# The Meaning of Distraction: How Metacognitive Inferences from Distraction during Multitasking Affect Brand Evaluations

DANIEL M. ZANE
ROBERT W. SMITH
REBECCA WALKER RECZEK

Consumers often encounter advertisements in the background while primarily focused on other stimuli (e.g., while multitasking). Consumers' perceived level of distraction by these background ads serves as a metacognitive cue from which inferences are drawn. When consumers perceive themselves to be relatively distracted by a background advertisement, they draw on an underlying lay theory that distraction implies interest in the contents of the distracting stimulus to make the metacognitive inference that they have positive evaluations of the advertised brand. Across five studies, we provide evidence for this proposed metacognitive inferential process by demonstrating that perceived distraction does not enhance brand evaluations when the distraction = interest lay theory is not perceived to be (1) diagnostic or (2) applicable to the current context (e.g., when consumers have little interest in the product category being advertised). Thus, this research introduces distraction as a new metacognitive experience from which consumers draw inferences and offers important insights into when and how background ads shape brand evaluations.

*Keywords*: lay theory, metacognitive inferences, distraction, background advertisements, multitasking, metacognition

Daniel M. Zane (dzane@miami.edu) is an assistant professor of marketing at Miami Business School, University of Miami, 5250 University Drive, Coral Gables, FL 33124, USA. Robert W. Smith (r.w.smith@tilburguniversity.edu) is an assistant professor of marketing at Tilburg School of Economics and Management, Tilburg University, Warandelaan 2, Tilburg 5037 AB, Netherlands. Rebecca Walker Reczek (reczek.3@osu.edu) is the Dr. H. Lee "Buck" Mathews Professor of Marketing at the Fisher College of Business, The Ohio State University, 2100 Neil Avenue, 538 Fisher Hall, Columbus, OH 43210, USA. Please address correspondence to Daniel M. Zane. The work is supported in part by grants from the Marketing Science Institute, Fisher College of Business, and the Decision Sciences Collaborative at The Ohio State University. The authors would like to thank Cait Lamberton, Pat West, Norbert Schwarz, Joe Goodman, and Duane Wegener for their helpful comments on this research and Adam Smith for technical assistance. This article is based on the first author's doctoral dissertation. Supplementary materials are included in the web appendix accompanying the online version of this article.

*Editors: Gita V. Johar and J. Jeffrey Inman*

*Associate Editor: JoAndrea Hoegg*

*Advance Access publication August 1, 2019*

Consumers often encounter advertisements in the background while primarily focused on other stimuli (e.g., while multitasking). For example, a consumer may listen to the radio while using the internet to read an article, check social media, or perform a variety of other tasks. In this context, a radio ad is encountered as a background stimulus as the consumer primarily focuses on other stimuli or tasks. Even television ads may be heard as background audio as consumers' mobile devices become focal points of attention; 87% of American consumers use additional media devices while watching television (Accenture 2015). In this research, we examine how consumers are impacted by background advertisements, which we define as advertisements that individuals are exposed to while primarily focused on a concurrent but unrelated focal task. Because people are not able to devote all of their processing resources to a focal task while processing two stimuli

 • Vol. 46 • 2020
DOI: 10.1093/jcr/ucz035

at once (Kahneman 1973; Lynch and Srull 1982; Pashler 1994), consumers will generally experience some shift in their attention from the focal task to a background ad (i.e., distraction) in these contexts.[1] We propose that consumers draw metacognitive inferences (Schwarz 2004) based on their perceptions of this distraction, and that these inferences often influence consumers' evaluations of the advertised brand.

Across five studies, we show that when consumers perceive themselves to be relatively distracted by a background ad, they appear to draw on an underlying lay theory that distraction implies interest to make the metacognitive inference that they must have shifted their attention to the background ad because they like the advertised brand. In other words, when consumers perceive themselves to be relatively distracted by the ad, they express more positive evaluations of the brand. We explore two conditions in which consumers are likely to experience high relative distraction by a background ad such that this perceived distraction spurs metacognitive inferences: when they perceive themselves to be more distracted relative to their expectations, and when they perceive themselves to be more distracted relative to others. We provide evidence for this proposed metacognitive inferential process by demonstrating that perceived distraction does not enhance brand evaluations when the distraction = interest lay theory is not perceived to be (1) diagnostic or (2) applicable to the current context (e.g., when consumers have little interest in the product category being advertised). In this latter case, we show that consumers' inferences are instead directed toward executional elements of the ad itself (i.e., the ad must be particularly distracting) rather than to their own interest in the actual contents of the ad (i.e., their interest in the advertised brand). We note that we explore only how differences in perceived distraction toward background ads affect consumers' brand evaluations. We do not suggest that consumers who perceive themselves to be relatively distracted by a background ad would always evaluate the brand more positively than consumers who are processing the ad as the sole focus of their attention. Rather, given that an ad is being processed as a background stimulus, we explore whether and how perceived distraction by the ad affects brand evaluations.

This research therefore makes several theoretical and practical contributions. We introduce distraction as a new metacognitive experience from which consumers draw inferences, in line with previously established metacognitive cues such as ease of recall and information-processing fluency (Labroo, Dhar, and Schwarz 2008; Lee and Labroo 2004; Schwarz et al. 1991; Wänke, Bohner, and Jurkowitsch 1997; Winkielman et al. 2003). We also add to a large and growing literature about how distraction and interruption affect judgments. However, unlike this past work, which focuses on attitudinal reactions toward focal messages and experiences that are driven by processing depth (Isikman et al. 2016; Kupor, Liu, and Amir 2018; Kupor and Tormala 2015; Petty, Wells, and Brock 1976), our work focuses on evaluative reactions toward secondary messages that are driven by metacognitive inferences. We also contribute to the literature documenting the influence of lay theories on a variety of consumer behaviors (Broniarczyk and Alba 1994; Deval et al. 2013; Labroo and Mukhopadhyay 2009; Luchs et al. 2010; Mukhopadhyay and Johar 2005; Posavac et al. 2010; Raghunathan, Naylor, and Hoyer 2006; Smith and Schwarz 2016). Finally, our findings provide insight into how background ads shape consumers' evaluations of brands, a finding with important practical implications as marketers search for ways to influence consumers who often encounter ads while multitasking.

