THE INFLUENCE OF SHARED ATTENTION ON PRODUCT EVALUATION

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ABSTRACT

Shared attention is a pervasive presence in our daily lives. On social media platforms, broadcasting services, and online stores, today's consumers synchronously attend to objects or information with others to an unprecedented degree. Recent scholarship on shared attention has enlightened our understanding of how such synchronous co-attention shapes individuals' cognitive, attitudinal, affective, and behavioral responses. While previous work explored the effect of shared attention on a wide range of stimuli (e.g., evocative images or videos, political speech), the effect of shared attention on objects that are essentially scarce, such as products, remains elusive.

In three studies, this dissertation examines how shared attention influences evaluations of products. The results indicate that shared attention leads to more positive attitudes toward and higher purchase intention of desirable products compared to other social contexts that do not involve shared attention (i.e., attending alone or attending asynchronously with others). Interestingly, the effect of shared attention is reversed when products are perceived to be scarce. In other words, shared attention leads to more positive product attitudes and higher purchase intention when perceptions of scarcity are low, but it leads to less positive product attitudes and lower purchase intention when perceptions of scarcity are high. Furthermore, the findings from this dissertation suggest that increased or decreased perceptions of similarity to the co-viewers may serve as a mechanism by which shared attention affects evaluations of desirable products. Overall, this dissertation adds to existing knowledge by documenting the novel relationship between shared attention and scarcity and provides practical suggestions for marketers in devising communication

materials by underscoring the importance of the social context in which consumers view products.

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CHAPTER 1:
INTRODUCTION AND GENERAL INFORMATION

Phenomenon Statement

Today's consumers experience synchronous co-attention to an unprecedented degree. The internet has facilitated the experience of synchronous co-attention—shared attention—by enabling it to occur more frequently and on a larger scale. Regardless of time and place, consumers can simultaneously watch the same viral videos, social media posts, and news broadcasts with other consumers. Whereas consumers can be spontaneously aware of simultaneous viewing on mass communication platforms (Shteynberg, Bramlett, Fles, & Cameron, 2016), these platforms commonly incorporate explicit cues for simultaneous co-attention. For example, Instagram shows the number of views and likes of concurrent viewers during live broadcasts, Facebook features how many people are currently watching a video, and YouTube and NBC (e.g., NBC's TODAY) display real-time user-generated comments during broadcasts.

This type of practice is not only prevalent on social media platforms and broadcasting services, but also becoming increasingly popular in online stores. For example, hotel- and flight-booking websites such as Expedia and Booking.com show how many people are viewing the same webpages or products by displaying messages such as "66 people are currently looking for a place in New York" or "33 people are looking at this hotel." In addition, the websites of some apparel brands, such as BCBG Max Azria, indicate how many online shoppers are currently viewing the same product.

An emerging body of literature on collective attention suggests that the simple perception that "*we are attending*" to an object or information leads to greater devotion of cognitive resources to the target of attention (Shteynberg, 2015, p. 581). In other words, the processing related to a target of shared attention is both broader and deeper than that related to a target that does not involve shared attention (Baddeley, 1992; Shteynberg, 2015). As a result, shared attention amplifies cognitive, attitudinal, affective, and behavioral responses to the co-attended stimulus; for example, if the object of shared attention is valenced, the intensity of the valence will be stronger; similarly, the judgment toward the stimulus will be more extreme when experienced under shared attention (Shteynberg, Hirsh, Apfelbaum, et al., 2014; Shteynberg et al., 2016).

While prior research has documented the consequences of shared attention on a broad range of stimuli (i.e., artworks, evocative images or videos, political speeches), an important context remains underexplored: synchronous co-attention to a stimulus that is essentially *scarce*. As one of the fundamental tenets of economics, the law of scarcity states that society's resources are limited by nature (Mankiw, 2014). Indeed, most products that consumers use and purchase in their daily lives, such as food, clothing, or automobiles, are "excludable" (i.e., it is possible to prevent people who have not paid for the good from accessing it) and "rivalrous" (i.e., consumption by one person prevents simultaneous consumption by others or reduces their chances of consuming it) (Acemoglu, Laibson, & List, 2016; Mankiw, 2014).

Given the importance of scarcity in consumption settings, an important inquiry involves *how* shared attention influences consumers' evaluations of scarce objects.

Reiterating the theory of shared attention, the perception of simultaneous co-attention amplifies the psychological experience of the co-attended stimulus by triggering deeper processing of it (Shteynberg, 2015). Therefore, if a product is initially desirable, its positive aspects may become more cognitively accessible under shared attention, thereby leading to more positive evaluations of it.

Additionally, an awareness that other people are concurrently viewing the same product may render the scarce *nature* of the product salient. Put differently, it is possible that shared attention can function *as* a scarcity cue by reminding consumers that products are essentially scarce. Given that perception of scarcity generally increases consumer evaluations of and desire for a product (e.g., Cialdini, 2008; Lynn, 1991; Verhallen & Robben, 1994a), it is conceivable that shared attention may lead to more positive evaluations of an already-desirable product by highlighting its scarce nature.

Although the concept of scarcity is embedded in products, a product's scarcity can also be communicated through marketing messages (Cialdini, 2008). In reality, marketers widely use scarcity messages to increase the desirability of products and boost sales (Aggarwal, Jun, & Huh, 2011; Wu & Lee, 2016). Therefore, not only can shared attention amplify the scarce nature of a product, it may also magnify the impact of a scarcity message provided by marketers. That is, in the presence of an explicit scarcity message, shared attention may increase perceptions of scarcity by rendering information about limited availability more salient, thereby enhancing product evaluation. Here, it is important to distinguish between the "shared attention *as* scarcity" effect and the "shared

attention *on* scarcity" effect. The difference lies in whether shared attention can influence perceptions of scarcity in the absence or presence of an explicit scarcity message.

Overall, the effects of shared attention described here are expected to make desirable products even more so. However, researchers have yet to address how shared attention affects evaluations of scarce objects. Because scarcity is embedded in nearly every product, it is crucial to further explore the relationship between shared attention and scarcity in order to understand the role of shared attention in product evaluation.

Purpose Statement

Building on the theory of shared attention and previous scholarship on scarcity, this dissertation explores how shared attention influences product evaluation. Specifically, this dissertation proposes that shared attention affects product evaluation by rendering the positive features of a desirable product to be more salient, functioning as a scarcity cue, and amplifying the impact of scarcity information that is provided. Evidence from three experiments complements existing literature by revealing the relationships among shared attention, scarcity, and product evaluation.

An investigation of the role of shared attention in product evaluation is not only theoretically interesting but also practically relevant. Due to limited cognitive resources, consumers have to consistently prioritize certain properties of their environments (Miller, 1956; Shteynberg, 2015). In addition, consumers' attention tends to wax and wane and often dissipates in a short time (Smallwood, McSpadden, & Schooler, 2008). Because

shared attention involves the prioritization of cognitive resources to the co-attended object, understanding the impact shared attention on product evaluation is particularly important and relevant to marketers. The findings of this dissertation thus have practical implications for marketing practices, as they facilitate a deeper understanding of how shared attention influences product evaluation.

Definition of Terms

The terms used in this dissertation are defined as follows.

Asynchronous co-attention: A non-simultaneous attention to a stimulus with another individual (or other individuals) (Shteynberg, 2015).

Attitudes: "A psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor" (Eagly & Chaiken, 1993, p. 1).

Club goods: "Goods that are excludable but not rival in consumption" (Mankiw, 2014, p. 217).

Common resources: "Goods that are rival in consumption but not excludable" (Mankiw, 2014, p. 216).

Conformity: "Changing one's behavior or beliefs in response to explicit or implicit pressure (whether real or imagined) from others" (Gilovich, Keltner, Chen, & Nisbett, 2013, p. 311).

Excludability: "The property of a good whereby a person can be prevented from using it" (Mankiw, 2014, p. 216).

Perceived scarcity: The extent to which an individual considers a product to be limited in availability (Suri, Kohli, & Monroe, 2007).

Perceived similarity: The extent to which an individual feels another individual (or individuals) to be relationally close (Liviatan, Trope, & Liberman, 2008).

Private goods: "Goods that are both excludable and rival in consumption" (Mankiw, 2014, p. 216). In this dissertation, the terms private goods and products are used interchangeably.

Product scarcity: The limited availability of a product (Brock, 1968; Verhallen & Robben, 1994a).

Public goods: "Goods that are neither excludable nor rival in consumption" (Mankiw, 2014, p. 216).

Rivalry (in consumption): "The property of a good whereby one person's use diminishes other people's use" (Mankiw, 2014, p. 216).

Scarcity: The state of being limited in availability (Cialdini, 2008).

Shared attention state: The perception of "in-the-moment attention to an object from a first-person-plural perspective" (Shteynberg, 2015, p. 581). In other words, the perception that "*we are attending*" to an object (Shteynberg, 2015, p. 581). In this dissertation, the terms shared attention, concurrent co-attention, synchronous co-attention, and simultaneous co-attention are used interchangeably.

Overview

The dissertation proceeds as follows. First, Chapter 2 reviews the existing literature on shared attention and scarcity, focusing on the concepts, mechanisms, and consequences. Based on the literature review, the chapter also presents the theoretical rationale for the proposed effects of shared attention on product evaluation. Next, Chapter 3 introduces the general method of the studies and the results of the pretest. Subsequently, Chapter 4 presents the findings from three experimental studies designed to test the hypotheses. Finally, Chapter 5 discusses the findings and their practical implications, the limitations of this dissertation, and suggestions for future research.

CHAPTER 2:
THEORETICAL BACKGROUND

This chapter presents the theoretical background and rationale for this dissertation. First, the literature on shared attention is reviewed, focusing on the shared attention state, its consequences on cognitive, attitudinal, and affective responses, and the underlying mechanism of these processes. Second, the concept of scarcity and its impact on product evaluation are presented. The literature review is followed by a discussion of this dissertation's contribution to existing research and the gap it fills. Finally, this chapter outlines the theoretical rationale and hypotheses regarding three distinct ways that shared attention influences product evaluation.

The Theory of Shared Attention

The Shared Attention State

The theory of shared attention maintains that shared attention state, or the perception that "we are attending to something," leads to greater channeling of cognitive resources to the target of that attention, thereby increasing its psychological impact (Shteynberg, 2015, p. 581). Because greater devotion of cognitive resources to a stimulus generally equates to a deeper processing of that stimulus (Baddeley, 1992; Shteynberg, Hirsh, Apfelbaum et al., 2014), shared attention results in better memory (Eskenazi, Doerrfeld, Logan, Knoblich, & Sebanz, 2013; He, Lever, & Humphreys, 2011;

Shteynberg, 2010), higher affective intensity (Shteynberg, Hirsh, Apfelbaum, et al., 2014; Shteynberg, Hirsh, Galinsky, & Knight, 2014), and more extreme judgments (Shteynberg et al., 2016).

Several idiosyncratic aspects of the shared attention state are as follows. First, the shared attention state is established under two conditions: when an individual perceives that a stimulus is *simultaneously* co-attended with others, and when those co-attendees are relationally *close* others (Shteynberg, 2015). These propositions are based on people's basic need to learn and maintain common knowledge with the member(s) of their social group (Shteynberg, 2010; Sober & Wilson, 1998). According to Shteynberg (2010), cognitively prioritizing co-attended objects or information is a more effective means to increase shared knowledge with one's social group compared to devoting cognitive resources to objects or information experienced solitarily or non-simultaneously with others. This is because objects or information simultaneously co-attended with close others are readily accessible to the people engaged in the activity.

Furthermore, shared attention states are stronger when people perceive that they are synchronously attending to object or information with *close* others because there is a higher likelihood of interacting with and taking collective action with these people (Shteynberg, 2015). While shared attention states are stronger when co-attendees are close others, past research has demonstrated that concurrent co-attention with minimally close others (such as participants who chose the same color or animal avatar) should suffice to evoke shared attention state (Bhargave et al., 2018; Shteynberg & Apfelbaum, 2013; Shteynberg, Hirsh, Apfelbaum, et al., 2014).

Next, shared attention is a *psychological* state, such that co-attendees are not required to be physically present. Although the act of physically attending with others generally triggers a shared attention state, it can also be established *without* the physical presence of others (Shteynberg, 2015). This distinguishes shared attention from joint attention, which requires individuals to observe the gazes or gestures of others (Baron-Cohen, 1991, 1995; Tomasello, 1999). Because observing others' behavior is unnecessary in shared attention, it can occur in a larger scale (e.g., mass media); this phenomenon is difficult to achieve with joint attention (Shteynberg et al., 2016).

Last, shared attention does not require mentalization of the shared attitudes, beliefs, and preferences of the co-attendees (Echteroff, Higgins, & Levine, 2009; Festinger, 1950; Shteynberg, 2015; Wagner, Giesen, Knausenberger, & Echteroff, 2017). That is, people can perceive shared attention without assuming or being aware of others' inner states or attitudes (Shteynberg, 2015). Similar to when individuals attend to a stimulus solitarily, the shared attention state involves *the mere perception* that some aspect of the world is being attended to with close others (Shteynberg, 2015).

Mechanisms and Consequences of Shared Attention

To date, researchers have demonstrated that experiencing an object or information with close (or similar) others affects basic processes such as cognition, emotion, and behavior (Bhargave et al., 2018; Boothby, Carr & Walton, 2014; Boothby, Smith, Clark, & Bargh, 2016; Eskenazi et al., 2013; He et al., 2011; Shteynberg & Galinsky, 2011;

Shteynberg, Hirsh, Apfelbaum, et al., 2014). For example, Shteynberg, Hirsh, Apfelbaum, et al. (2014) found that shared attention to happy (or sad) images and videos with close others increases happiness (or sadness); in addition, participants felt a scary element of an advertisement (i.e., teeth) to be scarier under shared attention (vs. viewing contexts with no shared attention).

In a similar vein, Boothby et al. (2014) demonstrated that responses to valenced experiences are amplified when shared. In particular, when shared with close others, pleasant experiences became even more pleasant (i.e., delicious chocolate tastes more delicious), and unpleasant experiences became even worse (i.e., unpleasant tasting chocolate tastes more unpleasant). Furthermore, prior research showed that shared attention polarizes judgments of stimuli. In Shteynberg et al.'s study (2016), participants in the shared attention condition evaluated a persuasive (or unpersuasive) speech as more persuasive (or unpersuasive) compared to those who viewed the speech without shared attention (i.e., attending alone, attending non-simultaneously with close others, or simultaneously attending with strangers).

Notably, research evidence has consistently shown that the shared attention effect is explained by greater cognitive resources devoted to the co-attended target. For example, in a set of studies, Shteynberg, Hirsh, Apfelbaum, et al. (2014) demonstrated that the effect of shared attention on participants' feelings toward evocative objects, such as happy and sad videos and videos featuring cute puppies, were mediated by the amount of thought that participants allocated to the videos. In particular, participants reported more thoughts of sadness and poverty when they watched a video that depicted homelessness under shared

attention (vs. viewing conditions that do not involve shared attention); this amplified reaction resulted in increased sadness and higher donations to the homeless. Similarly, a recent study found that the extent to which participants recalled political speeches mediated the influence of shared attention on their personal judgments of the speech (Shteynberg et al., 2016).

Empirical studies also suggested that the shared attention effect is independent of alternative explanations, such as an attitudinal conformity to the imagined attitudes of the co-viewers (Smith & Mackie, 2015, 2016)[1] and mere social presence (Zajonc & Sales, 1966).[2] For example, Shteynberg et al. (2016) showed that shared attention leads to extreme judgments of both persuasive and unpersuasive political speeches, while finding little evidence that their findings were explained by the attitudinal conformity account. In most experiments, participants did not show differences in the extent to which they thought their co-viewers liked the speech or agreed with the speaker between the shared attention condition and other conditions without shared attention (i.e., attending alone or attending non-simultaneously with others). In addition, Shteynberg, Hirsh, Apfelbaum, et al. (2014) demonstrated that the shared attention effect is independent of the mere social presence account by comparing participants' affective responses to stimuli in various social contexts. Specifically, participants in the shared attention condition who viewed an evocative stimulus simultaneously with similar others (i.e., people who chose an avatar

[1] According to the Representation and Incorporation of Close Others' Responses model (RICOR; Smith & Mackie, 2015), an individual's attitudes or preferences can be shaped by the imagined or simulated attitudes of their psychologically close others.

[2] Zajonc's (1965) social facilitation model proposes that individuals are aroused in the mere presence of others.

with the same color) indicated more intense emotional responses to the stimulus than those who viewed it with different others (i.e., people who chose an avatar with different colors) or those who viewed a different stimulus while similar others were present.

