from the study at any time. We will provide **\$XX** based on prevailing rates on mTurk. Consent is implied with submission of the survey. Should you have any questions or comments about this study please contact the researcher directly (jhkim21@vt.edu).

Should you have any questions or concerns about the study conduct or your rights as a research subject, or need to report a research-related injury or event, you may contact the VT IRB Chair, Dr. David M. Moore at moored@vt.edu.

Please click the arrow button below to start.

[Screen]

---Camera Ads were presented here---

(Condition 1: Year 2000)

(Condition 2: Year 2017)

[Screen]

As an overall evaluation of *Optimax*, I think I will:

(1= Dislike it very much, 7= Like it very much)

How nostalgic do you think *Optimax* is? (1= Not nostalgic at all, 7= Very nostalgic)

To what extent do you think *Optimax* reminds you of the past? (1= Not much at all, 7= Very much)

Overall, I think the quality of *Optimax* is: (1= Very low, 7= Very high)

Overall, I think the design of *Optimax* is: (1= Very bad, 7= Very good)

[Screen]

What is your gender? (1= Male, 2= Female, 3= I don't want to disclose my gender)

What is your age in years? _____

[Products / Ads stimuli]

1. Year 2000 ad



In 2000, **Gladiator**, **Snatch**, **Memento**, and **Bring It On** were popular in the theater.

Smooth by Santana (ft. Rob Thomas), **Breathe** by Faith Hill, and **Maria Maria** by Santana (ft. The Product G&B) were the top 3 songs of the year on the Billboard Year End chart.

Where were you?

Save your memory with **Optimax**



2. Year 2017 ad



In 2017, *La La Land*, *Rogue One: A Star Wars Story*, *Sing*, and *Hidden Figures* are popular in the theater now.

Bad And Boujee by Migos, **Closer** by The Chainsmokers, and **Black Beatles** by Rae Sremmurd, are the top 3 songs now on the Billboard HOT100.

Where are you?

Save your memory with **Optimax**



APPENDIX G:

EXPERIMENTAL MATERIALS AND MEASURES (EXPERIMENT 5)

[Screen]

Welcome. Thank you for taking part in this study. Your task is to complete the questions in the linked survey below (you should open it in a new window). There are three different tasks in this study. You will be automatically redirected to the next study when you complete each study. While taking the study, you will be asked to provide your current emotional states. If you have any kinds of mood disorder, you are not eligible for taking part in this study.

Your participation is voluntary. Your responses will remain confidential and will only be reported in aggregate fashion. The results of the study may be published. You have freedom to withdraw from the study at any time. We will provide you with \$XX for your participation today. **This study should take no more than 7 minutes to complete, but the exact time depends on your individual performance. It is very important to precisely follow the instructions. Any interruptions will significantly influence our data, so please try to complete the survey in one sitting.** The task may be quite demanding, so please be focused during the study.

Consent is implied with a submission of the survey.

[Screen]

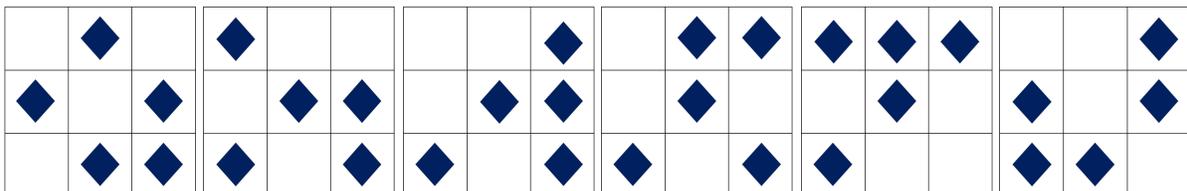
I. Memory Recall Task

On the next screen, you will see six matrices [one matrix] with some randomly placed diamonds. Your task is to memorize the matrices [matrix] and recall them [it] later in the study. Try to remember how the diamonds are positioned in (each) matrix. You will be asked to recall the matrix by selecting the correct one out of four matrices. You should be able to correctly answer three [one] recalling questions. So, please focus on the task.