## THE EFFECTS OF NONFOCAL ADVERTISEMENTS

Although intuition might suggest that an ad that is not the primary focus of a consumer's attention may not influence brand evaluations, prior research has shown that this is not the case. For example, research on preattentive processing shows that even advertisements that never enter consumers' conscious thoughts can still affect brand evaluations via subconscious processing (Janiszewski 1988, 1990). Mere exposure to an advertisement outside of one's focal visual field can also improve brand evaluations (Janiszewski 1993) or increase the likelihood of a brand's inclusion in a consideration set (Shapiro, MacInnis, and Heckler 1997). Information from an ad that is consciously processed, but done so under low involvement (in that consumers are allocating little attention toward processing the information), can also drive consumer brand attitudes through peripheral cues like attractive visuals or pleasant music (per the Elaboration Likelihood Model; Petty and Cacioppo 1986). In this research, we focus not on how cues in a nonfocal ad can impact brand attitudes, but instead on whether consumers' evaluations of brands in background advertisements are influenced by metacognitive inferences based on a lay theory that distraction = interest.

## METACOGNITIVE INFERENCES AND THE DISTRACTION = INTEREST LAY THEORY

We propose that perceived distraction by a background ad can hold meaning for consumers. The inferred meaning

1 We define distraction as a shift in attention away from the focal task toward the background stimulus. This definition aligns with previous work that has operationalized distraction through a secondary stimulus that pulls people's attention away from a focal stimulus (see Petty and Wegener 1998, 361, for a review).

of one's mental experiences is referred to as a metacognitive inference (Schwarz 2004). In simple terms, metacognition refers to individuals' "thoughts about their thoughts or thought processes" (Briñol, Petty, and Tormala 2004; Petty et al. 2007). Consumers often infer their attitudes toward objects from metacognitive experiences with those objects instead of based solely on relevant accessible knowledge or directly observable qualities of those objects (e.g., "I'm thinking/experiencing X about an object. What can I infer about the object since I'm thinking/experiencing X in regards to that object?" Schwarz 2015).

The metacognitive inferences that consumers form stem from underlying lay theories that are accessible at the time of evaluation (Schwarz 2004, 2015). Lay theories (also known as naïve theories or lay beliefs) reflect people's understanding of the world; they are the common-sense explanations people use to understand their experiences and environment and have been shown to impact a variety of behaviors (Molden and Dweck 2006; Schwarz 2004). For example, when consumers notice that time is passing quickly during a task, they might draw on the lay theory that "time flies when you're having fun" to form the metacognitive inference that they must be enjoying the task (Sackett et al. 2010). We propose that the underlying lay theory driving metacognitive inferences from distraction is one of distraction = interest; that is, the more distracted consumers are by something, the more interested they must be in it.

Although it is impossible to document the exact sources of a lay theory, past research suggests that lay theories may be generated internally, through personal experience and self-observation (Ross and Nisbett 1991), or externally, from environmental cues (Haws, Reczek, and Sample 2017; Morris, Menon, and Ames 2001; Raghunathan et al. 2006). Lay theories may also stem from a consumer's direct experience through a process called lay inferencing (Kelley and Thibaut 1969), where consumers repeatedly observe co-occurrences between two things. We posit that the distraction = interest lay theory stems, at least in part, from such a lay inferencing process. Throughout their lives, consumers likely find that when something pulls their attention away from a focal task, it leads to the discovery that they are interested in what distracted them. For example, a consumer browsing the internet on their phone in a public place and finding their attention pulled from their phone toward something in their environment will likely find themselves interested in the distracting stimulus. Hence, distraction and interest are likely to co-occur, resulting in subscription to the distraction = interest lay theory.[2]

In this research, we propose that when consumers perceive themselves to be relatively distracted by a background ad, they make metacognitive inferences about their own brand evaluations based on this lay theory. Specifically, we propose that they hold more positive evaluations of the brand through the following mental process: consumers (1) perceive themselves to be relatively distracted by the background ad as they notice their attention shifting away from the focal task and toward the background ad, (2) infer that they must be interested in the content of the advertisement, and (3), because interesting things are generally positive, therefore express more positive evaluations of the advertised brand (e.g., increased interest in the brand, higher ratings of the brand's attributes, and more positive attitudes toward the brand).

We base our prediction that metacognitive inferences in this context are directed toward the content of the ad (i.e., the advertised brand) on Kelley's (1967) reasoning about inference-making, in which he suggests that people attribute behaviors to the factor with which that behavior most strongly covaries (i.e., "the condition which is present when the effect is present and which is absent when the effect is absent," 194). In this case, the covariation occurs between distraction and presence of a background ad. When a consumer is performing a single task and an ad is not in the background, the effect of distraction is absent (because the individual generally stays focused on the single task at hand). However, when a background ad is present and distraction occurs, consumers attribute their distraction to the ad because this is the new factor present when distraction occurs. This pattern of covariation is likely learned and strengthened over time as individuals both perform single tasks with no background distractions present and perform focal tasks while background distractions are present.