Product Scarcity

The Scarce Nature of Products

The law of scarcity states that society's resources, such as goods or services, time, and labor to achieve the desired ends, are limited in nature (Mankiw, 2014). Beyond the utility derived from intrinsic attributes, scarcity is an important component that determines the perceived value of a product (Van Harpen, Pieters, & Zeelenberg, 2005). Indeed, Smith (1776) noted that "the merit of an object, which is in any degree either useful or beautiful, is greatly enhanced by its scarcity..." (p. 172). Dovetailing with Smith's account, Brock (1968) commented that "any commodity that is useful, conveyable, and potentially possessable is valued to the extent that it is unavailable" (p. 246).

By definition, private goods are products or services that are both *excludable* and *rivalrous* (Mankiw, 2014).[3] Herein, excludability is defined as "the property of a good whereby a person can be prevented from using it," and rivalry is defined as "the property of a good whereby one person's use diminishes other people's use" (Mankiw, 2014, p.

[3] Based on the levels of excludability and rivalry in consumption, economists defined four types of goods: private goods, common pool resource goods, club goods, and public goods (Mankiw, 2014).

216). That is, if a good is excludable, people who do not pay for it can be prevented from possessing or accessing it; if a good is rivalrous, it is no longer available for use or purchase by others when someone uses or purchases it. Many consumer goods—products or services that can be purchased by consumers for personal use (e.g., foods, electronics, clothing, automobiles, flights, and hotel stays)—are parallel to what economists call private goods (Acemoglu et al., 2006). Although some consumer goods are excludable but not rivalrous, such as e-books or video/audio streaming subscription services (e.g., Netflix and Spotify), this dissertation pertains to consumer goods that meet the criteria of private goods.

The concept of scarcity is embedded in products; however, scarcity can be communicated through marketing messages (Aggarwal et al., 2011; Cialdini, 2008; Parker & Lehmann, 2011). Marketers often use scarcity messages, also referred to as scarcity tactics or cues, to inform consumers about the limited availability of products (Aggarwal et al., 2011). Scarcity can be real or created; there can in fact be very few products available owing to demand and/or supply or marketers can restrict quantity (e.g., "while supplies last") or time (e.g., "limited time only") to create scarcity (Aggarwal et al., 2011; Cialdini, 2008).

Mechanisms and Consequences of Scarcity

The extant literature on scarcity demonstrates that scarcity is a powerful and common way to affect consumers' product evaluation (Lynn, 1991). For example, scarcity

positively affects product attitudes (Bozzolo & Brook, 1992; Inman, Peter, & Rahubir, 1997; Swami & Khairnar, 2003; Verhallen & Robben, 1994b), product desirability or attractiveness (Fromkin, Williams, Dipboye, & Barnaby, 1971; Lynn, 1992; Worchel, Lee, & Adewole, 1975), and purchase intention (Aggarwal et al., 2011; Inman et al., 1997). However, the question is, why do people evaluate a scarce product more positively? Two classic approaches explain the mechanisms by which scarcity increases the value of products: commodity theory (Brock, 1968; Lynn, 1991) and reactance theory (Brehm, 1966). The central claim of the commodity theory is that individuals perceive commodities to be more attractive when they are scarce rather than abundant (Brock, 1968). Researchers reasoned that the increased perception of uniqueness or value underlies this effect (Fromkin & Snyder, 1980). The reactance theory (Brehm, 1966), in contrast, suggests that scarcity can pose a threat on an individual's freedom to acquire a product, which in turn motivates them to obtain scarce goods for offsetting the feeling of restraint.

Importantly, researchers have noted that the impact of scarcity is a function of the assumed or informed causes of scarcity (Lynn, 1992; McKinnon, Smith, & Hunt, 1985; Verhallen & Robben, 1994a, 1994b; Worchel et al., 1985). Specifically, researchers argued that the positive effect of scarcity no longer holds when consumers believe that the scarcity occurred accidentally or owing to nonmarket situations (Lynn, 1992, Verhallen & Robben, 1994b). Through a series of experiments, Worchel et al. (1975) demonstrated that individuals place a higher value on a commodity (i.e., cookie) when its scarcity occurred because of high demand than when it occurred accidentally. Furthermore, a good was

perceived to be more attractive when it became recently scarce than when it has been scarce from the beginning.

Gap in the Literature

Social context plays an important role in consumption. Although a vast body of literature has documented the varied and numerous ways in which consumers influence each other in both interactive and non-interactive social contexts (Argo, Dahl, & Manchanda, 2005; Cialdini & Goldstein, 2004), most researchers have focused on the issue of how consumer responses are shaped by the cues provided by other individual consumers. That is, the collective perspective of consumer behavior is relatively underexplored, and thus merits further investigation. The shared attention theory sheds new light on the role of other consumers by adopting a "first-person-plural perspective" of consumption episodes, in which the consumers involved are *constitutive* and essential to the experience (Shteynberg, 2015, p. 581). Despite the increasing frequency with which multiple consumers synchronously view products, researchers have paid only cursory attention to the existence and potential role of shared attention in consumption processes. This dissertation aims to address this gap in the literature by investigating the role of shared attention in product evaluation.

The Influence of Shared Attention on Product Evaluation

Building on the literature on shared attention and scarcity, this dissertation proposes three formal predictions about the effect of shared attention on product evaluation. First, the shared attention on positive features hypothesis predicts that shared attention leads to more positive evaluations of a desirable product. Second, the shared attention as scarcity hypothesis states that shared attention itself functions as a scarcity cue. Last, the shared attention on scarcity messages hypothesis predicts that shared attention amplifies the impact of scarcity messages, thereby leading to an even more positive evaluation of a desirable product.

Shared Attention on Positive Features Hypothesis

Empirical evidence from previous research suggests that synchronous co-attention stimulates elaborative processing of the co-attended object, thereby amplifying attitudes toward a valenced stimulus (Shteynberg, Hirsh, Apfelbaum, et al., 2014). For example, when experienced under shared attention, a pleasant stimulus becomes more pleasant. The first hypothesis reflects this role of shared attention as described by the literature—given that a product is desirable to begin with, shared attention will lead to an even more positive evaluation of the desirable product. Because shared attention facilitates channeling of greater cognitive resources to the co-attended product, the positive features of the product

are likely to be more cognitively accessible when forming attitudes and behavioral intentions toward it. Therefore, the first hypothesis is as follows:

H1: Shared attention (vs. attending alone and asynchronous co-attention) leads to more positive evaluations of a desirable product.

Shared Attention as a Scarcity Cue Hypothesis

A majority of products that consumers use and purchase in their daily lives (e.g., food, clothing, electronics) are characterized by excludability and rivalry in consumption; in other words, products are essentially finite in availability. Due to this inherently scarce nature of products, shared attention itself may function as a scarcity cue. More specifically, greater cognitive resources directed to a product under shared attention may render the product's scarce nature to be more cognitively salient, thereby increasing the perceived scarcity of it. Given that consumers evaluate products that are scarce to be more attractive and show greater interest in purchasing these products (Lynn, 1991), shared attention will enhance positive evaluations of a product by increasing its perceived scarcity. Therefore, the second hypothesis is as follows:

H2: Shared attention (vs. attending alone and asynchronous co-attention) increases perceptions of scarcity, thereby leading to more positive evaluations of a desirable product.

Shared Attention on Scarcity Messages Hypothesis

Although products are essentially scarce, information about the limited availability of a product can be provided. If this is the case, shared attention can leverage the impact of scarcity information that has already been provided. Therefore, it is hypothesized that shared attention leads to increased perceptions of scarcity in the presence of a scarcity message highlighting limited availability (high product scarcity) and decreased perceptions of scarcity in the presence of a scarcity message that does not highlight limited availability (low product scarcity). Furthermore, these increased or decreased perceptions of scarcity under shared attention will mediate the effect of shared attention on evaluations of a desirable product (see Figure 1 for the overall research model).[4] Therefore, the third set of hypotheses is as follows:

H3a: Under conditions of high product scarcity, shared attention (vs. attending alone and asynchronous co-attention) increases perceptions of scarcity, whereas, under conditions of low product scarcity, shared attention leads to decreased perceptions of scarcity (vs. attending alone and asynchronous co-attention).

[4] All tables and figures are located in the Appendix.

H3b: A moderated mediation effect exists, such that perceptions of scarcity mediate the relationship between shared attention/product scarcity interaction and evaluations of a desirable product.

Finally, it can be argued that consumers evaluate products more positively when viewing product with others because they think that their co-viewers like it. While it is possible that consumers form impressions of an object based on the imagined opinions of others (Smith & Mackie, 2015), previous research on shared attention has demonstrated that the shared attention effect is not predicated on conformity to the assumed attitudes or beliefs of others (Shteynberg et al., 2014; Shteynberg et al., 2016). Therefore, this dissertation will further examine whether the effects of shared attention predicted by the hypotheses presented here are independent of attitudinal conformity.

CHAPTER 3:
METHOD

This chapter presents the general method of this dissertation and the pretest conducted to determine the products used as stimuli in the studies. All study materials were approved by the University of Tennessee Institutional Review Board before implementation (Approval No. UTK IRB-19-05224-XM). At the beginning of each study, participants read the informed consent form and indicated their willingness to participate; only participants who consented proceeded with the studies.

General Methodology

Participants and Design

Individuals who were 18 years old or older and resided in the United States were eligible to participate in a single study associated with this dissertation. Participants were recruited from Amazon Mechanical Turk (MTurk), a crowdsourcing marketplace used by researchers or businesses to hire workers to complete small online tasks.[5] Specifically, individuals were asked to participate in an online focus group to provide their opinions on

[5] Though there is a concern that MTurk samples are less representative than national probability samples and some Internet-based panels in terms of demographics and psychographics (Berinsky, Huber, & Lenz, 2012; Goodman & Paolacci, 2017), researchers generally agree that MTurk samples do not exhibit a "wildly distorted view of the U.S. population" (Berinsky et al., 2012, p. 361; Buhrmester, Kwang, & Gosling, 2011; Levay, Freese, & Druckman, 2016).

products. The payment for each study was based on the length of each survey and suggested ethical rates (Williamson, 2014).[6] Power analysis was conducted using G*power (Faul, Erdfelder, Lang, & Buchner, 2007) to estimate the minimum number of participants required for each study. More participants were recruited than suggested by the power analysis to account for technical malfunctions that might prevent the participants from viewing the stimuli (i.e., product webpages).

Three online studies were designed to investigate how consumers evaluate products (i.e., product attitudes and purchase intention) in varying social contexts: attending alone, asynchronous co-attention, and shared attention. The two conditions (i.e., attending alone condition and asynchronous co-attention) did not involve shared attention, serving as control conditions. Specifically, in the attending alone condition, participants did not have co-viewers; in the asynchronous co-attention condition, participants had co-viewers but viewed the products at a different time point (i.e., a one-minute delay in viewing the product webpages). Furthermore, Study 3 investigated whether product evaluation in varying social contexts differ based on low and high levels of product scarcity.

Materials and Procedure

At the beginning of each study, participants were asked to indicate their baseline mood using self-assessment mannequin (SAM) pictorial assessment items (1 = very

[6] The federal minimum wage is 7.25 US dollars per hour effective on July 24, 2009 (U.S. Department of Labor, n.d.).

unhappy, 5 = very happy; Bradley & Lang, 1994). Baseline mood was measured to be employed as a potential covariate because positive affect generally enhances sociability (Moore, Diener, & Tan, 2018), and individuals in a good mood tend to evaluate products more favorably than those in a negative mood (Gorn, Goldberg, & Basu, 1993).

Next, participants were randomly assigned to one of the experimental conditions. An adapted version of Shteynberg and Apfelbaum's (2013) shared attention paradigm was used to manipulate the social context conditions. First, participants viewed a description characterizing the current study as an online focus group and were instructed to choose an avatar to represent themselves anonymously. The original paradigm employed six animal avatars: two different pictures of three types of animals (i.e., elephant, koala, and owl). In this research, one additional picture was added for each type of animal, resulting in nine possible avatar options (Appendix C). Upon selecting an avatar, each participant received a participant number. Whereas participants in the attending alone condition did not have other participants in the focus group, participants in the asynchronous co-attention and shared attention conditions saw that two other participants selected an avatar from the same type of animal. Participants then entered a purported online focus group session wherein three product webpages were presented. In the attending alone and asynchronous co-attention conditions, participants could only see their own avatars, whereas, in the shared attention condition, participants could see their own avatars alongside the avatars of other participants. Several features of the paradigm enhanced experimental realism (i.e., intermittent delays, instructions to "wait for the others," and a loading page).

The product webpages contained pictures and short descriptions of products marketed under a fictitious brand; a fictitious brand name was used ("Rhosoh") to avoid any potential bias associated with previous exposure to brands, such as familiarity effects (Till & Busler, 2000). Immediately after viewing each product, participants responded to measures regarding product evaluation: product liking ("To what extent do you like the product?" 1 = not at all, 7 = very much; adapted from Shteynberg, Hirsh, Apfelbaum, et al., 2014), product attitudes ("attractive," "likeable," and "favorable," 1 = not at all, 7 = very much; adapted from Berger & Fitzsimons, 2008 and Lasaleta, Sedikides, & Vohs, 2014), and purchase intention ("How likely would you be to purchase this product?" 1 = definitely would not purchase, 7 = definitely would purchase; adapted from Sevilla & Kahn, 2014).

Subsequently, participants assigned to the shared attention condition or asynchronous co-attention condition reported their perceived similarity to the co-viewers ("To what extent do you feel that you and the other participants in your group are similar to one another?" 1 = not at all, 7 = very much; adapted from Haj-Mohamadi et al., 2018). This measure was used to test whether the manipulation successfully evoked the shared attention state. Participants who were assigned to attending alone condition did not complete this measure because there were no co-viewers in the condition. Lastly, participants reported demographic information (i.e., gender, age, and ethnicity) and were thanked and fully debriefed.

Pretest for Product Selection

This dissertation posits that shared attention enhances positive evaluations of desirable products, compared to conditions with no shared attention (i.e., attending alone and asynchronous co-attention). To prevent misleading results due to a ceiling effect, a pretest was conducted to identify products with moderately positive desirability, measured in terms of liking and attitudes.

Participants and Design

A total of 81 participants (25 females, 56 males, 0 other; M_{age} = 38.11, SD_{age} = 11.90, range: 21 to 70) recruited from an online subject pool managed by Amazon Mechanical Turk (MTurk) completed this survey in exchange for compensation of $1.75. Participants reported their ethnicities as Caucasian (71.6%), Asian (9.9%), Black or African American (8.6%), Hispanic or Latino (3.7%), American Indian or Alaskan Native (2.5%), or other (3.7%). One participant indicated a technical malfunction that prevented the product webpages from loading and thus was excluded from the analysis.

Materials and Procedure

Participants who agreed to participate in the pretest viewed a total of eight product webpages with pictures and short descriptions of products in a randomized order

(Appendix D). The products were selected based on the most commonly purchased product categories online in the U.S. (Statista, 2018): fashion (i.e., a baseball cap and a hoodie), home goods (i.e., two travel mugs), stationery (i.e., two journals), and electronics (i.e., a portable Bluetooth speaker and Bluetooth earphones).[7] After viewing each product, participants were asked to rate their liking of the product ("To what extent do you like the product?" 1 = not at all, 7 = very much) and their attitudes toward the product ("attractive," "likeable," and "favorable;" 1 = not at all, 7 = extremely). Lastly, participants provided demographic information.

Results

Measurement items pertaining to product liking and attitudes indicated high reliability and correlations for all eight products (all 4-item scale α's > .936; all item-item correlations > .711, Table 1-8). Therefore, the scores for the four items were averaged to form a product attitudes index. Based on the product attitudes index scores, three products with ratings higher than the neutral point of 4 and lower than 4.71 were selected to be included in the main studies: hoodie (M = 4.70, SD = 1.32), journal A (M = 4.71, SD = 1.47), and Bluetooth earphones (M = 4.48, SD = 1.69, see Table 9 for descriptive statistics for all products). Although the mean rating of product attitudes index for journal B was in

[7] According to a consumer survey (n = 1,052) conducted by Statista (2018), the most commonly purchased product categories in the U.S. are as follows: clothing, accessories, shoes (37%), books, music, and other media products (28%), electronic devices (17%), and household goods (13%).

the same range (M = 4.61, SD = 1.50), it was not selected to avoid an overlap in product categories.

CHAPTER 4:
EMPIRICAL FINDINGS

The overarching goal of the three studies was to investigate the proposed effects of shared attention on product evaluation (i.e., product attitudes and purchase intention): the effect of shared attention on positive features of a desirable product (Study 1), the effect of shared attention as a scarcity cue (Study 2), and the effect of shared attention on scarcity messages (Study 3). The experimental conditions of this research included the shared attention condition and two other conditions without shared attention: attending alone and asynchronous co-attention conditions. This design enabled the investigation of consumers' product evaluation in varying social contexts. Although each study's manipulation and measures differed based on the objective of each study, all studies followed the general procedure presented in Chapter 3.