Please click the arrow button below to start.

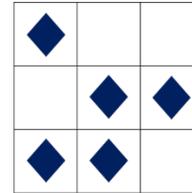
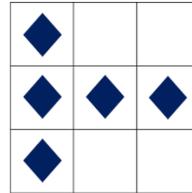
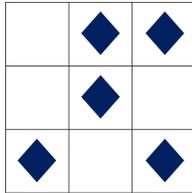
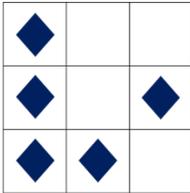
[Screen: High Load]

Please memorize all six matrices below.



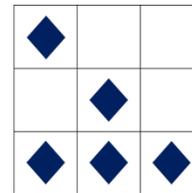
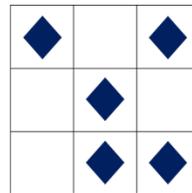
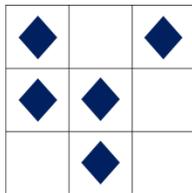
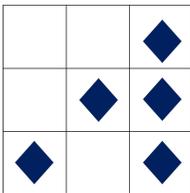
[Screen: Memory Question 1 (High Load)]

Which picture have you seen previously?



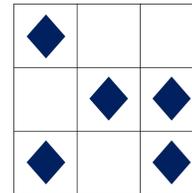
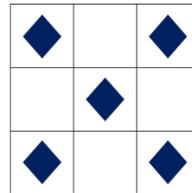
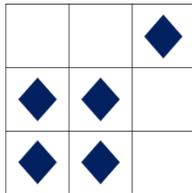
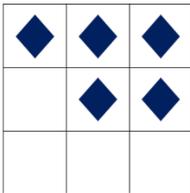
[Screen: Memory Question 2 (High Load)]

Which picture have you seen previously?



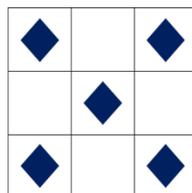
[Screen: Memory Question 3 (High Load)]

Which picture have you seen previously?



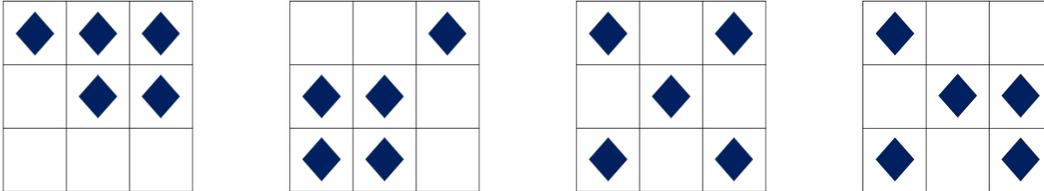
[Screen: Low Load]

Please memorize the matrix below.



[Screen: Low Load]

Which picture have you seen previously?



[Screen]

How difficult was the memory recall task for you? (1= Not difficult at all; 7= Very difficult)
How effortful did you find the memory recall task? (1= Not effortful at all; 7= Very effortful)
How easy was the memory recall task? (1= Not easy at all; 7= Very easy)*
How exhausted do you think the memory recall task is? (1= Not exhausted at all; 7= Very exhausted)

[Screen]

Thank you for completing the first task. Now, you will be directed to the next study.
Please click the arrow button to proceed.

[Screen]

II. Word Search Puzzle

The same word search puzzle used in Experiment 3 was presented here.

[Screen]

How difficult do you think this task is? (1= Not difficult at all, 7= Very difficult)
How much effort did you exert to find the words? (1= Not much at all, 7= A lot)
How much time did you spend to find the words? (1= Not much at all, 7= A lot)

[Screen]

Thank you for completing the second task. Now, you will be directed to the next study.
Please click the arrow button to proceed.

[Screen]

III. Product Evaluation

The objective of this study is to examine how consumers evaluate a product. Specifically, we are interested in how consumers evaluate an advertised camera and form attitudes toward the product. Your task in this study is to answer a series of questions about the product. There is no right or wrong answer, so please provide your honest opinions.