In order for consumers to make the type of metacognitive inference that we predict, it is important to note that they must experience distraction noteworthy enough that they want to explain it. Under which conditions will consumers draw conclusions about their experienced distraction? Past research has demonstrated that metacognitive inferences are particularly likely when one's experience differs from expectations (e.g., when it is harder or easier to process information compared to one's expectations; Schwarz 2004; Whittlesea and Williams 2000). Distraction is an abundant source of violated expectations, as consumers tend to believe that they are able to effectively perform two tasks, or attend to more than one stimulus, simultaneously (Crenshaw 2008; Ophir et al. 2009; Rosen 2008; Sanbonmatsu et al. 2013). In reality, however, consumers are quite prone to being distracted away from focal tasks by background stimuli (Crenshaw 2008; Finley, Benjamin,

2 Although our studies do not provide direct evidence for this argument, we speculate that consumers also likely overestimate the extent to which their attention is voluntary or "top down," as consumers generally believe they have control over their mental processes (Wegner 2002); this underestimation of the degree to which attention can be captured involuntarily is likely also a source for the belief that distraction = interest.

and McCarley 2014; Kahneman 1973; Pashler 1994; Rosen 2008). This mistaken belief that one can effectively attend to multiple stimuli simultaneously is colloquially referred to as "the myth of multitasking" (Crenshaw 2008; Rosen 2008). Thus, we predict that when consumers find their attention moving away from a focal task toward a secondary stimulus, this distraction is often unexpected, making the distraction particularly likely to result in a metacognitive inference based on the distraction = interest lay theory. Research has also demonstrated that metacognitive inferences are likely to result when people's experiences differ from those of others (Kelley 1967; Kelley and Michela 1980). We therefore predict that consumers will infer their own brand evaluations based on a distraction = interest lay theory when they perceive that they are more distracted by a background ad relative to others. Formally:

> **H1:** Consumers draw on an underlying lay theory that distraction implies interest to make the metacognitive inference that they are interested in the advertised brand when they perceive themselves to be (a) more distracted by a background ad than expected or (b) more distracted than others by the same ad.

## Moderation by Perceived Diagnosticity of the Lay Theory

Past research has shown that consumers will make a particular metacognitive inference only when the underlying lay theory is both accessible and perceived to be diagnostic (Feldman and Lynch 1988; Herr, Kardes, and Kim 1991; Menon, Raghubir, and Schwarz 1995). Accessibility refers to the activation potential of available knowledge (Higgins 1996). Due to the lay inferencing process referenced above, the distraction = interest lay theory should be accessible to consumers, meaning it is likely to become activated in their minds when they perceive themselves to be relatively distracted by a background ad. Diagnosticity refers to the extent to which information is sufficient to draw a conclusion (Feldman and Lynch 1988; Menon et al. 1995). In other words, it is the "appropriateness or relevance of applying stored knowledge to a stimulus" once the knowledge is activated (akin to Higgins's [1996, 136] definition of judged usability). If the diagnosticity of a lay theory is called into question (i.e., if it does not seem sufficient or appropriate to rely on this lay theory in a given context), consumers no longer make metacognitive inferences consistent with it (Sanna and Schwarz 2003; Schwarz et al. 1991). Thus, if consumers have reason to believe that distraction = interest is not a sufficient and appropriate relationship to draw on in a given instance (even if this relationship could still be perceived to hold in another context), they will not use this lay theory to draw conclusions about this instance of distraction. We therefore propose that if consumers are exposed to information that directly challenges the diagnosticity of the distraction = interest lay theory, then even when distraction by a background ad is perceived to be relatively high, it will not yield positive evaluative consequences for the advertised brand. Formally:

> **H2:** The effect in hypothesis 1 will not obtain when the underlying distraction = interest lay theory is not perceived to be diagnostic.

## Moderation by Perceived Applicability of the Lay Theory

In hypotheses 1 and 2 we predict that consumers draw metacognitive inferences about the contents of a background ad when they perceive themselves to be relatively distracted by the ad and when they perceive the distraction = interest lay theory to be diagnostic. In addition to accessibility and diagnosticity, applicability, defined as the degree of overlap between "attended features of a stimulus" and "stored knowledge" (Higgins 1996, 135), can also influence whether consumers use information in an inferential task. We propose that consumers will perceive there to be low applicability of the distraction = interest lay theory when the advertised brand is from a product category in which they have little to no a priori interest. For example, if a consumer is not at all interested in cars and perceives himself or herself to be relatively distracted by a background ad for a car brand, he or she will not find the distraction = interest lay theory applicable because of a lack of overlap between attended features of the ad stimulus (i.e., the fact that the contents of the ad focus on a car, a product category that he or she finds inherently uninteresting) and the existing knowledge structure (i.e., the distraction = interest lay theory).

These consumers are instead likely to draw on other, more applicable knowledge structures to explain their distraction. For example, consumers could attribute their distraction to characteristics of the focal task they are distracted away from (e.g., "I must be bored by the focal task since I am getting distracted by this ad") or the self (e.g., "I must not be good at multitasking and that's why I keep getting distracted"). However, past research suggests that it is unlikely that consumers would use distraction to make inferences about the focal task or themselves. First, Damrad-Frye and Laird (1989) found that although distraction could lead people to conclude that they were bored with a focal task, this occurred only when people were not aware that a particular background stimulus was causing them to be distracted. Once participants in Damrad-Frye and Laird's (1989) studies were able to consciously recognize that a background stimulus was distracting them away from the focal task, this distraction no longer impacted their evaluations of the focal task. Second, consumers generally think they can control their attention when

encountering multiple stimuli (Crenshaw 2008; Rosen 2008; Sanbonmatsu et al. 2013; Wegner 2002), which suggests that consumers are unlikely to attribute distraction to their own attentional limitations. Although both of these inferences may occur under certain circumstances, they seem unlikely to dominate inferential reasoning in the context of background ads.