Study 1: Shared Attention on Positive Features

The purpose of Study 1 was to provide an initial test of how shared attention influences evaluations of a desirable product. In addition, Study 1 aimed to verify that the adapted version of the shared attention paradigm (Shteynberg & Apfelbaum, 2013) fosters a sense of affinity with co-viewers, which is necessary to establish shared attention state. Study 1 employed a 3-condition (social context: attending alone vs. asynchronous co-attention vs. shared attention) between-subjects design.

Method

Participants. A power analysis using G*power (Faul et al., 2007) suggested a total sample of 114 participants to detect a medium effect size (d = 0.50) with 80% power using an independent t-test (allocation ratio of 2:1) with an alpha value of .05. A larger sample was recruited due to the possibility of technical malfunctions (e.g., product webpages not loading correctly) during the study. A total of 181 participants (90 females, 90 males, 1 other, M_{age} = 35.17, SD_{age} = 9.74, range: 18 to 66) were recruited from MTurk in exchange for compensation of $1.50. Participants reported their ethnicities as Caucasian (69.6%), Black or African American (13.8%), Hispanic or Latino (8.3%), Asian (6.1%), American Indian or Alaskan Native (0.6%), or other (1.7%) (see Table 10 for a summary of demographic information in all studies). Seven participants reported technical malfunctions that prevented them from viewing the product webpages and thus were excluded from analysis.

Materials and procedure. At the beginning of the survey, participants indicated their baseline mood using SAM pictorial assessment items (1 = very unhappy, 5 = very happy). Then, participants were randomly assigned to one of the three experimental conditions (social context: attending alone vs. asynchronous co-attention vs. shared attention) and followed the general procedure of the shared attention paradigm. Participants selected their avatars to represent themselves anonymously and were instructed to enter what they were told was an online focus group about consumer product evaluation, at which point they viewed a series of three product webpages (i.e., a hoodie, a

journal, and Bluetooth earphones). In the attending alone and asynchronous co-attention conditions, each participant's avatar appeared alone while he or she viewed the product webpages; in the shared attention condition, two other participants' avatars appeared next to the participant's avatar. After viewing each product, participants completed the primary dependent measures of product attitudes and purchase intention on a 7-point Likert scale, going from negative to positive product attitudes/purchase intention with 4 serving as a neutral point (see Appendix E for measures regarding products).

Then, participants in the shared attention and asynchronous co-attention conditions reported their perceptions of similarity to co-viewers ("To what extent do you feel that you and the other participants in your group are similar to one another?" 1 = not at all, 7 = very much). Participants also responded to items that measure their perceptions of co-viewers' attitudes ("To what extent do you think other participants in your focus group liked the product?" adapted from Shteynberg, Hirsh, Apfelbaum, et al., 2014) and their speculations on the co-viewers' attitudes toward the product ("When you were viewing the product, to what extent did you think about other participants' opinions of the product?" adapted from Shteynberg et al., 2016); both items were measured on a 7-point scale (1 = not at all, 7 = very much; Appendix F). These items were used to examine the alternative account, whether participants' attitudinal conformity to the assumed attitudes of co-viewers influenced product evaluation. Lastly, participants reported their demographic information (i.e., gender, ethnicity, and age) and were thanked and fully debriefed (Appendix G).

Results

Preliminary analysis. A one-way ANOVA was conducted to examine the differences for baseline mood among the conditions. The results showed that baseline mood did not differ among the social context conditions (attending alone: $M = 3.49$, $SD = .74$, asynchronous co-attention: $M = 3.60$, $SD = .72$, shared attention: $M = 3.81$, $SD = .78$, $F(2, 171) = 2.78$, $p = .065$).

Manipulation check. The shared attention state is established when individuals perceive that they are synchronously attending to a stimulus with similar others. As such, if social context manipulation was successful, perceptions of similarity to co-viewers should be higher for participants who viewed the products under shared attention compared to those who viewed the products asynchronously with others. The results of a *t*-test (a priori contrast –1, 1) revealed that participants in the shared attention condition ($M = 4.58$, $SD = 1.42$) felt more similar to their co-viewers than those in the asynchronous co-attention condition ($M = 4.08$, $SD = 1.39$, $t(117) = 1.91$, $p = .029$).[8]

Furthermore, researchers suggested that mediation analysis provides a way to test whether a manipulation had the intended effect on the proposed results (Lench, Taylor, & Bench, 2014; Mackinnon, 2011). Following this recommendation, two mediation analyses were conducted to examine whether perceived similarity with co-viewers mediated the effect of the social context conditions (asynchronous co-attention vs. shared attention) on the primary dependent measures (product attitudes and purchase intention). The first

[8] All planned contrasts are based on a priori predictions and hence are one-tailed (Kimmel, 1957).

mediation analysis (PROCESS Model 4 with 10,000 bootstrap samples; Hayes, 2018) revealed that perceived similarity did not mediate the effect of social context on product attitudes (effect = .1523, *SE* = .0861, 95% CI: [–.0045, .3354]). However, the results showed that shared attention (vs. asynchronous co-attention) enhanced perceptions of similarity to co-viewers (*b* = .49, *SE* = .26, *t*(117) = 1.91, *p* = .029), and that perceptions of similarity led to more positive product attitudes (*b* = .31, *SE* = .06, *t*(116) = 5.30, *p* < .001, Figure 2). With respect to purchase intention, perceptions of similarity to co-viewers did not mediate the effect of social context (–1, 1) on purchase intention (effect = .2046, *SE* = .1078, 95% CI [–.0024, .4200]). Yet again, results showed that perceived similarity increased purchase intention (*b* = .42, *SE* = .07, *t*(116) = 6.25, *p* < .001, Figure 3).

Evaluations of desirable products. Before forming the primary dependent measures of product attitudes and purchase intention, repeated measures ANOVAs were conducted to explore the within-subject effect of products. In each analysis, product attitudes and purchase intention served as the repeated measure within a three-condition design. For product attitudes, the results showed that product attitudes ratings did not differ across the three products (*F*(1.94, 332.23) = 1.85, *p* = .161, using Huynh-Feldt correction).[9] Mirroring the results of product attitudes, purchase intention ratings did not differ across the products (*F*(2, 342) = 1.06, *p* = .348).[10] As such, product attitudes (α = .966; all item-item correlations > .843) and purchase intention scores were averaged across the three products in Study 1 and subsequent studies.

[9] The Huynh-Feldt correction was used because the sphericity assumption was violated (*p* = .010) and the Greenhouse-Geisser estimate of sphericity exceeded .75 (G-G = .950, Field, 2013, p. 548).

[10] The sphericity assumption was not violated (*p* = .060).

Product attitudes. Two planned contrasts (–1, –1, 2; –1, 1, 0) were used to test hypothesis 1. Specifically, the contrasts intended to test the following comparisons among social context conditions: (a) attending alone and asynchronous co-attention versus shared attention (–1, –1, 2) and (b) attending alone versus asynchronous co-attention (–1, 1, 0). Because the results of Levene's test indicated unequal variances for social context conditions (p = .044), unequal variances t-tests were performed. A t-test of the first contrast indicated that the difference in product attitudes between participants in the shared attention condition (M = 5.08, SD = 1.01) and those in the conditions with no shared attention was marginally significant (attending alone: M = 4.89, SD = .74, asynchronous co-attention: M = 4.76, SD = .96, t(101.33) = 1.65, p = .051). Furthermore, the results of the second contrast (–1, 1, 0) showed that product attitudes did not differ between the two conditions without shared attention (t(109.92) = –.78, p = .219, Table 11 and Figure 4).

Purchase intention. Following the same procedure used to test product attitudes, two planned contrasts tested the effect of social context conditions on purchase intention. The results of a t-test for the first contrast (–1, –1, 2) showed significant difference for purchase intention between the shared attention condition (M = 4.54, SD = 1.18) and the other two control conditions (attending alone: M = 4.15, SD = 1.04, asynchronous co-attention: M = 4.07, SD = 1.14, t(171) = 2.39, p = .009). The results of a t-test for the second contrast (–1, 1, 0) indicated no difference in purchase intentions between the attending alone and asynchronous co-attention conditions (t(171) = –.38, p = .353, Table 12 and Figure 5).

Alternative account. One might wonder whether participants in the shared attention condition evaluated the products more positively than those in the asynchronous co-attention because they thought their co-viewers liked the products more. Further analyses were conducted to test this possibility. The results of *t*-tests (contrast –1, 1) demonstrated that participants in the shared attention condition thought their co-viewers liked the products more (M = 5.20, SD = .94) than those in the asynchronous co-attention condition (M = 4.85, SD = .92, $t(117) = 2.07$, p = .020). However, participants in the two conditions did not differ in terms of the extent to which they considered their co-viewers' opinions while viewing the products (asynchronous co-attention: M = 2.22, SD = 1.80, shared attention: M = 2.58, SD = 1.83, $t(117) = 1.08$, p = .141; note that the mean values in both conditions were below the neutral point of 4). Overall, these findings suggest the possibility that imagined attitudes of other viewers led to more positive product evaluation for participants in the shared attention condition.

Discussion

The results from Study 1 provided support for the initial hypothesis that shared attention leads to more positive evaluations (i.e., product attitudes and purchase intention) of desirable products than viewing the products without shared attention. Consistent with the prediction, participants in the shared attention condition indicated marginally more positive attitudes toward the desirable products compared to those in the attending alone and asynchronous co-attention conditions. In addition, participants exhibited higher

purchase intention when they viewed the products under shared attention (vs. attending alone and asynchronous co-attention). However, the findings from Study 1 also suggested the possibility that participants' speculations about the imagined attitudes of their co-viewers led to more positive product evaluations in the shared attention condition.

In addition, the findings of Study 1 confirmed the effectiveness of shared attention paradigm. Participants in the shared attention condition indicated a stronger sense of similarity to their co-viewers than those who viewed the products asynchronously with others. Although perceived similarity to co-viewers did not mediate the relationship between social context conditions and the dependent variables, shared attention led to higher perceived similarity to co-viewers and perceived similarity positively influenced both product attitudes and purchase intention. In sum, Study 1 provided support to the findings of the previous literature that shared attention amplifies attitudes toward a valenced object (Shteynberg, Hirsh, Apfelbaum, et al., 2014), while also suggesting the possibility that the effect of shared attention on product attitudes and purchase intention may not be independent of attitudinal conformity to the assumed attitudes of the co-viewers.

Study 2: Shared Attention as a Scarcity Cue

Study 2 examined the second potential role of shared attention that shared attention function *as* a scarcity cue. Specifically, shared attention was expected to increase (vs. decrease) perceptions of scarcity compared to conditions without shared attention (i.e.,

attending alone and asynchronous co-attention), hence leading to more (vs. less) positive attitudes toward and higher (vs. lower) purchase intention of desirable products. Study 2 employed the same design with that of Study 1: a 3-cell (social context: attending alone vs. asynchronous co-attention vs. shared attention) between-subjects design.

Method

Participants. A power analysis using G*power (Faul et al., 2007) suggested a sample of 114 participants for a three-condition design (independent *t*-test with an allocation ratio of 2:1, effect size $d = 0.50$, $\alpha = .05$, $1 - \beta = .80$). More participants were recruited than required based on the G*Power estimate for the same reason as in Study 1. A total of 265 individuals from MTurk participated in this study (146 females, 119 males, 0 other, $M_{age} = 37.73$, $SD_{age} = 10.82$, range: 19 to 71) in exchange for compensation of $1.50. Participants reported their ethnicities as Caucasian (79.6%), Black or African American (8.3%), Hispanic or Latino (6.0%), Asian (5.3%), or other (0.8%). Ten participants reported technical malfunctions that prevented them from viewing the product webpages and thus were excluded from analysis.

Materials and procedure. The procedure was identical to Study 1. After being randomly assigned to one of the three social context conditions (attending alone vs. asynchronous co-attention vs. shared attention), participants followed the general procedure of the shared attention paradigm. In addition to questions regarding product attitudes ($\alpha = .945$; all item-item correlations > .738) and purchase intention, participants

responded to two measures of perceived scarcity for each product: (a) "How would you describe this product's quantity?" (1 = very scarce, 7 = very abundant; adapted from Kristofferson, McFerran, Morales, & Dahl, 2016); and (b) "How would you describe the availability of this product?" (1 = extremely limited, 7 = extremely plentiful; adapted from Zhu & Ratner, 2015). Two measures of perceived scarcity were reversed coded and averaged to form an index (α = .916; item-item correlation = .846). All measures regarding products were averaged across the three products (i.e., a hoodie, a journal, and Bluetooth earphones).

Results

Preliminary analysis. A one-way ANOVA was conducted to test whether baseline mood differed across social context conditions. The results suggested that there was not difference in baseline mood among the conditions (attending alone: M = 3.64, SD = .73, asynchronous co-attention: M = 3.67, SD = .57, shared attention: M = 3.76, SD = .80, $F(2, 252) = .61$, p = .543).

Manipulation check. A t-test (contrast –1, 1; asynchronous co-attention vs. shared attention) was conducted to confirm that social context manipulation was successful. Results indicated that the participants in the shared attention condition (M = 4.37, SD = 1.31) felt more similar to their co-viewers than those in the asynchronous co-attention condition (M = 4.01, SD = 1.23, $t(167) = 1.84$, p = .034).

Mediating role of perceived scarcity. Mediation analysis was conducted to test whether perceptions of scarcity mediated the positive effect of shared attention on product evaluation (i.e., product attitudes and purchase intention). Two contrasts (–1, –1, 2; –1, 1, 0; Hayes, 2018; Hayes & Preacher, 2014) were used to test the hypothesis.

Product attitudes. The first contrast—testing whether shared attention leads to more positive product attitudes through increased perceptions of scarcity (relative indirect effect) compared to the control conditions—was not significant (PROCESS Model 4 with 10,000 samples, effect = .0004, *SE* = .0039, 95% CI: [–.0081, .0085]).[11] In addition, the attending alone and asynchronous co-attention conditions did not differ in terms of their effects on product attitudes through perceived scarcity (effect = –.0087, *SE* = .0100, 95% CI = [–.0327, .0071]).

Purchase intention. Similar to the results of product attitudes, a mediation analysis revealed that the first contrast was not significant (PROCESS Model 4 with 10,000 samples, effect = .0002, *SE* = .0036, 95% CI: [–.0070, .0086]). Furthermore, the attending alone and asynchronous co-attention conditions did not differ in terms of their effects on purchase intention through perceived scarcity (effect = –.0040, *SE* = .0116, 95% CI = [–.0306, .0184]).

[11] Relative indirect effects refer to the indirect effects of multi-categorical independent variables (X_n, n > 2) on the dependent variable (Y) through the mediator (M). The effect of X_n on the mediator (a_n) refers to the mean differences between the conditions specified by the coding systems, while the effect of the mediator on the dependent variable (b) refers to the effect of the mediator on the dependent variable holding the conditions constant (for more details, see Hayes & Preacher, 2014).

Post Hoc Analyses

Moderating role of perceived scarcity. The results did not support the second hypothesis, indicating that shared attention does not function as a scarcity cue. However, one caveat should be kept in mind when interpreting these findings. It was possible that the presence of scarcity measures made the concept of scarcity salient to the participants, unexpectedly manipulating scarcity. Indeed, researchers cautioned that measures can affect participants' thought processes and function as manipulation by directing attention to what is being measured (Hauser, Ellsworth, & Gonzalez, 2018). If this was the case, the effect of social context conditions on product attitudes and purchase intention would differ across the levels of perceived scarcity. To test this possibility, further analyses were conducted. Specifically, two moderation analyses (PROCESS Model 1 with 10,000 samples) were conducted to examine the interaction effect of social context and perceived scarcity on product evaluation (i.e., product attitudes and purchase intention). Two contrasts were used to test the following comparisons between social context conditions: (a) attending alone versus shared attention (1, 0, 0) and (b) asynchronous co-attention versus shared attention (0, 1, 0). Perceived scarcity scores were mean-centered prior to analysis (Aiken & West, 1991).

Product attitudes. The results indicated that the interaction effect between the first contrast (1, 0, 0) and perceived scarcity was significant (b = .27, SE = .12, $t(249)$ = 2.19, p = .029); however, the interaction effect of the second contrast (0, 1, 0) and perceived scarcity was not significant (b = .13, SE = .12, $t(249)$ = 1.05, p = .296), revealing that there

was no difference for product attitudes between the shared attention and asynchronous co-attention conditions across perceived scarcity levels (Table 13).