Please click the arrow button below to start.

[Screen: Camera Ads (Year 2000 vs. Year 2017)]

--- The pretested ads were presented here ---

[Screen]

As an overall evaluation of *Optimax*, I think I will: (1= Dislike it very much, 7= Like it very much)

How attractive do you think *Optimax* is? (1= Very unattractive, 7= Very attractive)

How likely are you to buy *Optimax*? (1= Not likely at all, 7= Very likely)

How much are you willing to pay for *Optimax*? (1= Not much at all, 7= A lot)

[Screen]

To what extent do you expect that *Optimax* elicits positive feelings? (1= Not much at all, 7= Very much)

[Screen]

How nostalgic do you think *Optimax* is? (1= Not nostalgic at all, 7= Very nostalgic)

To what extent do you think *Optimax* reminds you of the past? (1= Not much at all, 7= Very much)

[Screen]

Age: _____

Gender (check one): ___ Male ___ Female

Monthly Income (including allowances)-Please check one:

Less than \$1,000

\$2,001 – \$5,000

\$1,001 – \$2,000

More than \$5,000

APPENDIX H:

EXPERIMENTAL MATERIALS AND MEASURES (EXPERIMENT 6)

[Screen]

Welcome! Thank you for taking part in this study. Your task is to complete the questions in the linked survey below (you should open it in a new window). There are two different surveys in this study. You will be automatically redirected to the second survey when you complete the first one.

In the first survey, you will be asked to a simple reading comprehension task. This task is designed to gauge lay people's cognitive ability to perform a reading task. So, you will be asked to read a short reading and to answer a few questions about it.

The second survey examines how lay people solve a difficult problem. While taking the second study, you will be asked to provide your current emotional states. If you have any kinds of mood disorder, you are not eligible for taking part in this study.

There is no right or wrong answer and your participation is voluntary. Your responses will remain anonymous and will only be treated in aggregate fashion. Please provide your honest opinions for each question. We will provide you with **\$XX** for your participation today. This study will take you approximately **10 minutes** to complete. It is very important to precisely follow the instructions. Any interruptions will significantly influence our data, so please try to complete the survey at one sitting. Consent is implied with submission of the survey.

If you are ready, please click the arrow button below to start.

[Screen]

I. Reading Comprehension Task

---The same reading task used in Experiment 3 was presented here---

[Screen]

II. Word Search Puzzle

---The same word search puzzle used in Experiment 3 was presented here---

[Screen]

III. Charity Study

Thank you for your participation. The objective of this study is to examine how consumers make charitable giving decisions. In this task, you will be shown an ad from a specific charity organization. Your task is to carefully review the ad and provide your opinions. This study will take you approximately 5 minutes to complete.

Please click the arrow button below to start.

[Screen]



You Can Change a Life

United Way is proud to provide **UpStart**, a Children's initiative that helps kids grow up great. By providing breakfast to a child in need, this program makes sure that child doesn't go to school hungry. Each child matters, and by providing breakfast we can make a difference one child at a time.

Please support the United Way.

[Screen]

How likely are you to donate your money to the United Way? (1= Not likely at all; 7= Very likely)

[Screen]

To what extent do you think helping others would make you feel good? (1= Not at all; 7= A lot)

How much pleasure do you think you would get by contributing to the United Way? (1= Not much at all; 7= A lot)

How happy do you think you would be if you help children suffering from hunger? (1= Not happy at all; 7= Very happy)

To what extent do you think you would feel connected with children in need if you contributing to the United Way? (1= Not connected at all; 7= Very connected)

[Screen]

In my opinion, my attitude toward the United Way is:

Bad	1	2	3	4	5	6	7	Good
Negative	1	2	3	4	5	6	7	Positive
Unfavorable	1	2	3	4	5	6	7	Favorable

[Screen]

Age: _____

Gender (check one): ___Male___Female

Monthly Income (including allowances)-Please check one:

Less than \$1,000

\$2,001 – \$5,000

\$1,001 – \$2,000

More than \$5,000

APPENDIX I:

EXPERIMENTAL MATERIALS AND MEASURES (EXPERIMENT 7)

[Screen]

Welcome. Thank you for taking part in this study. Your task is to complete the questions in the linked survey below (you should open it in a new window). There are three different tasks in this study. You will be automatically redirected to the next study when you complete each study. Note that you may be asked to complete only one of two studies based on the conditions. While taking the study, you will be asked to provide your current emotional states. If you have any kinds of mood disorder, you are not eligible for taking part in this study.

Your responses will remain anonymous and will only be treated in aggregate fashion. Please provide your honest opinions for each question. We will provide you with **\$XX** for your participation today. **This study should take no more than 13 minutes to complete, but the exact time depends on your individual performance. It is very important to precisely follow the instructions. Any interruptions will significantly influence our data, so please try to complete the survey in one sitting.** The task may be quite demanding, so please be focused during the study.

Consent is implied with a submission of the survey.

[Screen]

I. Memory Recall Task

---The same memory recall task used in Experiment 5 was presented here---

[Screen]

II. Word Search Puzzle

---The same word search puzzle used in Experiment 3 was presented here---

[Screen]

III. Charity Study

The objective of this study is to examine how consumers make charitable giving decisions. In this task, you will be shown an ad from a specific charity organization. Your task is to carefully review the ad and provide your opinions.

Please click the arrow button below to start.

[Screen: Charity Ad: People Against Poverty (“Human cause”)]



People Against Poverty works with international and US projects that we can personally engage with to help change lives by releasing communities from poverty. Our aims are to feed the hungry, provide shelter, clothe and educate the poor, take care of the sick and bring communities together to help break the cycle of poverty.

[Screen: Charity Ad: Conservation International (“Non-human cause”)]



Conservation International works with international and US projects that we can personally engage with to help protect nature. Our aims are, through cutting-edge science, innovative policy and global reach, to empower people to protect the nature that we rely on for food, fresh water, and livelihoods.

[Screen]

How likely are you to donate your money to this charity? (1= Not likely at all; 7= Very likely)

[Screen]

To what extent do you think donating money to this charity would make you feel better? (1= Not at all; 7= A lot)

How much pleasure do you think you would get by contributing to this charity? (1= Not much at all; 7= A lot)

How happy do you think you would be if you help people through this charity? (1= Not happy at all; 7= Very happy) [How happy do you think you would be if you protect the nature through this charity?]

To what extent do you think donating money to this charity would make you feel connected? (1= Not connected at all; 7= Very connected)

[Screen]

In my opinion, my attitude toward this charity is:

Bad	1	2	3	4	5	6	7	Good
Negative	1	2	3	4	5	6	7	Positive
Unfavorable	1	2	3	4	5	6	7	Favorable

[Screen]

Age: _____

Gender (check one): ___Male___Female

Monthly Income (including allowances)-Please check one:

- | | |
|--|--|
| <input type="checkbox"/> Less than \$1,000 | <input type="checkbox"/> \$2,001 – \$5,000 |
| <input type="checkbox"/> \$1,001 – \$2,000 | <input type="checkbox"/> More than \$5,000 |

[Screen]

Thank you for completing the questionnaires.

The word search puzzle you completed today is actually designed to make you think about loneliness. Some of the words were, therefore, closely related to loneliness. It should NOT be interpreted as a situation relevant to your current life.

This was a necessary step for our research team to investigate how people emotionally react to various social situations. Should you have any questions or comments about this study please contact the researcher directly (jhkim21@vt.edu). Should you have any questions or concerns about the study conduct or your rights as a research subject, or need to report a research-related injury or event, you may contact the VT IRB Chair, Dr. David M. Moore at moored@vt.edu. Thank you again for your participation.

If you fully understand this experimental procedure, please click "YES" to confirm. If you would like to discard your responses, please click "NO" below. You will be paid regardless of your answer here.

YES / NO