There is, however, another possibility for where inferences could plausibly go, and that is to the executional elements of the ad itself (e.g., "This ad only distracted me because it has blatantly distracting elements, such as a unique narrator's voice or distracting sound effects"). This is a likely source of attribution because it involves the distractor, which is the feature of the environment with the most covariation with distraction (Kelley 1967), and also involves established consumer beliefs, namely persuasion knowledge (Friestad and Wright 1994). We propose that this inference about the executional elements of the ad will, in fact, occur when consumers do not perceive the distraction = interest lay theory to be applicable. Specifically, we predict that a consumer who has little interest in the advertisement's product category will not find the distraction = interest lay theory applicable and will therefore be unlikely to infer that they are interested in the brand being advertised. They will instead draw on their persuasion knowledge about what makes ads distracting to attribute their distraction to attention-grabbing executional elements of the ad. This prediction is consistent with Schwarz (2004), who proposes that metacognitive inferences are dependent on what lay theories consumers find applicable; if the lay theory is not perceived to be applicable, it will not be applied, and only one applicable lay theory will determine inferences. Formally:

> **H3:** Individuals who do not express at least moderate interest in the product category to which the background-advertised brand belongs will (a) not infer greater interest in the brand being advertised even when distraction is perceived to be relatively high and (b) attribute their distraction more to executional elements of the ad instead of to their own interest in the brand.

## OVERVIEW OF STUDIES

Across five studies, we demonstrate that when consumers perceive themselves to be relatively distracted by a background ad, they make metacognitive inferences about their own brand evaluations based on a distraction = interest lay theory. We measure brand evaluations in two ways: (1) using a composite measure of brand interest and ratings of the brand on positive attributes (e.g., exciting, unique) and (2) using a validated measure of attitudes from past literature (Luttrell et al. 2016; Petty, Cacioppo, and Schumann 1983). In study 1, we demonstrate that consumers often find distraction by a background ad to be unexpected (pretest), and that they express more positive brand evaluations after perceiving themselves to be distracted relative to their expectations by a background ad for that brand. In study 2, we demonstrate that when perceived diagnosticity of the distraction = interest lay theory is reduced, consumers who perceive themselves to be distracted relative to their expectations no longer evaluate the advertised brand more positively. Study 3 presents a preregistered study that generalizes our main findings using a different focal task, an ad for a different brand from a different product category, and a new manipulation based on perceptions of distraction by a background ad relative to other people. Study 4 demonstrates that the metacognitive inferences consumers draw from distraction influence actual behavior, and this occurs even when exposure to the background advertisement is incidental (i.e., when participants are not told that the background ad is part of the study). Finally, in study 5, we demonstrate that consumers no longer rely on a distraction = interest lay theory when they do not perceive the lay theory to be applicable due to a general lack of interest in the product category being advertised. We also measure attribution and show that consumers' general level of interest in the advertised product category affects the source to which consumers attribute their distraction (i.e., their own interest in the advertised brand vs. attention-grabbing executional elements of the ad) and illustrate the role that these attributions play in the relationship between perceived distraction and brand evaluations.

We note that we employ different exclusion criteria across our studies due to the two different contexts in which the studies were conducted, in a lab (studies 1 and 2) and on Amazon Mechanical Turk (MTurk; studies 3–5). These criteria were designed with the same goal: to exclude participants who did not follow instructions and therefore did not experience exposure to a background ad. Since participants in studies 1 and 2 were closely monitored by lab staff, we exclude participants from those studies who were not following instructions per notes from the lab staff (i.e., not completing the assigned focal task while listening to a background ad). In studies 3–5, we employ a different series of exclusion criteria that we outline in detail in study 3, which are designed for an MTurk environment and the new manipulation of perceived distraction used in these studies. We also note that the same pattern of results holds when we use the full sample in every study.

## STUDY 1

The goal of study 1 is to test whether consumers form metacognitive inferences about their brand evaluations when they experience high relative distraction by a background ad. We test this by manipulating their perceived level of distraction relative to their expectations. Note that

we are interested in exploring the consequences of perceiving oneself to be relatively distracted by a background advertisement regardless of any specific characteristics of the advertisement itself. In order to achieve this, we hold the background audio advertisement constant and manipulate whether consumers expect to experience high versus low levels of distraction by this ad while simultaneously completing a focal task. Consistent with hypothesis 1, participants who perceive themselves to be more distracted than expected by a background ad (i.e., those who expect low levels of distraction by an ad, but then experience more distraction than expected) should infer that they have more positive evaluations of the advertised brand.

Additionally, we include a third condition in which we do not manipulate participants' expectations prior to hearing a background advertisement. Because consumers naturally believe they are able to effectively perform two tasks, or attend to more than one stimulus, simultaneously (Crenshaw 2008; Rosen 2008; Sanbonmatsu et al. 2013), we predict that participants in this baseline condition will expect a similarly low level of distraction by the background ad as those in the manipulated low expectations of distraction condition (confirmed in a pretest below). Thus, any experienced distraction by participants in this baseline "natural" low expectations of distraction condition should seem relatively high, and these participants should be prone to form metacognitive inferences based on perceiving themselves to be relatively distracted. We therefore predict that participants in this condition will have similarly high evaluations of the advertised brand compared to the condition in which we experimentally manipulate participants to have low expectations of distraction by the background ad.

## Participants and Procedure

A total of 110 undergraduates (46.36% female; $M_{age}$ = 21.07) participated in this study for partial course credit. This study used a three-cell (expectations of distraction: manipulated high, manipulated low, or naturally low/baseline) between-subjects design. All participants were told that the study involved how secondary tasks affect color preferences and that they would soon color a picture while also listening to an audio advertisement (see web appendix F for complete descriptions of stimuli across all studies). All participants were given crayons and spent five minutes coloring an outlined drawing of a small "main street" district in a quaint town as the focal task while simultaneously listening to a long-form background audio advertisement for the 2016 Mercedes-AMG GT S sports coupe over headphones. After the five minutes passed, participants answered several questions about their experience.