A spotlight analysis was conducted to decompose the significant interaction effect between the first contrast (1, 0, 0; attending alone vs. shared attention) and perceived scarcity (Aiken & West, 1991; Spiller, Fitzsimons, Lynch, & McClelland, 2013). More specifically, the simple effects of condition on product attitudes were examined at low and high levels of perceived scarcity (i.e., 2SD below and above the mean, SD = 1.12). When perceptions of scarcity were low (–2SD), the difference between conditions was marginally significant (p = .055). Participants in the shared attention condition (M = 5.41, SE = .23) tended to exhibit more positive attitudes toward the products than those in the attending alone condition (M = 4.84, SE = .19). Surprisingly, when perceptions of scarcity were high (+2SD), participants showed less positive product attitudes in the shared attention condition (M = 4.45, SE = .23) than those in the attending alone condition (M = 5.09, SE = .21, p = .042, Figure 6).

Purchase intention. The same procedure was used to test whether perceived scarcity moderated the effect of the social context conditions on purchase intention. Moderation analysis results indicated a significant interaction between the first contrast (1, 0, 0) and perceived scarcity (b = .36, SE = .17, t(249) = 2.08, p = .038). In addition, there was a significant interaction between the second contrast (0, 1, 0) and perceived scarcity (b = .34, SE = .17, t(249) = 2.01, p = .046, Table 14).

Spotlight analyses were conducted to decompose the interactions at low and high levels of perceived scarcity (i.e., 2SD below and above the mean, SD = 1.12). When

perceptions of scarcity were low (–2SD), participants who viewed the products under shared attention indicated higher purchase intention (M = 4.74, SE = .32) than those in the asynchronous co-attention condition (M = 3.83, SE = .29, p = .036) and tended to exhibit higher purchase intention than those in the attending alone condition (M = 4.00, SE = .27, p = .081). In contrast, when perceptions of scarcity were high (+2SD), participants who viewed the products under shared attention (M = 3.42, SE = .33) showed significantly lower purchase intention than those who viewed the products alone (M = 4.30, SE = .29, p = .045). The difference between the shared attention and asynchronous co-attention conditions was not significant (M = 4.05, SE = .26, p = .133, Figure 7).

Mediating role of perceived similarity to co-viewers. The findings from Study 1 suggested that participants' perceptions of similarity to co-viewers may underlie the effect of shared attention on product evaluation. Speculating from these results, testing was conducted to determine whether the same pattern emerges in Study 2.

Product attitudes. A moderated-mediation analysis was conducted (PROCESS Model 7 with 10,000 samples) to investigate whether perceptions of similarity to co-viewers mediated the interaction effect of social context and perceived scarcity on product attitudes. A conditional moderated-mediation effect existed at one standard deviation (SD = 1.10) below the mean value of perceived scarcity (effect = .0962, SE = .0623, 95% CI: [.0033, .2416]). In addition, both the direct effect of social context on perceived similarity to co-viewers (b = .35, SE = .20, t(165) = 1.77, p = .039) and the direct effect of perceived similarity on product attitudes (b = .15, SE = .05, t(166) = 3.03, p = .003) were significant.

Purchase intention. A similar conditional moderated-mediation pattern appeared for purchase intention (effect = .1976, *SE* = .1120, 95% CI: [.0154, .4548]). Shared attention (vs. asynchronous co-attention) led to higher purchase intention through perceived similarity to co-viewers, when perceptions of scarcity were low (–1SD). Also, perceived similarity to co-viewers led to increased purchase intention (*b* = .31, *SE* = .07, $t(166) = 4.68$, $p < .001$).

Subsequently, spotlight analysis was conducted to decompose the interactions at low and high levels of perceived scarcity (i.e., 1SD below and above the mean). When the perceived scarcity of products was low (–1SD), participants in the shared attention condition (*M* = 4.62, *SE* = .21) felt more similar to their co-viewers than those in the asynchronous co-attention condition (*M* = 3.97, *SE* = .20, *p* = .024); difference in perceived similarity became insignificant as perceptions of scarcity increased (+1SD) (shared attention: *M* = 4.12, *SE* = .21; asynchronous co-attention: *M* = 4.05, *SE* = .18, *p* = .787, Figure 8).

Discussion

The results of Study 2 demonstrated that shared attention does not necessarily work as a scarcity cue, resulting in the rejection of hypothesis 2. However, the results of the post hoc analyses suggested an important consideration that must be mentioned with respect to interpreting this result. Specifically, scarcity measures appeared to have the unintended effect of manipulating perceptions of product scarcity, manifested by the significant

moderating effect of perceived scarcity on the relationship between social context conditions and the dependent measures. Specifically, when perceptions of product scarcity were low, participants who viewed the products under shared attention tended to exhibit more positive product attitudes than those who viewed the products alone ($p = .055$) and showed higher purchase intention than those who viewed the products with asynchronously with others. Surprisingly, counter to the prediction that shared attention leads to more positive attitudes toward and higher purchase intention of desirable products under high perceptions of product scarcity, participants in the shared attention condition indicated *less* positive product attitudes and *lower* purchase intention than those in the attending alone condition.

Overall, Study 2 demonstrated that the effects of shared attention on product attitudes and purchase intention are reversed as products are perceived to be scarcer. This finding was unexpected, and the reasons for it are as yet unclear. However, post hoc analysis of the mediating role of perceived similarity to co-viewers did suggest a possible explanation. While participants in the shared attention condition felt more similar to their co-viewers than those in the asynchronous co-attention condition when perceptions of product scarcity were low, the difference in perceived similarity to co-viewers became insignificant between the two conditions as perceptions of product scarcity increased; this is because participants in the shared attention condition felt less similar to their co-viewers as perceptions of product scarcity increased. In addition, Studies 1 and 2 consistently found that perceived similarity to co-viewers led to more positive product attitudes and higher purchase intention. Taken together, these findings suggest that the subtle cue of scarcity

(i.e., scarcity measures) may have induced a confusion within participants, particularly those under shared attention who were presented with two possibly conflicting messages. That is, participants in the shared attention condition were guided to establish a sense of "us" with their co-viewers but were then presented with a message that could undermine their sense of affinity with others. As such, it is reasonable to assume that the participants experienced goal conflict during the study, potentially resulting in less positive attitudes toward and lower purchase intention of products.

Study 3: Shared Attention on Scarcity Messages

This research initially proposed that shared attention will increase perceptions of scarcity when product scarcity is high and decrease perceptions of scarcity when product scarcity is low, compared to conditions with no shared attention (i.e., attending alone and asynchronous co-attention) (H3a). In addition, increased perceptions of scarcity were proposed as a mechanism by which shared attention leads to more positive product attitudes and higher purchase intention than the control conditions (H3b). However, the findings from Study 2 suggested contradictory evidence to these initial hypotheses, implying instead that shared attention impacts both product attitudes and purchase intention in the opposite direction. In addition, the results of Studies 1 and 2 suggested a possibility that decreased perceptions of similarity to co-viewers may underlie this process. In consideration of these results, a set of hypotheses were further developed. Specifically, hypothesis 4a states that shared attention leads to more positive evaluations of a desirable

product when product scarcity is low and less positive evaluations of a desirable product when product scarcity is high. In addition, hypothesis 4b relates to the process by which shared attention and product scarcity influence product evaluation. In particular, it states that decreased perceptions of similarity to co-viewers mediate the interaction effect of social context and product scarcity interaction on evaluations of a desirable product.

H4a: Under conditions of high product scarcity, shared attention (vs. attending alone and asynchronous co-attention) leads to less positive evaluations of a desirable product, whereas, under conditions of low product scarcity, shared attention (vs. attending alone and asynchronous co-attention) leads to more positive evaluations of a desirable product.

H4b: A mediated-moderation effect exists, such that perceptions of similarity to others mediate the negative relationship between shared attention/product scarcity interaction and evaluations of a desirable product.

Study 3 tested these alternative hypotheses (see Figure 9 for the alternative research model). The important change in Study 3 was the product scarcity manipulation; scarcity was manipulated by incorporating scarcity messages about limited product availability. Study 3 employed a 3 (social context: attending alone vs. asynchronous co-attention vs. shared attention) × 2 (product scarcity: low vs. high) between-subjects design.

Method

Participants. Power analysis using G*Power suggested a sample of 158 for ANOVA fixed effects (effect size f = 0.25, numerator df = 2, number of groups = 6, α = 0.05, 1 – β = .80). As in Study 2, more participants were recruited than required based on the power analysis for the same reason. A total of 456 participants (272 females, 179 males, 5 others, M_{age} = 36.88, SD_{age} = 11.71, range: 19 to 76) recruited via MTurk participated in this study in exchange for monetary compensation of $1.00. Participants reported their ethnicities as Caucasian (70.6%), Black or African American (12.9%), Hispanic or Latino (7.2%), Asian (7.0%), American Indian or Alaskan Native (0.4%), Native Hawaiian or other Pacific Islander (0.4%), or other (1.3%). Fourteen participants indicated a technical malfunction of loading the product webpages, hence were excluded from analysis.

Materials and procedure. Participants followed the general procedure of the shared attention paradigm. After reporting their baseline mood, participants were randomly assigned to one of the six experimental conditions: 3 (social context: attending alone vs. asynchronous co-attention vs. shared attention) × 2 (product scarcity: low vs. high). Subsequently, participants viewed three product webpages; in this study, the first two products served as a filler, and product scarcity manipulation was incorporated into the last product. Product scarcity conditions (low vs. high) were manipulated by stating different quantities of the remaining stocks of the product (Appendix H). In the low product scarcity condition, participants saw a product webpage with the message "Only 50 left!"; whereas

in the high product scarcity condition, participants viewed a product webpage with the message "Only 3 left!" (Kristofferson et al., 2016). Everything else in the stimuli was the same in two scarcity conditions and all measures were identical to those of Study 2.

Results

Preliminary analysis. A 3 (social context: attending alone vs. asynchronous co-attention vs. shared attention) × 2 (product scarcity: low vs. high) ANOVA on baseline mood yielded a significant interaction, $F(2, 436) = 3.22$, $p = .041$. Post-hoc pairwise comparisons revealed that participants differed in their baseline mood among three social context conditions within high product scarcity conditions. Specifically, participants in the asynchronous co-attention/high product scarcity condition ($M = 3.34$, $SE = 0.08$) were in a less positive mood than those in the attending alone/high product scarcity condition ($M = 3.62$, $SE = 0.08$, $p = .011$) and those in the shared attention/high product scarcity condition ($M = 3.58$, $SE = 0.08$, $p = .026$).

Manipulation check. A 3 (social context: attending alone vs. asynchronous co-attention vs. shared attention) × 2 (product scarcity: low vs. high) ANCOVA on perceived scarcity ($\alpha = .812$; item-item correlation = .684) was conducted, controlling for baseline mood. Baseline mood was mean-centered prior to analysis.[12] The results indicated that the product scarcity manipulation was successful. Participants in the high product scarcity

[12] Baseline mood was mean-centered before entering all analyses associated with this study.

conditions indicated higher levels of perceived scarcity than those in the low product scarcity conditions across the three social context conditions (all *p*'s < .021, Table 15).

Subsequently, a 2 (social context: asynchronous co-attention vs. shared attention) × 2 (product scarcity: low vs. high) ANCOVA was conducted with baseline mood as a covariate to test whether participants in the shared attention condition felt more similar to their co-viewers than those in the asynchronous co-attention condition. The results revealed that participants in the shared attention (vs. asynchronous co-attention) condition did not feel more similar to their co-viewers across the two product scarcity conditions (all *p*'s > .106). However, social context manipulation was assumed to be successful for the following reasons. First, Study 2 revealed that perceptions of scarcity can undermine the extent to which participants feel similar to their co-viewers under shared attention. Because the item measuring perceptions of similarity was presented after both social context and scarcity manipulations, it is conceivable that the null difference can be attributable to product scarcity manipulation. Furthermore, the effectiveness of social context manipulation was confirmed in Studies 1 and 2. Hence, it was assumed that social context manipulation was successful.

Evaluations of desirable products. Hypothesis 4a states that shared attention (vs. attending alone and asynchronous co-attention) leads to less positive evaluations (i.e., product attitudes and purchase intention) of a desirable product when product scarcity is high, and more positive evaluations of a desirable product when product scarcity is low. A moderation analysis (PROCESS Model 1 with 10,000 samples) was conducted to test this alternative hypothesis, controlling for baseline mood.

Product attitudes. Two contrasts (1, 1, –2; –1, 1, 0) were used to examine the interaction effect of social context and product scarcity on product attitudes (α = .943; all item-item correlations > .720). The interaction between the first contrast (1, 1, –2) and product scarcity was not significant (*b* = .09, *SE* = .10, *t*(435) = .88, *p* = .381). Also, the interaction between the second contrast (–1, 1, 0) and product scarcity was not significant (*b* = –.13, *SE* = .17, *t*(435) = –.74, *p* = .459, see Table 16 and Figure 10).

Purchase intention. The same procedure was used to test the interaction effect of social context and product scarcity on purchase intention. The results indicated that the interaction between the first contrast (1, 1, –2) and product scarcity was not significant (*b* = .19, *SE* = .12, *t*(435) = 1.53, *p* = .126). In addition, the interaction between the second contrast (–1, 1, 0) and product scarcity was not significant (*b* = –.04, *SE* = .22, *t*(435) = –.19, *p* = .847, see Table 17 and Figure 11).

Mediating role of perceived similarity. The second alternative hypothesis, hypothesis 4b, states that perceptions of similarity to co-viewers mediate the effect of social context conditions and product scarcity on evaluations of a desirable product. To test this hypothesis, moderated-mediation analyses were conducted (PROCESS Model 7 with 10,000 samples, contrast –1, 1) with baseline mood as a covariate.

Product attitudes. Perceived similarity to co-viewers did not mediate the effect of conditions (asynchronous co-attention vs. shared attention) and product scarcity on product attitudes (index of moderated mediation = –.0709, *SE* = .0637, 95% CI: [–.2075, .0476]). Also, the interaction effect of social context and product scarcity on perceptions of similarity to co-viewers was not significant (*b* = –.31, *SE* = .27, *t*(287) = –1.17, *p* = .241).

However, the results suggested that perceived similarity to co-viewers did lead to more positive attitudes toward the desirable product (b = .23, SE = .08, t(288) = 2.93, p = .004).

Purchase intention. Similarly, perceived similarity to co-viewers did not mediate the interaction effect of social context and product scarcity on purchase intention (index of moderated mediation = –.1257, SE = .1083, 95% CI: [–.3538, .0821]). However, the direct effect of perceived similarity to co-viewers on purchase intention was significant (b = .40, SE = .09, t(288) = 4.23, p < .001).

Discussion

Study 3 examined the relationship between social context and product scarcity by manipulating product scarcity. The effects of social context (attending alone vs. asynchronous co-attention vs. shared attention) on product attitudes and purchase intention did not differ across product scarcity conditions (low vs. high). The mediating role of perceptions of similarity to others was not supported either; however, in all three studies, the positive main effects of perceived similarity to co-viewers on product attitudes and purchase intention were consistently demonstrated.

Overall, the results from Study 3 did not provide evidence to support hypotheses 4a and 4b. This might appear to be discouraging; however, simply concluding that the findings from Study 3 were insignificant could be somewhat off the mark. For example, in terms of the null results in the low product scarcity condition, the results may be partially explained by the effectiveness of product scarcity manipulation. Although participants in

the low- and high-product scarcity conditions indicated a significant difference in their perceptions of scarcity, the marginal mean of perceived scarcity in the low product scarcity conditions, averaged across the three social context conditions, was slightly above the neutral point of 4.[13] As such, the medium level of product scarcity was possibly manipulated. Another possibility relates to the social aspect of this study. This study was introduced as an "online focus group" and also involved social context manipulations. This social attribute of the study could have enhanced perceptions of scarcity in the experimental conditions.

[13] Higher scores on the measure indicate high product scarcity.

CHAPTER 5:
GENERAL DISCUSSION

The notion that collective attention is consequential for basic human processes has recently spawned a great deal of interest among researchers. With a decade of shared attention research, scholars have documented the vital role of shared attention in the collective formation of values, beliefs, and judgments regarding a wide range of objects, topics, or issues (Shteynberg, 2018). Extending this line of research, this dissertation examined how shared attention impacts product evaluation.

First, Study 1 established the primary role of shared attention in product evaluation by demonstrating that concurrent viewing of products with others leads to more positive evaluations of desirable products compared to the conditions with no shared attention. Specifically, participants who viewed the products under shared attention exhibited more positive product attitudes than those who viewed the products alone and those who viewed the products *non*-simultaneously with others. Furthermore, shared attention led to higher intentions to purchase the co-attended products than when participants viewed the products solitarily or asynchronously with others. In all, Study 1 results resonated with the previous literature suggesting that perceptions of synchronous co-attention amplify the psychological impact of the target object (Shteynberg et al., 2014; Shteynberg et al., 2016).