*Expectations of Distraction Manipulation.* Prior to beginning the aforementioned tasks, participants in the manipulated low expectations of distraction condition read that previous research has shown that students are good at tuning out advertisements while focusing on creative tasks and therefore that the audio advertisement should not be very distracting as they focus on coloring. Based on these instructions, participants in this condition should perceive any distraction they experience to be relatively high and, consistent with hypothesis 1, should make a metacognitive inference that they have more positive evaluations of the advertised brand. Participants in the manipulated high expectations of distraction condition read the opposite—that students are not good at tuning out advertisements while focusing on creative tasks. Perceived distraction in this condition should be lower or similar compared to expectations. Participants in the natural low expectations of distraction condition read nothing about prior research and thus did not have their expectations manipulated in any way. As mentioned above, we predicted that any perceived distraction by participants in this baseline condition should also seem relatively high given that consumers expect to be good at performing multiple tasks simultaneously, such that results in this condition should be similar to those in the manipulated low expectations of distraction condition.

A pretest with a separate sample of undergraduates from the same population ($n$ = 189; 56.61% female; $M_{age}$ = 20.68) confirmed that participants in the manipulated low expectations of distraction condition and natural low expectations of distraction condition indeed held equally low expectations of being distracted by the audio ad while coloring and that their expected distraction was significantly less than that of participants in the manipulated high expectations of distraction condition. Participants in the pretest read the same instructions and saw one of the same manipulations, depending on condition, as in the main study. After undergoing their respective manipulation, but before commencing any coloring or listening task, the participants responded to the following measures: "How distracted do you expect to be by the audio advertisement while coloring" (1 = Not at all distracted, 7 = Very distracted), "My attention will shift toward the advertisement as I try to color" (1 = This will not happen to me at all, 7 = This will happen to me a lot), and "I will be unable to remain completely focused on coloring" (1 = Strongly Disagree, 7 = Strongly Agree; $\alpha$ = .75). A one-factor, three-level between-subjects ANOVA revealed a significant main effect of expectations of distraction ($F(2, 186)$ = 8.90, $p < .001$, $\omega_p^2 = .08$), and we then conducted pairwise comparisons informed by our theory. Those in the manipulated low expectations of distraction condition and those in the natural low expectations of distraction condition reported equally low expectations of distraction ($M_{\text{manipulated low expectations of distraction}} = 3.34$ vs. $M_{\text{natural low expectations of distraction}} = 3.56$; $t(186) = -1.12$, $p = .266$). Participants in the manipulated high expectations of

distraction condition reported significantly higher expectations of distraction ($M = 4.16$) than participants in the manipulated low expectations of distraction condition ($t(186) = -4.08$, $p < .0001$) and the natural low expectations of distraction condition ($t(186) = -2.97$, $p = .003$). The results of this pretest informed the planned contrasts described below.

*Measures.* When the five-minute ad ended in the main study, participants heard a message in their headphones prompting them to stop coloring and look back at the computer screen to continue. Participants then reported their brand interest and ratings of the brand on positive attributes by indicating their agreement with the following statements about the brand in the audio ad (1 = Strongly disagree, 7 = Strongly agree): "The brand is exciting," "The brand is unique," "I am interested in the brand," and "I would like to learn more about the brand." These four items were averaged into a composite ($\alpha = .81$; henceforth referred to as brand interest), which served as our dependent variable.[3] Finally, participants provided demographic information and were then informed that the study was over and were instructed to remove their headphones before proceeding to an unrelated task. No participants in this study were excluded for failing to follow directions.

## Results

A one factor, three-level between-subjects ANOVA revealed a significant main effect of expectations of distraction on participants' brand interest ($F(2, 107) = 5.09$, $p = .008$, $\omega_p^2 = .069$). To test hypothesis 1, we created two orthogonal between-subjects contrasts (table 1) comparing (1) the manipulated low expectations of distraction and natural low expectations of distraction conditions to the manipulated high expectations of distraction condition, and (2) the manipulated low expectations of distraction condition to the natural low expectations of distraction condition.

We then regressed brand interest onto the two contrast codes. As expected, this regression revealed a significant main effect of the first contrast code ($b_{unstandardized} = .20$, SE = .07, $t(107) = 2.98$, $p = .004$, $\omega_p^2 = .067$), such that mean brand interest in the manipulated low expectations of distraction ($M = 5.11$) and natural low expectations of distraction conditions ($M = 5.37$) was significantly greater than mean brand interest in the high expectations of distraction condition ($M = 4.64$). Also as expected, there was no significant main effect of the second contrast code ($b_{unstandardized} = -.13$, SE = .12, $t(107) = -1.07$, $p = .285$, $\omega_p^2 = .001$); mean brand interest was the same in the manipulated low expectations of distraction condition and the natural low expectations of distraction condition.

**TABLE 1**

STUDY 1: ORTHOGONAL BETWEEN-SUBJECTS CONTRAST CODES

| | Manipulated low expectations of distraction | Manipulated high expectations of distraction | Natural low expectations of distraction (baseline) |
|---|---|---|---|
| **Contrast code 1** Manipulated low expectations of distraction and natural low expectations of distraction versus manipulated high expectations of distraction | 1 | –2 | 1 |
| **Contrast code 2** Manipulated low expectations of distraction versus natural low expectations of distraction | 1 | 0 | –1 |

We also conducted planned pairwise comparisons between conditions. Participants in the natural low expectations of distraction condition reported significantly greater interest than participants in the manipulated high expectations of distraction condition ($t(186) = -3.15$, $p = .002$). Participants in the manipulated low expectations of distraction condition also reported significantly greater interest in the brand than participants in the manipulated high expectations of distraction condition ($t(186) = 2.01$, $p = .047$).These results support hypothesis 1.

## Discussion

Study 1 shows that consumers who do not expect to be distracted by a background ad while performing a focal task report more positive brand evaluations than consumers who expect to be distracted by the background ad. These findings provide initial support for our theory that consumers report more positive evaluations of a brand in a background ad when they perceive themselves to be relatively distracted by the ad compared to their expectations.[4] Presumably, participants inferred from this relatively high level of distraction that they must be interested in the advertised brand. Importantly, participants in the natural low

3 Factor analyses in all studies that employed only this composite measure of brand interest (studies 1, 2, and 5) confirmed that these four items loaded onto a single factor (retained with an eigenvalue = 2.62), with no clear second factor being close to emerging (no eigenvalues apart from the first factor > .56). See web appendix D for more details.