Beyond replicating the primary effect of shared attention in previous research, this dissertation demonstrated that shared attention can play a different role in the presence of scarcity. Initially, it was predicted that shared attention and scarcity function in a congruent direction, both leading to more positive attitudes toward and increased purchase intention

of desirable products. Contrary to this prediction, the results revealed an unexpected and surprising possibility that shared attention and scarcity may conflict with each other, resulting in *less* positive product attitudes and *lower* purchase intentions. Particularly, Study 2 demonstrated that the effect of shared attention on product evaluation is reversed as perceptions of product scarcity increase. When perceived scarcity of products was low, participants who viewed the products under shared attention indicated more positive attitudes toward the products than those who viewed the products alone. In addition, shared attention (vs. asynchronous co-attention) increased purchase intention of the products when perceptions of scarcity were low. However, when perceived scarcity of products was high, participants who viewed the products under shared attention exhibited less positive product attitudes and lower purchase intentions than those who attended to the products alone.

While these findings are seemingly contradictory to current theorizing, they do not diverge from the propositions of shared attention theory. Consistent with the findings in the existing research, shared attention led to more positive product attitudes (vs. attending alone) and higher purchase intention (vs. asynchronous co-attention) when perceived scarcity was low; however, it was when perceived scarcity was high that the effect of shared attention on product evaluation was reversed. Given the connection between scarcity and competition mindset (Aggarwal et al., 2011; Nichols, 2012), it is possible that a reminder of scarcity (i.e., scarcity measures) was perceived to be inconsistent with a sense of affinity established by shared attention manipulation. If so, these contradicting messages would have induced goal conflict within the participants, resulting in less

positive evaluations of products. Relatedly, recent work suggests that people may adopt a mindset that leads them to approach an issue from opposing perspectives when faced with conflicting goals (Kleiman & Hassin, 2013). In this sense, being presented with inconsistent messages might have led participants to speculate on the situational interpersonal connection formed with their co-viewers. In support of this account, the post hoc findings from Study 2 revealed that participants' perceptions toward the co-viewers differed across perceived scarcity levels. Specifically, participants who viewed the products under shared attention (vs. asynchronous co-attention) felt less similar to their co-viewers as perceptions of scarcity increased. Taking these considerations into account, participants' goal conflicts could be one possible explanation to understand the findings from this dissertation.

In addition, the results of three studies suggested that the initially proposed mechanism—increased perceptions of scarcity—is unlikely to underlie the process by which shared attention enhances product evaluation. However, this dissertation found perceptions of similarity to others to be a feasible mechanism by which shared attention affects product evaluation. Notably, the findings from Studies 1 and 2 suggested that perceptions of similarity are likely to mediate the effect of shared attention on product evaluation. In Study 1, although the mediation analysis result was not significant, shared attention increased perceived similarity to co-viewers, and perceived similarity to co-viewers led to more positive attitudes toward and increased purchase intention of the products. Mirroring this result, Study 2 demonstrated that shared attention leads to more

positive product attitudes and purchase intentions through increased perceived similarity to others when perceptions of scarcity were low.

Practical Implications

This dissertation provides several practical implications for retailers. First, this dissertation underscores the importance of social context in which consumers view products. Specifically, participants indicated more positive attitudes toward and greater intentions to purchase the products when they viewed those under shared attention than when they viewed those alone or asynchronously with others. These results suggest that retailers may benefit from creating an environment that fosters shared attention.

While shared attention can lead to positive consequences for retailers, this dissertation also provides evidence that shared attention may lead to negative outcomes in certain circumstances. When perceived scarcity was high, shared attention (vs. attending alone) led to less positive product attitudes and decreased purchase intentions. In the marketplace, there are increasing instances in which retailers incorporate concurrent viewing information and scarcity information at the same time. For example, online stores present information such as "80 people are viewing this product" while stating the number of remaining stock items (e.g., "only a few left!") or during a sales period when consumers are highly likely to acknowledge that the stock is limited. However, the results of this dissertation suggest that these two information elements may conflict with each other, thereby having detrimental impacts on product attitudes and purchase intentions. As the

possible conflict between shared attention and scarcity can undermine retailers' efforts to promoting products, retailers may be well advised to consider interdependencies between shared attention and scarcity when designing marketing communication materials. For example, incorporating cues that evoke a sense of shared attention may not be compatible with flash-sale websites (e.g., Gilt) or hotel- and flight-booking websites (e.g., Expedia) that sell products or services that are very limited in availability. However, for other online stores, selectively incorporating each strategy between the shared attention and scarcity cues can generate positive retail outcomes.

The findings of this dissertation are applicable to more than just online stores. Technology has facilitated the experience of shared attention by enabling it to occur more frequently and on a larger scale, especially across various social media platforms and broadcast media (Lin, Keegan, Margolin, & Lazer, 2014; Wu & Huberman, 2007). In such an environment, consumers are likely to be aware of concurrent viewership even without explicit information about simultaneous viewers (Shteynberg et al., 2016). According to the findings of this dissertation, promoting products on social media platforms may lead to more positive product attitudes and increased purchase intentions as long as high scarcity information is not provided together. Also, corroborating the findings in the previous research, this dissertation demonstrated that shared attention can be evoked by synchronously attending to products with situational social groups that have a minimal basis for affinity (e.g., anonymous online experiments) (Shteynberg & Apfelbaum, 2013; Tajfel, 1970). Hence, the stronger effect of shared attention is likely on social media platforms where users are more likely to feel connected to each other.

Limitations and Future Directions

While this dissertation provides initial evidence toward understanding how shared attention influences product evaluation, it has several limitations that could be improved in future investigations of this topic. One important methodological limitation was the scarcity manipulation; specifically, Study 2 intended to examine the hypothesis that shared attention functions as a scarcity cue by rendering the scarce nature of a product salient. However, the results of post hoc analysis revealed that measures included to explore this hypothesis had, in fact, manipulated scarcity. That is, in Study 2, participants viewed stimuli that did not have an explicit cue about scarcity (e.g., information about remaining stocks). Therefore, the presence of scarcity measures could have been somewhat unexpected and might have led the participants to speculate on the concept of scarcity. In addition, in Study 3, the marginal mean of perceived scarcity in low scarcity conditions was slightly above the neutral point of 4 on a 7-point scale. Concerning these results, it is possible that a medium level of scarcity was manipulated instead of a low level of scarcity; further, the social aspect of the study (i.e., online focus group) could have increased perceptions of scarcity in all experimental conditions. Hence, better testing of the relationship between shared attention and scarcity could be facilitated by employing different scarcity manipulations.

Importantly, an unresolved question is the underlying mechanisms through which shared attention leads to less positive product attitudes and lower purchase intentions when the availability of products is scarce. Although this dissertation suggests that decreased

perceptions of similarity to others may account for the results, it is important to note that this is not the sole reason for shared attention leading to less positive product evaluations. Because perceptions of similarity to the co-viewers can be experienced only if there is a co-viewer, further investigation is required to understand the whole picture, especially why participants indicated less positive product attitudes and lower purchase intentions under shared attention than when they viewed the products alone. In addition, the findings from Study 1 suggested the possibility that more positive evaluations of desirable products in the shared attention (vs. asynchronous co-attention) condition were attributable to participants' attitudinal conformity to the imagined attitudes of others. As this dissertation offers inconclusive results, further work is needed to confirm the effect of shared attention on product evaluation.

Finally, future research could test the ideas of this dissertation with different types of products to generalize the findings. As this dissertation was an initial attempt to explore the role of shared attention in product evaluation, mundane products with basic design features were used to minimize the potential influence of personal preferences that might confound the results when using products with unique design features or those that cater to specific consumer segments. However, further investigations are needed to provide converging evidence to generalize the findings of this dissertation. For example, the effect of shared attention could be different for products that are unfamiliar to consumers, such as "really new products" (Gregan-Paxton & John, 1997; Hoeffler, 2003). The shared attention effect may be stronger for such products than for mundane products because consumers may not have preexisting attitudes toward them, unlike the products that were used in this

dissertation. Overall, researchers should continue exploring the role of shared attention in product evaluation.

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APPENDICES

Appendix A: Tables

Table 1. Correlations Between Measures of Product Attitudes Index for Baseball Cap (Pretest)

	1	2	3	4
1. Liking	–			
2. Attractive	.84	–		
3. Likeable	.79	.86	–	
4. Favorable	.86	.91	.92	–

Note. $n = 80$. All coefficients are significant at $p < .01$.

Table 2. Correlations Between Measures of Product Attitudes Index for Hoodie (Pretest)

	1	2	3	4
1. Liking	–			
2. Attractive	.75	–		
3. Likeable	.84	.76	–	
4. Favorable	.83	.71	.81	–

Note. $n = 80$. All coefficients are significant at $p < .01$.

Table 3. Correlations Between Measures of Product Attitudes Index for Journal A (Pretest)

	1	2	3	4
1. Liking	–			
2. Attractive	.83	–		
3. Likeable	.72	.80	–	
4. Favorable	.82	.91	.91	–

Note. $n = 80$. All coefficients are significant at $p < .01$.

Table 4. Correlations Between Measures of Product Attitudes Index for Journal B (Pretest)

	1	2	3	4
1. Liking	–			
2. Attractive	.72	–		
3. Likeable	.77	.89	–	
4. Favorable	.79	.80	.81	–

Note. $n = 80$. All coefficients are significant at $p < .01$.

Table 5. Correlations Between Measures of Product Attitudes Index for Travel Mug A (Pretest)

	1	2	3	4
1. Liking	–			
2. Attractive	.82	–		
3. Likeable	.86	.87	–	
4. Favorable	.86	.75	.90	–

Note. $n = 80$. All coefficients are significant at $p < .01$.

Table 6. Correlations Between Measures of Product Attitudes Index for Travel Mug B (Pretest)

	1	2	3	4
1. Liking	–			
2. Attractive	.86	–		
3. Likeable	.92	.90	–	
4. Favorable	.90	.86	.95	–

Note. $n = 80$. All coefficients are significant at $p < .01$.

Table 7. Correlations Between Measures of Product Attitudes Index for Bluetooth Speaker (Pretest)

	1	2	3	4
1. Liking	–			
2. Attractive	.72	–		
3. Likeable	.81	.83	–	
4. Favorable	.80	.86	.89	–

Note. $n = 80$. All coefficients are significant at $p < .01$.

Table 8. Correlations Between Measures of Product Attitudes Index for Bluetooth Earphones (Pretest)

	1	2	3	4
1. Liking	–			
2. Attractive	.79	–		
3. Likeable	.85	.85	–	
4. Favorable	.91	.85	.91	–

Note. $n = 80$. All coefficients are significant at $p < .01$.

Table 9. Descriptive Statistics and Reliabilities for Product Attitudes Index for All Products (Pretest)

Product	Product Attitudes Index		
	M	*SD*	α
Baseball Cap	3.49	1.83	.96
Hoodie	4.70	1.32	.94
Journal A	4.71	1.47	.95
Journal B	4.61	1.50	.94
Travel Mug A	5.00	1.38	.95
Travel Mug B	4.91	1.73	.97
Bluetooth Speaker	4.88	1.42	.95
Bluetooth Earphones	4.48	1.69	.96

Note. $n = 80$.

Table 10. Summary of Demographic Information

Demographics	Study 1 (n = 181)		Study 2 (n = 265)		Study 3 (n = 456)	
	M (*SD*)	Frequency (%)	*M* (*SD*)	Frequency (%)	*M* (*SD*)	Frequency (%)
Age	35.17 (9.74)		37.73 (10.82)		36.88 (11.71)	
Gender						
Male		90 (49.7%)		119 (44.9%)		179 (39.3%)
Female		90 (49.7%)		146 (55.1%)		272 (59.6%)
Other		1 (0.6%)		0 (0.0%)		5 (1.1%)
Ethnicity						
American Indian or Alaska Native		1 (0.6%)		0 (0.0%)		2 (0.4%)
Asian		11 (6.1%)		14 (5.3%)		32 (7.0%)
Black or African American		25 (13.8%)		22 (8.3%)		59 (12.9%)
Caucasian or White		126 (69.6%)		211 (79.6%)		322 (70.6%)
Hispanic or Latino		15 (8.3%)		16 (6.0%)		33 (7.2%)
Native Hawaiian or Other Pacific Islander		0 (0.0%)		0 (0.0%)		2 (0.4%)
Other		3 (1.7%)		2 (0.8%)		6 (1.3%)

Table 11. Differences for Product Attitudes Between Social Context Conditions (Study 1)

	Attending Alone (1)		Asynchronous Co-attention (2)		Shared Attention (3)				
Measure	*M*	*SD*	*M*	*SD*	*M*	*SD*	*t*	*p*	Contrast
Product Attitudes	4.89	.74	4.76	.96	5.08	1.01	1.65	.051	1 = 2 < 3
							–.78	.219	1 = 2

Note. The numbers in the parentheses in column heads refer to the numbers used for illustrating hypothesized differences in the "Contrast" column.

Table 12. Differences for Purchase Intention Between Social Context Conditions (Study 1)

	Attending Alone (1)		Asynchronous Co-attention (2)		Shared Attention (3)				
Measure	*M*	*SD*	*M*	*SD*	*M*	*SD*	*t*	*p*	Contrast
Purchase Intention	4.15	1.04	4.07	1.14	4.54	1.18	2.39	.009	1 = 2 < 3
							–.38	.353	1 = 2

Note. The numbers in the parentheses in column heads refer to the numbers used for illustrating hypothesized differences in the "Contrast" column.

Table 13. Moderated Linear Regression for the Interaction Effect of Social Context and Perceived Scarcity on Product Attitudes (Study 2)

	b	*SE*	*t*	*p*
Contrast 1	.03	.13	.24	.812
Contrast 2	.06	–.13	.43	.665
Perceived Scarcity	–.21	.09	–2.27	.024
Contrast 1 × Perceived Scarcity	.27	.12	2.19	.029
Contrast 2 × Perceived Scarcity	.13	.12	1.05	.296

Note. Contrast 1 (1, 0, 0): attending alone versus shared attention. Contrast 2 (0, 1, 0): asynchronous co-attention versus shared attention. $R^2 = .03$, $F(5, 249) = 1.41$, $p = .220$. Perceived scarcity was mean-centered prior to analysis.

Table 14. Moderated Linear Regression for the Interaction Effect of Social Context and Perceived Scarcity on Purchase Intention (Study 2)

	b	*SE*	*t*	*p*
Contrast 1	.07	.18	.41	.685
Contrast 2	–.14	.18	–.77	.440
Perceived Scarcity	–.29	.13	–2.21	.028
Contrast 1 × Perceived Scarcity	.36	.17	2.08	.038
Contrast 2 × Perceived Scarcity	.34	.17	2.01	.046

Note. Contrast 1 (1, 0, 0): attending alone versus shared attention. Contrast 2 (0, 1, 0): asynchronous co-attention versus shared attention. $R^2 = .03$, $F(5, 249) = 1.34$, $p = .247$. Perceived scarcity was mean-centered prior to analysis.

Table 15. Differences for Perceived Scarcity Between Conditions (Study 3)

	Product Scarcity					
	Low		High			
Social Context	*M*	*SE*	*M*	*SE*	$F(1, 435)$	*p*
Attending Alone	3.89	.18	4.63	.18	8.61	.004
Asynchronous Co-attention	4.39	.19	5.11	.18	7.92	.005
Shared Attention	4.08	.18	4.66	.18	5.35	.021

Note. Main effect of product scarcity: $F(1, 435) = 21.78$, $p < .001$. All means are adjusted for the covariate (baseline $\text{mood}_{\text{mean-centered}} = 0$).

Table 16. Moderated Linear Regression for the Interaction Effect of Social Context and Product Scarcity on Product Attitudes (Study 3)

	b	*SE*	*t*	*p*
Contrast 1	.01	.07	.13	.900
Contrast 2	.02	.12	.19	.853
Product Scarcity	–.04	.14	–.26	.792
Contrast 1 × Product Scarcity	.09	.10	.88	.381
Contrast 2 × Product Scarcity	–.13	.17	–.74	.459
Baseline mood	.23	.10	2.31	.022

Note. Contrast 1 (1, 1, –2): attending alone and asynchronous co-attention versus shared attention. Contrast 2 (–1, 1, 0): attending alone versus asynchronous co-attention. $R^2 = .14$, $F(6, 435) = 1.40$, $p = .213$. Baseline mood was mean-centered before entering analysis.