4 Note that even if the individuals in the manipulated high expectations of distraction condition perceived themselves to be unexpectedly *nondistracted* (i.e., they were told they should be distracted but find themselves not distracted), they should then report less interest in the brand, consistent with our theorizing.

expectations of distraction condition reported equally positive brand evaluations compared to those who were manipulated to expect the ad to be minimally distracting. As the pretest confirms, participants naturally expect ads to be minimally distracting, suggesting that metacognitive inferences based on perceiving oneself to be more distracted can occur even when expectations are not experimentally induced.

## STUDY 2

We next test hypothesis 2; if consumers do not perceive the distraction = interest lay theory to be diagnostic, they should be less likely to rely on the lay theory to draw metacognitive inferences about their evaluations of a brand featured in a background ad (Feldman and Lynch 1988). If other processes besides metacognitive inferencing were driving the effect we observe in study 1, challenging the diagnosticity of the lay theory should have no effect on brand evaluations. Thus, testing this hypothesis allows us to establish initial process evidence via moderation (Spencer, Zanna, and Fong 2005). We also provide evidence in study 2 that the advertisement is indeed seen as the background (vs. focal) stimulus and rule out an alternative explanation for our results. One could argue that differing levels of interest in an advertised brand could vary if actual, stand-alone attention to the ad (independent of any manipulation of expectations) differs across conditions. To address this, we demonstrate that participants' perceived attention to the background ad does not vary across condition; only perceived level of distraction relative to expectations seems to be affected by the manipulation.

### Participants and Procedure

A total of 212 undergraduates (40.10% female; $M_{age}$ = 20.84) participated in this study in exchange for partial course credit. This study used a 2 (expected distraction: manipulated to be high or low) × 2 (perceived diagnosticity of distraction: naturally high or manipulated to be low) between-subjects factorial design. As in study 1, participants colored the same black and white drawing and listened to the long-form audio advertisement for the Mercedes coupe as part of an ostensible study on how secondary tasks affect color preferences. Prior to simultaneously coloring and listening to the background ad, participants underwent the same manipulation as in study 1 to expect high or low levels of distraction, which would serve as a reference point to which they could compare their relative distraction. No natural expectations of distraction condition was included in this study. We also manipulated the perceived diagnosticity of the relationship between one's level of distraction and one's interest in the contents of that distractor (i.e., the perceived diagnosticity of the distraction = interest lay theory) prior to the coloring/audio ad task.

*Perceived Diagnosticity of Distraction Manipulation.* To manipulate the perceived diagnosticity of the relationship between distraction relative to expectations and interest in the brand, those in the low perceived diagnosticity of distraction condition read additional information before beginning to color and listen to the background ad. Specifically, these participants read that past research shows that one's level of distraction by an ad does *not* signal anything about one's interest in the advertised brand, whereas those in the naturally high perceived diagnosticity of distraction condition (i.e., where perceived diagnosticity of the lay theory was not manipulated) read nothing additional. We note upfront that the manipulation of diagnosticity in this study is designed to highlight the metacognitive process behind these results and aligns with methods used in other research to moderate the diagnosticity of a lay theory (Billeter, Kalra, and Loewenstein 2011; Sackett et al. 2010), perhaps at the expense of ecological validity. In study 5, we explore a more realistic boundary condition when documenting how another theoretical moderator (i.e., applicability of the distraction = interest lay theory) influences how consumers draw metacognitive inferences when they perceive themselves to be relatively distracted.

*Measures.* When the five-minute ad ended, participants heard a message in their headphones prompting them to stop coloring. Participants then indicated their agreement with the same brand interest measures as in study 1 ($\alpha$ = .85). Next, they reported what percentage of attention (out of 100% total) they allocated to both coloring the picture and listening to the advertisement. Finally, participants provided demographic information.

### Results

Data from five participants (2.36% of participants) were removed because a research assistant witnessed them doing activities other than coloring while listening to the background audio ad. The same pattern of results holds if these individuals are included in analyses.

First, we examined the difference in percentage of attention directed toward the focal task and the background ad across all participants. We conducted a within-subjects ANOVA, treating participants' attention to the focal task and attention to the background task as a within-subjects repeated measure and entering this repeated measure factor as the only independent variable in the model. The within-subjects effect was significant, revealing that, on average, participants directed significantly more attention toward the focal task ($M$ = 72%) than toward the background ad ($M$ = 34%; $F(1, 206) = 267.93$, $p < .0001$, $\omega_p^2 = .563$).[5]

5 We note that the measures assessing the percentage of attention participants' directed toward the focal task and background ad were not constrained to sum to 100. However, 77.29% of responses summed to 100.

This result provides support that participants indeed saw the ad as a background stimulus and also suggests that participants noticed that they were distracted by this background ad (i.e., noticed that at least some of their attention was not directed toward the focal task, but instead toward the ad). A between-subjects ANOVA with expected distraction, perceived diagnosticity of distraction, and their interaction as independent variables and the percentage of attention difference score as the dependent measure showed that the difference in attention given to the focal task versus the background ad was not affected by either manipulated factor or their interaction (all $ps > .20$). This finding provides support that our experimental design does not seem to manipulate participants' stand-alone level of attention directed toward background ads but instead creates differences in experienced distraction relative to expectations, as planned.

Next, we conducted a between-subjects ANOVA with expected distraction, perceived diagnosticity of distraction, and their interaction as independent variables and the brand interest composite as the dependent measure. No main effect of expected distraction ($F(1, 203) = .05$, $p = .819$, $\omega_p^2 = -.005$) or perceived diagnosticity of distraction emerged ($F(1, 203) = .88$, $p = .350$, $\omega_p^2 = -.001$). A marginally significant interaction between the two factors emerged ($F(1, 203) = 3.64$, $p = .057$, $\omega_p^2 = .013$). Follow-up analyses revealed that there was no significant conditional effect of expected distraction on brand interest among participants in the low perceived diagnosticity of distraction condition ($M_{\text{low expected distraction}} = 5.01$ vs. $M_{\text{high expected distraction}} = 5.17$; $F(1, 203) = .48$, $p = .490$, $\omega_p^2 = -.003$ for the simple effect). However, a significant simple effect of expected distraction on brand interest did emerge among participants in the naturally high perceived diagnosticity of distraction condition. Specifically, among individuals in the naturally high perceived diagnosticity of distraction condition, those with low expected distraction by the ad (i.e., those who perceive their distraction to be relatively high compared to expectations) reported more interest in the advertised brand compared to those with high expected distraction by the ad (i.e., those who perceived their distraction to be lower or similar compared to expectations; $M_{\text{low expected distraction}} = 5.35$ vs. $M_{\text{high expected distraction}} = 4.90$; $F(1, 203) = 3.99$, $p = .047$, $\omega_p^2 = .014$ for the simple effect). As illustrated in figure 1, these results support hypotheses 1 and 2.

## Discussion

The findings of study 2 provide support for the proposed process that consumers draw on a distraction = interest lay theory in order to make metacognitive inferences about their evaluations of a brand advertised in a background ad. We establish initial process evidence via moderation (Spencer et al. 2005) by showing that when the diagnosticity of this lay theory is directly challenged, no difference in brand evaluations results between consumers who have low expectations of being distracted by the background ad (and thus presumably perceive themselves to be more distracted than expected) and consumers who have high expectations of being distracted by the background ad (and thus presumably do not perceive themselves to be more distracted than expected). However, when consumers are left to naturally perceive this lay theory as diagnostic, they report more positive evaluations of the advertised brand when they have low expectations of being distracted by the background ad compared to when they have high expectations of being distracted.

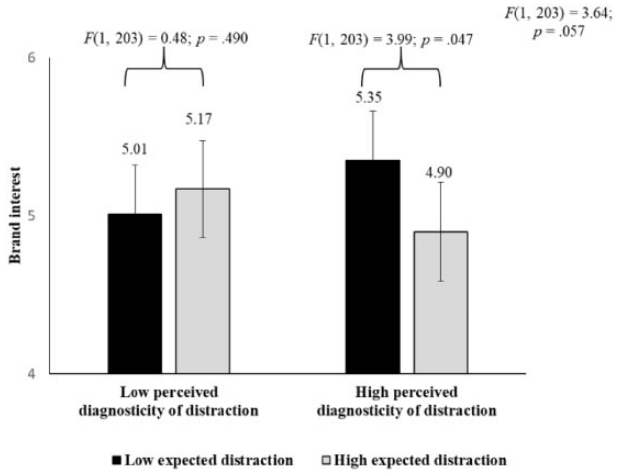
One potential limitation of these first two studies is that they both use an audio ad in conjunction with a visual coloring task. Although this is likely a conservative test of our hypotheses because a consumer is less likely to experience auditory interference (i.e., become noticeably distracted by the audio advertisement) when the focal task involves only visual processes and does not involve language (Tavassoli and Han 2001), all subsequent studies employ a different focal task that includes language in order to further establish the generalizability of these effects.

# STUDY 3

Study 3 was designed with several goals in mind. Most notably, we employ a new manipulation of perceived distraction in which participants are told that they were more or less distracted by a background ad than other people. Given that metacognitive inferences are likely to result when people's experiences differ from those of others (Kelley 1967; Kelley and Michela 1980), we propose that consumers are likely to infer their own brand evaluations based on a distraction = interest lay theory when they perceive that they are more distracted by a background ad relative to others. Manipulating perceived distraction relative to others has several benefits. First, it supports the proposed metacognitive inferential process by demonstrating the results hold using a second manipulation established in previous literature. Second, feedback relative to others demonstrates a practical way through which perceived distraction can be influenced. Finally, this new perceived distraction manipulation comes after participants perform the focal task while listening to the background advertisement (vs. the manipulation coming beforehand in studies 1 and 2). This timing of the manipulation, where all participants are subject to the same information before hearing the ad, ensures that attention to the ad will not vary across conditions. Even though we show that stand-alone level of attention directed toward background ads did not differ using the previous manipulation in study 2, this new manipulation ensures that we influence only participants' perceived

**FIGURE 1**

STUDY 2: INTERACTION OF EXPECTED DISTRACTION WITH PERCEIVED DIAGNOSTICITY OF DISTRACTION ON BRAND INTEREST




NOTE.—Bars in graph represent 95% confidence intervals.

level of distraction and not their actual level of attention toward the ad.

We also collect a second set of dependent measures in order to better support our theory that consumers spontaneously draw metacognitive inferences about their evaluations of brands featured in background ads. In studies 1 and 2, it is possible that the wording of the dependent variables (e.g., "I am interested in the brand") cued a lay theory pertaining to brand interest and thus steered participants to draw an inference about their brand interest. In study 3, we collect a validated set of attitude measures that do not mention brand interest (Luttrell et al. 2016; Petty et al. 1983) in addition to the interest-focused brand evaluation measures collected in studies 1 and 2. We vary the order of when these measures are collected in order to show that consumers report more positive brand evaluations when they perceive themselves to be relatively distracted by a background ad even when the attitude measures come before measures about interest.

We also extend the generalizability and ecological validity of our findings in several additional ways. Participants now listen to an advertisement for a different experiential good (a Bahamas vacation). The advertisement is also 60 seconds long, which is a more common length compared to the long-form Mercedes ad used in previous studies, and is embedded between two songs to simulate a more realistic radio listening experience.