Table 17. Moderated Linear Regression for the Interaction Effect of Social Context and Product Scarcity on Purchase Intention (Study 3)

	b	*SE*	*t*	*p*
Contrast 1	–.06	.09	–.69	.489
Contrast 2	.11	.15	.73	.468
Product Scarcity	.09	.18	.51	.613
Contrast 1 × Product Scarcity	.17	.12	1.53	.126
Contrast 2 × Product Scarcity	–.04	.22	–.19	.847
Baseline Mood	.44	.13	3.39	.001

Note. Contrast 1 (1, 1, –2): attending alone and asynchronous co-attention versus shared attention. Contrast 2 (–1, 1, 0): attending alone versus asynchronous co-attention. $R^2 = .18$, $F(6, 435) = 2.47$, $p = .023$. Baseline mood was mean-centered before entering analysis.

Appendix B: Figures

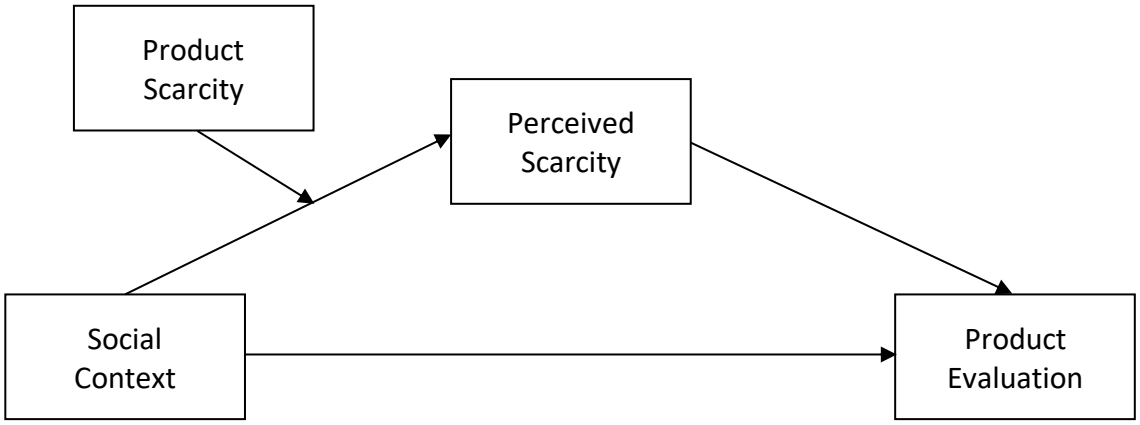
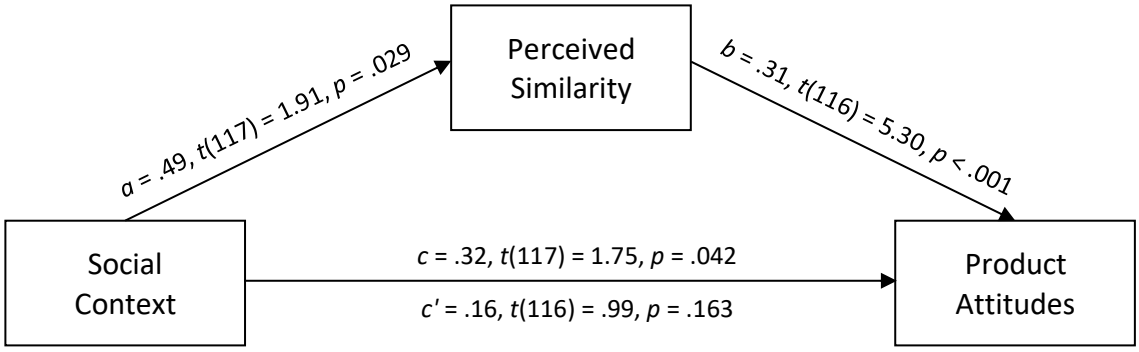


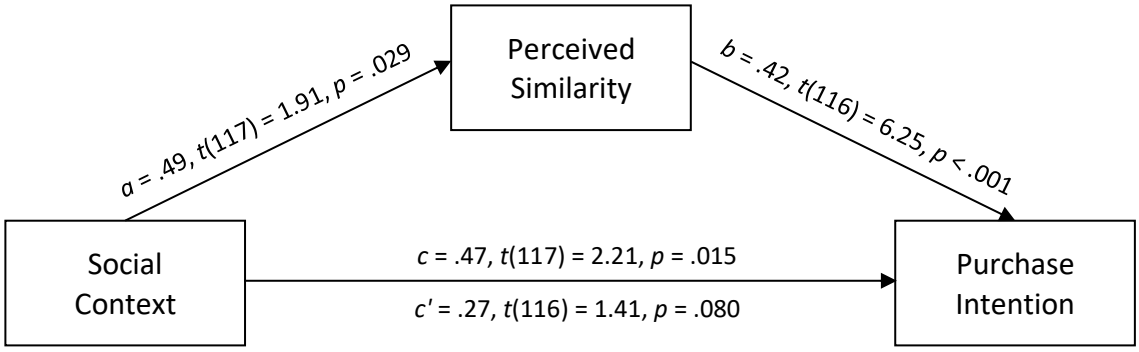
Figure 1. Overall Research Model



Indirect mediation effect = .1523, *SE* = .0861, 95% CI: [–.0045, .3354]

Note. *c*: total effect of social context (–1, 1) on product attitudes. *c'*: direct effect of social context (–1, 1) on product attitudes.

Figure 2. Mediation Model of Social Context (Asynchronous Co-attention versus Shared Attention) Predicting Product Attitudes Through Perceived Similarity to Co-viewers (Study 1)



Indirect mediation effect = .2046, *SE* = .1078, 95% CI: [–.0024, .4200]

Note. *c*: total effect of social context (–1, 1) on purchase intention. *c'*: direct effect of social context (–1, 1) on purchase intention.

Figure 3. Mediation Model of Social Context (Asynchronous Co-attention versus Shared Attention) Predicting Purchase Intention Through Perceived Similarity to Co-viewers (Study 1)

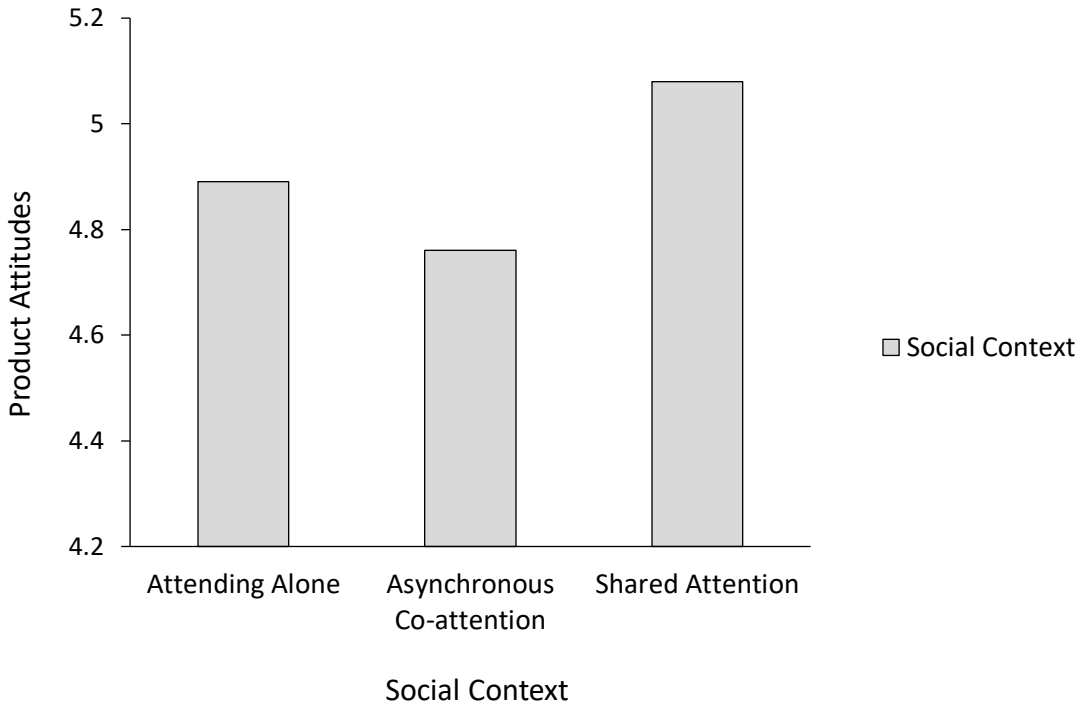


Figure 4. Product Attitudes by Social Context Conditions (Study 1)

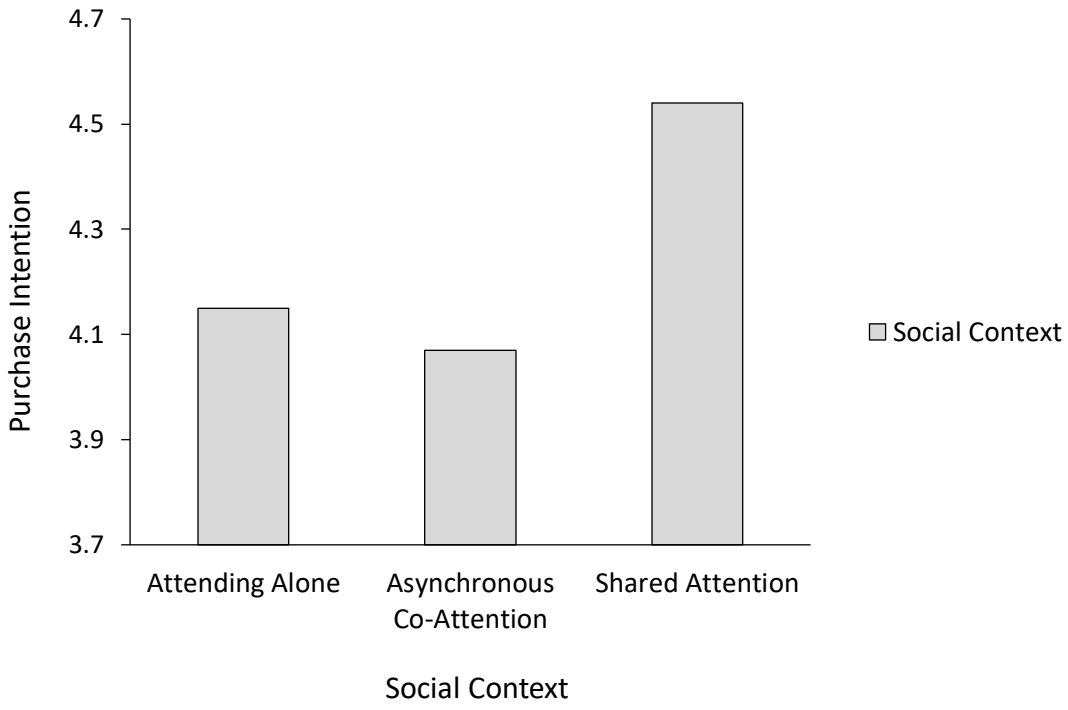


Figure 5. Purchase Intention by Social Context Conditions (Study 1)

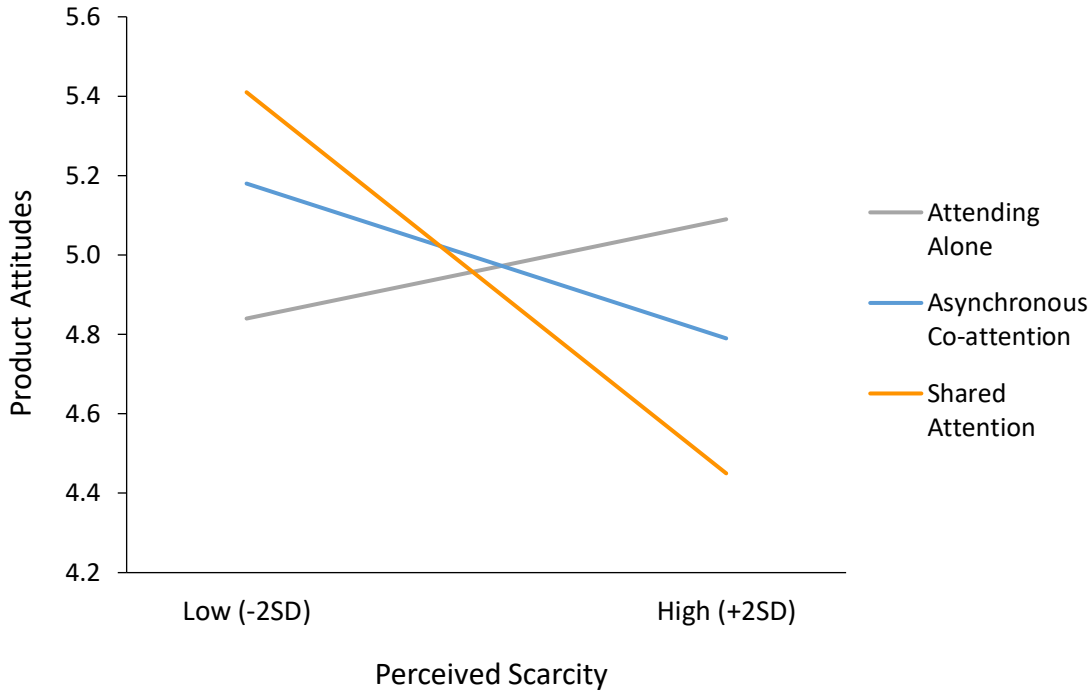


Figure 6. Product Attitudes by Social Context and Perceived Scarcity (Study 2)

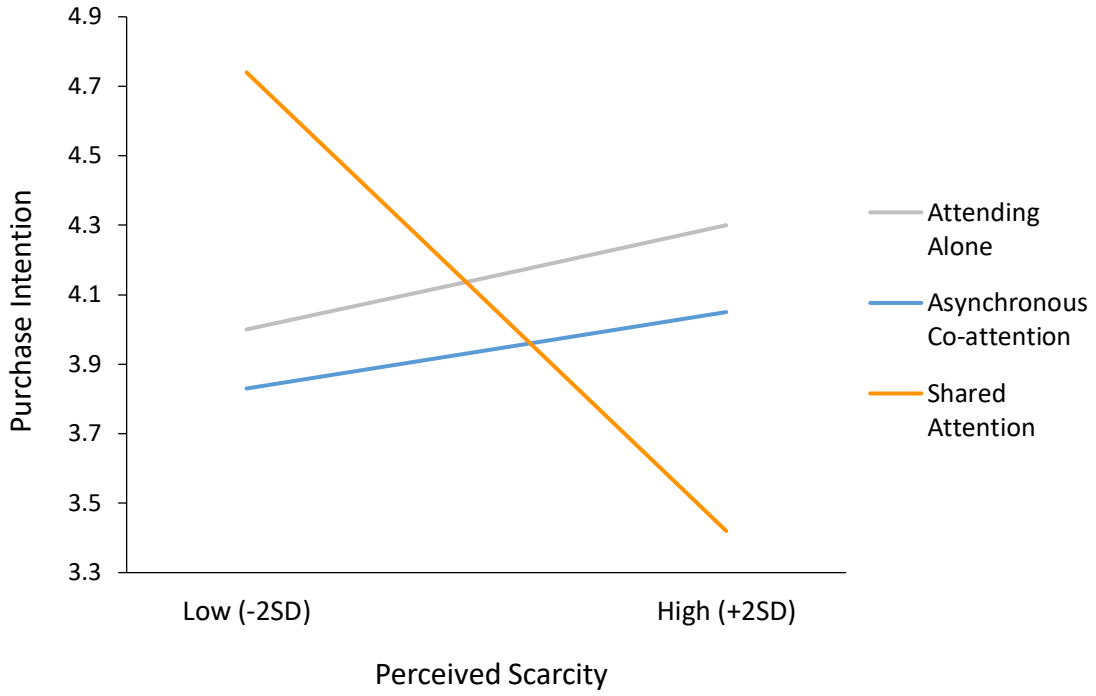


Figure 7. Purchase Intention by Social Context and Perceived Scarcity (Study 2)

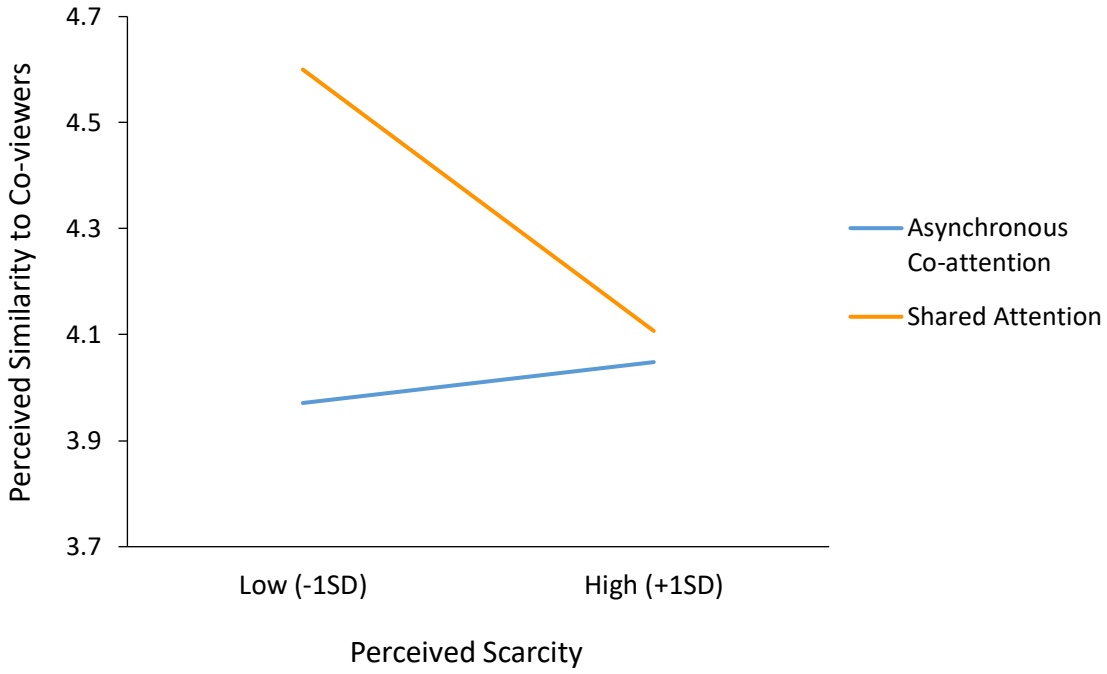


Figure 8. Perceived Similarity to Co-viewers by Social Context and Perceived Scarcity (Study 2)

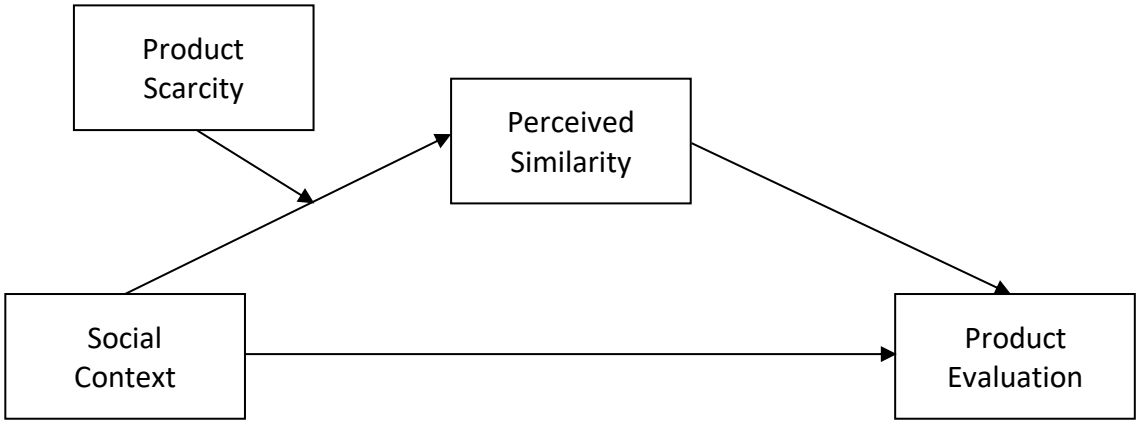
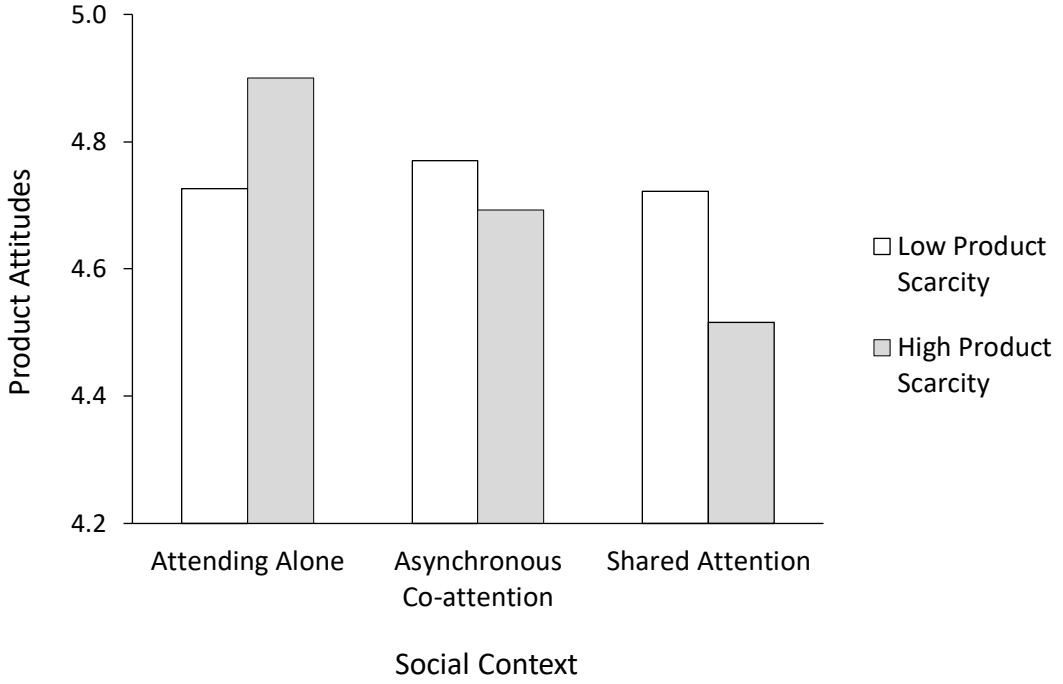
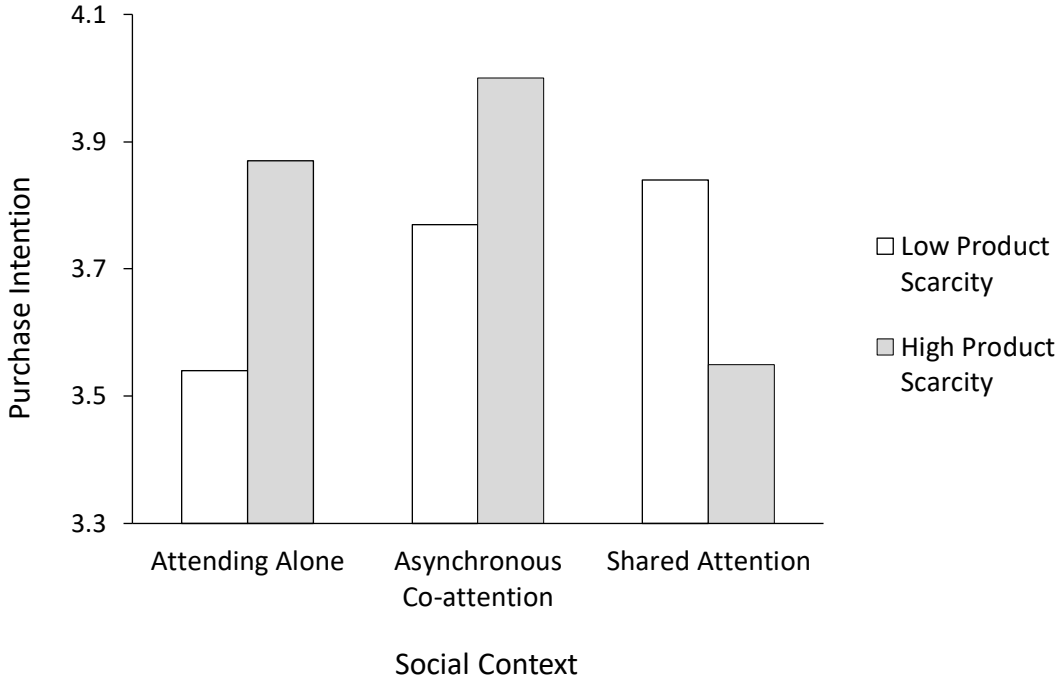


Figure 9. Alternative Research Model (Study 3)



Note. All means are adjusted for the covariate (baseline $mood_{mean\text{-}centered} = 0$).

Figure 10. Product Attitudes by Social Context and Product Scarcity (Study 3)



Note. All means are adjusted for the covariate (baseline $mood_{mean\text{-}centered} = 0$).

Figure 11. Purchase Intention by Social Context and Product Scarcity (Study 3)

Appendix C: Animal Avatars (Studies 1, 2, 3)

Avatar choice at the beginning of the experiment (adapted from Shteynberg & Apfelbaum, 2013, p. 6):

TO ENTER THE ONLINE FOCUS GROUP, PLEASE CHOOSE AN ANIMAL TO REPRESENT YOURSELF.

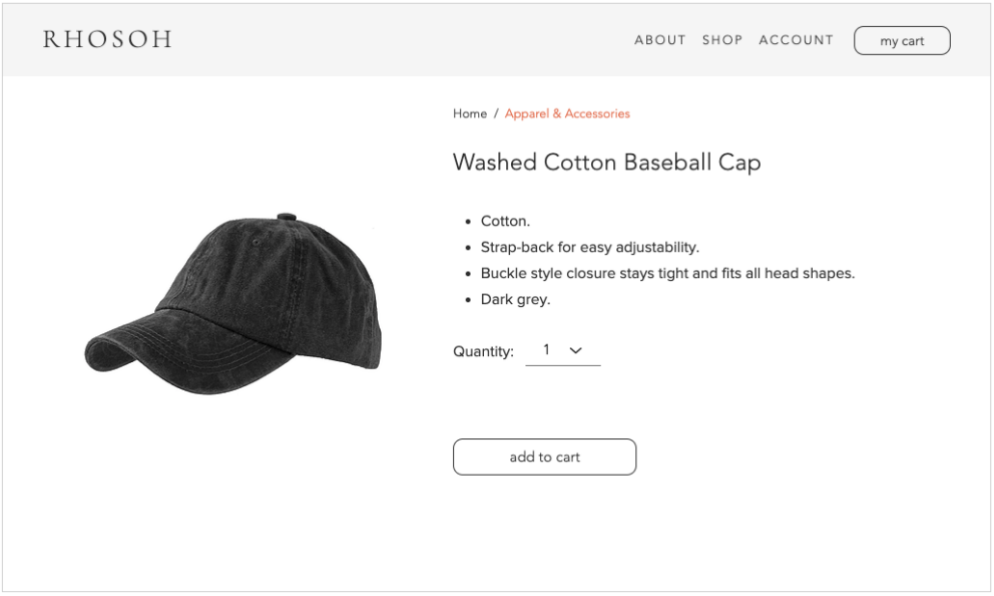
After making your choice, click the NEXT button to continue.



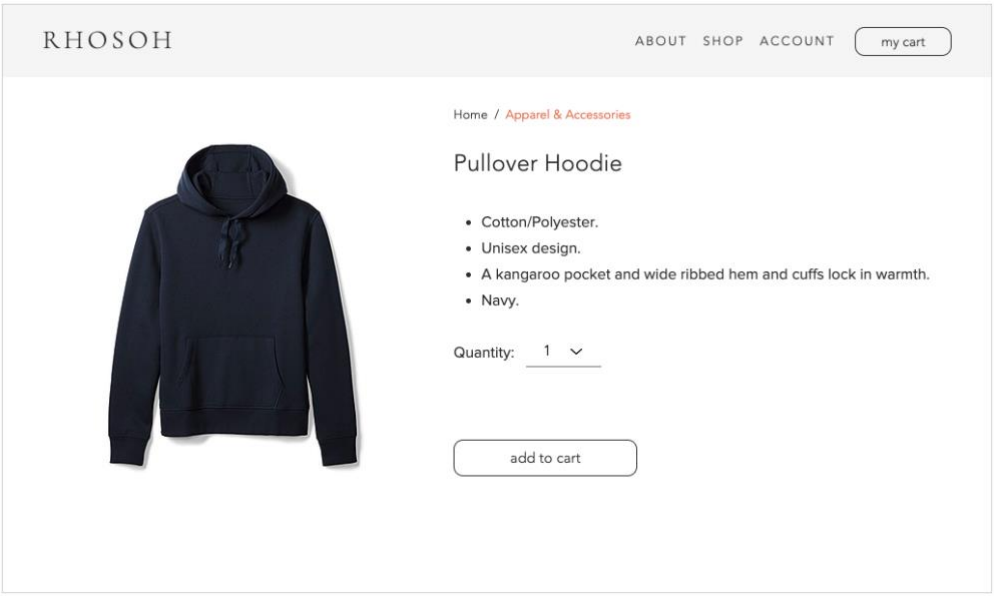
Owl1 Owl2 Owl3 Koala1 Koala2 Koala3 Elephant1 Elephant2 Elephant3

Appendix D: Product Webpages (Pretest, Studies 1, 2, and 3)

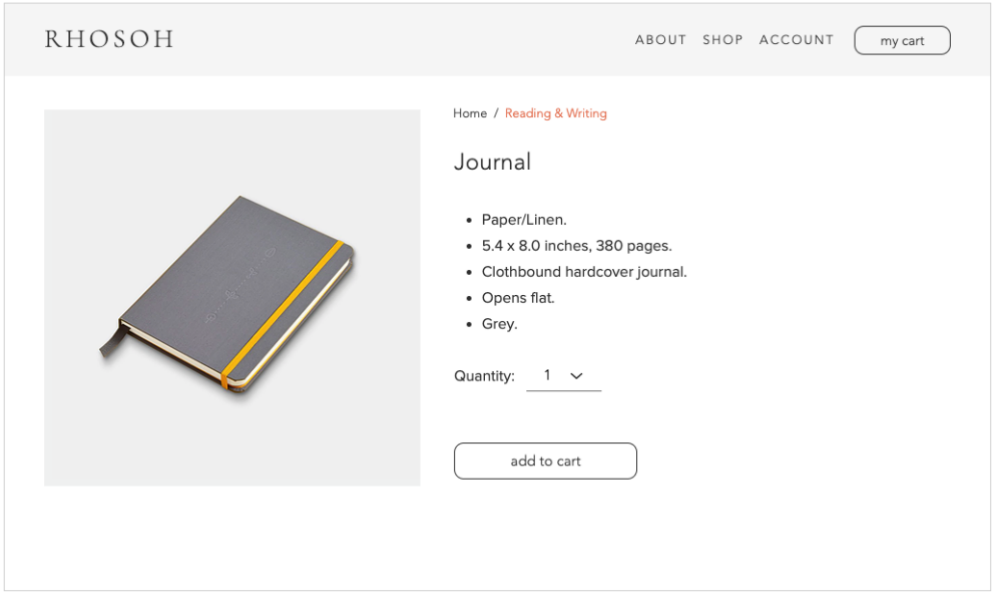
Baseball Cap (Pretest)



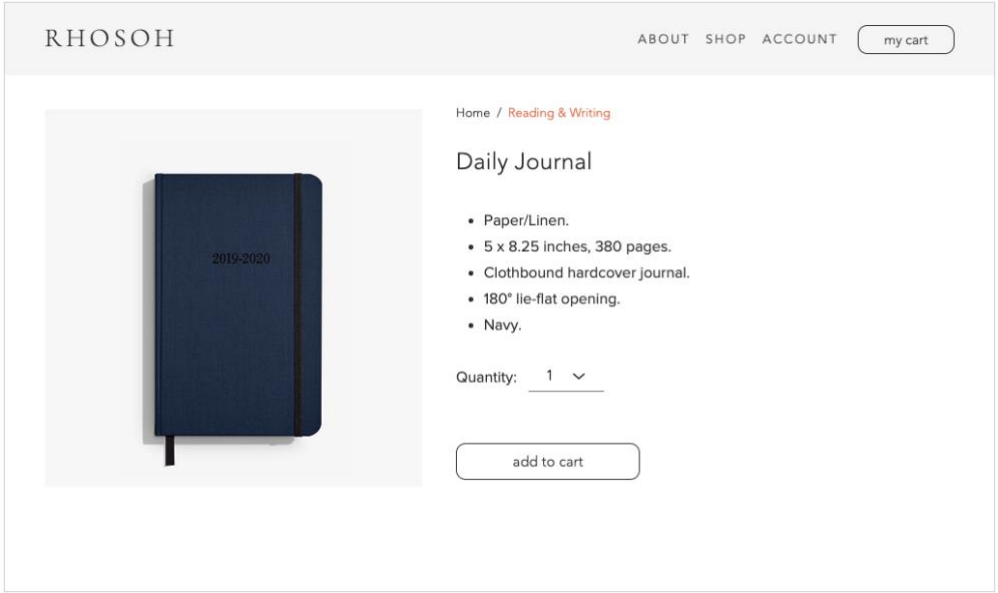
Hoodie (Pretest, Studies 1, 2, and 3)



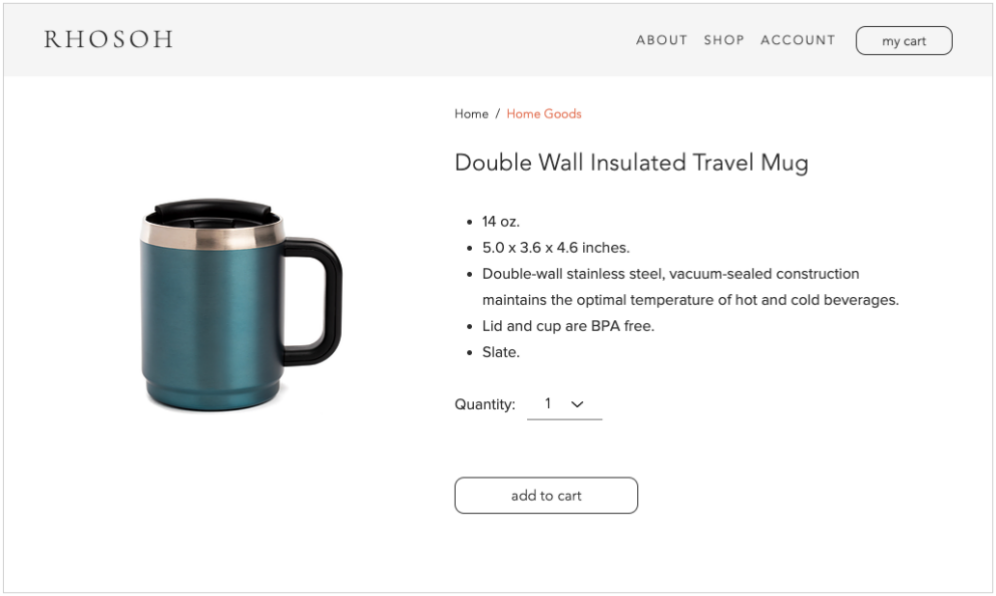
Journal A (Pretest, Studies 1, 2, and 3)



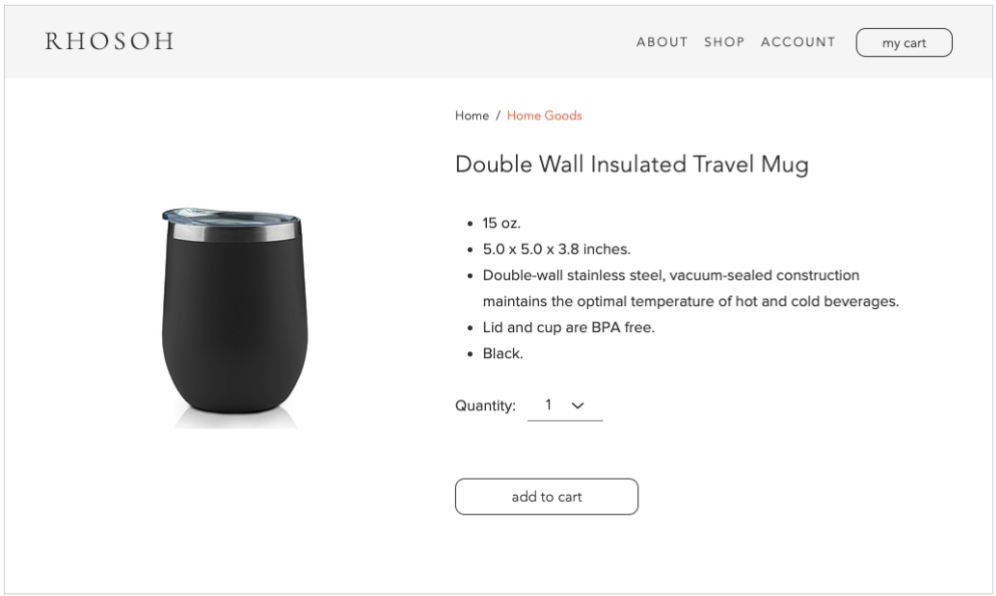
Journal B (Pretest)



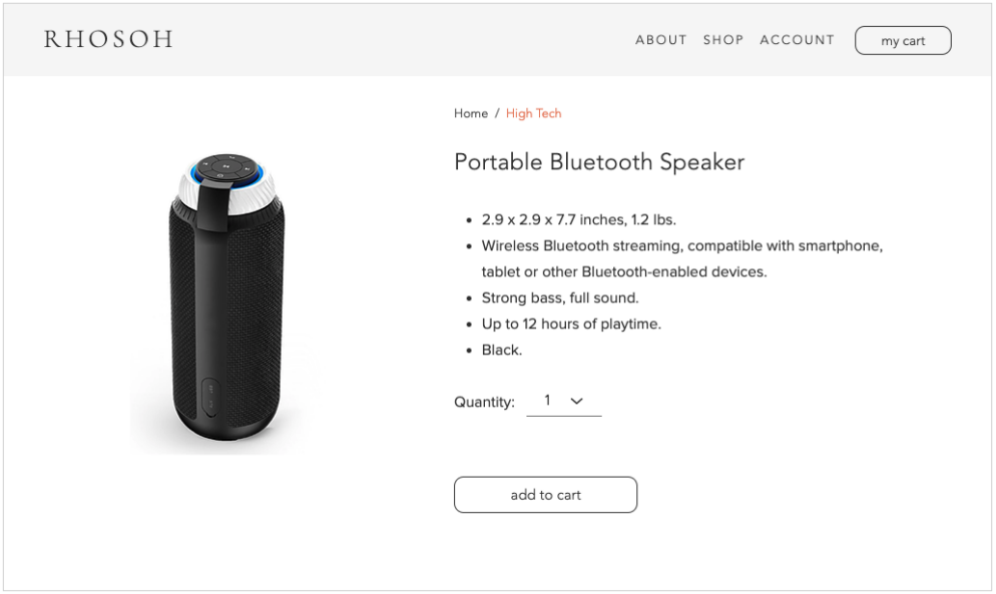
Travel Mug A (Pretest)



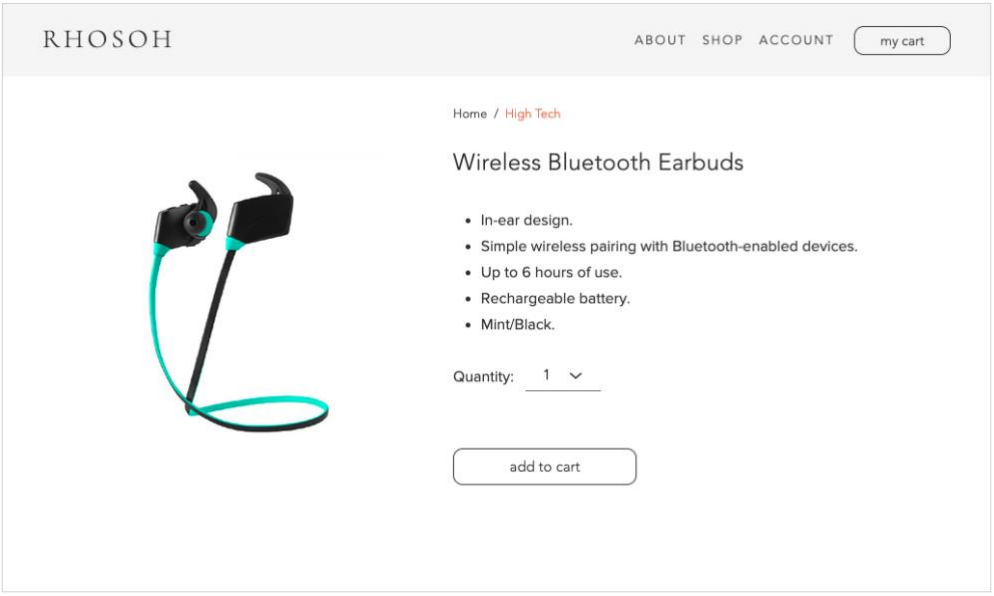
Travel Mug B (Pretest)



Bluetooth Speaker (Pretest)



Bluetooth Earphones (Pretest, Studies 1, 2, and 3)



Appendix E: Questions Regarding Products

To what extent do you like the product? (adapted from Shteynberg, Hirsh, Apfelbaum, et al., 2014)

Not at all 1	2	3	Neutral 4	5	6	Very much 7
❍	❍	❍	❍	❍	❍	❍

Please rate the product on the following scales. (adapted from Berger & Fitzsimons, 2008 and Lasaleta et al., 2014)

	Not at all 1	2	3	Neutral 4	5	6	Very much 7
Attractive	❍	❍	❍	❍	❍	❍	❍
Likeable	❍	❍	❍	❍	❍	❍	❍
Favorable	❍	❍	❍	❍	❍	❍	❍

How likely would you be to purchase this product? (adapted from Sevilla & Kahn, 2014)

Definitely would NOT purchase 1	2	3	Neutral 4	5	6	Definitely would purchase 7
❍	❍	❍	❍	❍	❍	❍

How would you describe this product's quantity? (adapted from Kristofferson et al., 2016)

Very scarce 1	2	3	Neutral 4	5	6	Very abundant 7
❍	❍	❍	❍	❍	❍	❍

How would you describe the availability of this product? (adapted from Zhu & Ratner, 2015)

Extremely limited 1	2	3	Neutral 4	5	6	Extremely plentiful 7
❍	❍	❍	❍	❍	❍	❍

Appendix F: Questions Regarding Co-viewers

To what extent do you feel that you and the other participants in your group are similar to one another? (adapted from Haj-Mohamadi et al., 2018)

Not at all			Neutral			Very much
1	2	3	4	5	6	7
❍	❍	❍	❍	❍	❍	❍

To what extent do you think other participants in your focus group liked the products? (adapted from Shteynberg, Hirsh, Apfelbaum, et al., 2014)

Not at all			Neutral			Very much
1	2	3	4	5	6	7
❍	❍	❍	❍	❍	❍	❍

When you were viewing the products, to what extent did you think about other participants' opinions of the products? (adapted from Shteynberg et al., 2016)

Not at all			Neutral			Very much
1	2	3	4	5	6	7
❍	❍	❍	❍	❍	❍	❍

Appendix G: Questions for Demographic Information

What is your gender?

- ❍ Male
- ❍ Female
- ❍ Other

What is your ethnic background?

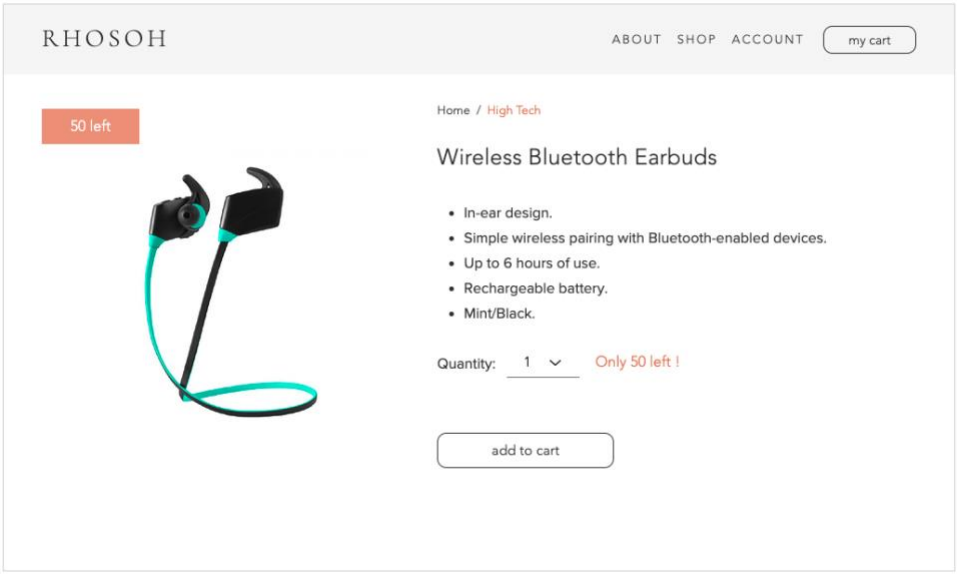
- ❍ American Indian or Alaska Native
- ❍ Asian
- ❍ Black or African American
- ❍ Caucasian or White
- ❍ Hispanic or Latino
- ❍ Native Hawaiian or Other Pacific Islander
- ❍ Other

What is your age?

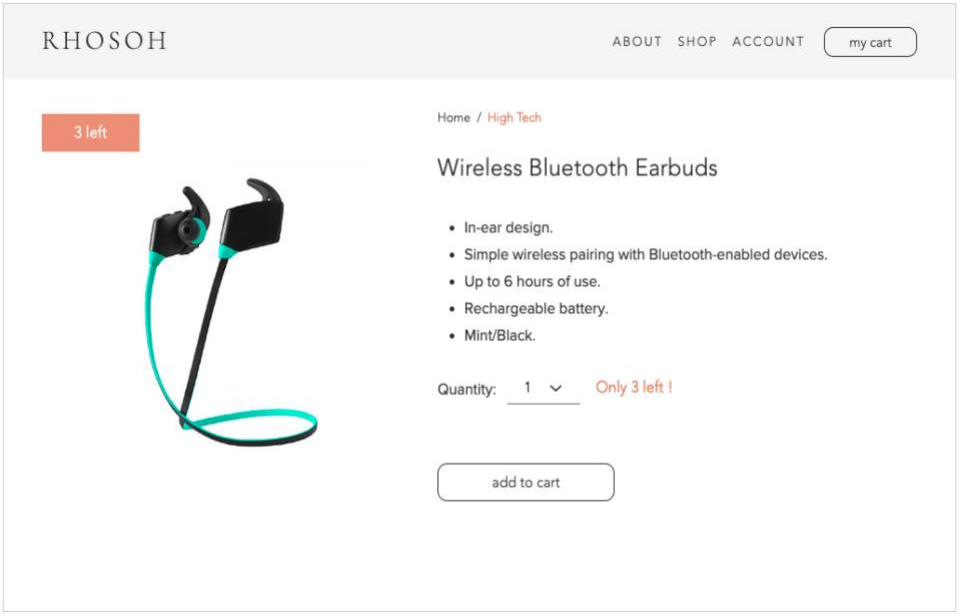
❍ 18	❍ 30	❍ 42	❍ 54	❍ 66	❍ 78	❍ 89
❍ 19	❍ 31	❍ 43	❍ 55	❍ 67	❍ 79	❍ 90
❍ 20	❍ 32	❍ 44	❍ 56	❍ 68	❍ 80	❍ 91
❍ 21	❍ 33	❍ 45	❍ 57	❍ 69	❍ 81	❍ 92
❍ 22	❍ 34	❍ 46	❍ 58	❍ 70	❍ 82	❍ 93
❍ 23	❍ 35	❍ 47	❍ 59	❍ 71	❍ 83	❍ 94
❍ 24	❍ 36	❍ 48	❍ 60	❍ 72	❍ 84	❍ 95
❍ 25	❍ 37	❍ 49	❍ 61	❍ 73	❍ 85	❍ 96
❍ 26	❍ 38	❍ 50	❍ 62	❍ 74	❍ 86	❍ 97
❍ 27	❍ 39	❍ 51	❍ 63	❍ 75	❍ 87	❍ 98
❍ 28	❍ 40	❍ 52	❍ 64	❍ 76	❍ 88	❍ 99+
❍ 29	❍ 41	❍ 53	❍ 65	❍ 77		

Appendix H: Product Scarcity Manipulation (Study 3)

Low Product Scarcity Condition



High Product Scarcity Condition



VITA

Theresa Kwon was born in Akron, OH, in 1988. She graduated cum laude with B.S. in Clothing and Textiles from Seoul National University in February 2012. Following graduation, she continued her education at her alma mater and earned her M.S. in Textiles, Merchandising, and Fashion Design in February 2014. She decided to further her education and entered the doctoral program in Retail, Hospitality, and Tourism Management at the University of Tennessee in the fall of 2015. Her research interests are shared experience and boredom at the interface of consumption and psychology. She is a recipient of the Chancellor's Scholarship, Excellence in Graduate Teaching Award, Julius D. McElroy Scholarship, Josephine D. Cochran Scholarship, and Helen Sharp Hakala Scholarship at the University of Tennessee, and a recipient of 2017 International Textile and Apparel Association Sara Douglas Fellowship for Professional Promise.