We also note that the design of study 3 and data analysis plan was preregistered prior to data collection at the Open Science Framework and is available at: https://osf.io/m75y8/?view_only=a5335cd1bf754775b20ba742ea39d4c7. All study procedures and confirmatory analysis reported below adhere to the plan set forth in the preregistration.

## Participants and Procedure

A total of 999 individuals (58.86% female; $M_{age}$ = 36.46) participated in this study on MTurk for payment.[6] This study used a two-cell (relative distraction: high or low) between-subjects design. Participants read a cover story about completing a study on multitasking behaviors while using the internet in which they were told that they would soon browse the internet at their leisure while some music plays in the background and that at some point an audio advertisement would also play. While browsing, they listened to a series of audio clips. The audio comprised roughly two minutes of a song ("See What Love Did to Me" by Cat Stevens), followed by a 60 second advertisement for a Bahamas vacation, followed by roughly

6 The preregistration plan specified that we would collect a sample size of 1,000 on MTurk. Only 999 individuals completed both the Qualtrics survey containing the actual study stimuli and submitted the task on MTurk to receive the compensation specified in our preregistration. One individual submitted the task on MTurk without completing the Qualtrics survey at all and thus did not produce any data. There were actually 1,004 individuals who completed the Qualtrics survey, but five failed to submit the task on MTurk. All analyses in studies 3–5 include only individuals who both submitted the task on MTurk and received compensation. Results remain unchanged when we use all Qualtrics completes.

30 seconds of a second song ("Mandolin Wind" by Rod Stewart). Participants then heard an audio message prompting them to stop browsing and return to the computer survey window to continue. The audio file was designed to match the typical experience of listening to audio ads on the radio, with music followed by an ad, followed by more music, while not being excessively long.

*Relative Distraction Manipulation.* In this study, participants' perceived level of distraction was manipulated after they finished the tasks described above. After browsing and listening to the audio, participants indicated what percentage of attention they paid to the background advertisement ("What percent of the words in the ad did you listen to? That is, what percent of the ad did you hear and understand?" 0% – 100%). In the high relative distraction condition, participants then read, "You indicated that you listened to XX% of the advertisement while it was playing. Compared to other people who listened to this particular ad, you paid significantly more attention to this ad." Individuals in this condition should now perceive themselves to have been more distracted by the advertisement relative to others who listened to the same ad. In the low relative distraction condition, participants learned that, compared to others who listened to the same ad, they paid "significantly less attention to this ad." Participants then responded to an open-ended question asking them to explain why their attention occurred the way it did. This open-ended question was included to strengthen the manipulation. It was dropped from the protocol in study 5, and the similar results in that study suggest that it is not a critical part of the study design.

*Measures.* Following the manipulation described above, participants then indicated their agreement with a new set of brand attitude measures ("Please indicate your overall impression of the destination from the ad"; $\alpha = .98$; Luttrell et al. 2016; Petty et al. 1983): "The destination is (–4 = Bad, 4 = Good)," The destination is (–4 = Unfavorable, 4 = Favorable), and "How much do you like the destination from the ad?" (–4 = Dislike, 4 = Like). Participants also completed the same brand interest measures as in studies 1 and 2 ($\alpha = .91$). Both of these sets of measures were averaged into composites and the order in which these two sets of measures were collected was counterbalanced.[7] As a manipulation check, participants also answered the following item: "Did you pay more attention to the music or the advertisement while they were playing?" (1 = Much more attention to the music, 5 = Much more attention to the ad). Finally, participants reported whether they turned their computer volume off while the ad was playing, completed an open-ended suspicion check, and provided demographic information.

## Results and Discussion

In line with the preregistered protocol, data from two participants (.20% of participants) were removed because these individuals correctly guessed the hypothesis (i.e., they recognized that we were manipulating perceived relative distraction and that we expected this manipulation to affect brand interest/attitudes). Data from six participants (.60%) were removed because these participants indicated that they were unable to hear the audio due to technical difficulties (they reported this either in the open-ended response attached to the manipulation or the open-ended suspicion check). Data from 26 participants (2.60%) were removed because these participants admitted to turning their computer volume completely off while the advertisement was playing. Finally, data from 50 participants (5.01%) were removed because these individuals reported either giving 0% attention or 100% attention to the advertisement. We excluded these respondents because individuals in the high relative distraction condition who report 0% will find our manipulation blatantly false (i.e., 0% of attention cannot be significantly higher than other people). Similarly, individuals in the low relative distraction condition who report 100% attention will also find our manipulation blatantly false (i.e., 100% of attention cannot be significantly lower than other people). However, differentially excluding people based on condition is problematic, so we excluded all individuals, regardless of condition, who reported giving either 0% or 100% attention to the advertisement. Excluding these individuals is still a very conservative approach because participants in the high distraction condition who report giving 1% attention (or above) are still included and participants in the low distraction condition who report giving 99% attention (or less) are still included. The exclusion criteria outlined above are carried through all subsequent studies. The same pattern of results holds if the full sample is used.

*Manipulation Check.* First, we conducted a between-subjects ANOVA with relative distraction, the order in which we collected brand interest and attitude measures, and their interaction as independent variables and the manipulation check item as the dependent measure. As expected, only a main effect of relative distraction emerged ($M_{\text{high relative distraction}} = 2.77$ vs. $M_{\text{low relative distraction}} = 2.39$; $F(1, 910) = 24.75$, $p < .0001$, $\omega_p^2 = .025$). No main effect of question order ($F(1, 910) = .68$, $p = .410$, $\omega_p^2 = .000$) or interactive effect emerged ($F(1, 910) = 1.45$, $p = .229$, $\omega_p^2 = .001$).

7 Factor analysis confirmed that all of the measures across both composites loaded onto a single factor (retained with an eigenvalue = 5.04), with no clear second factor being close to emerging (no eigenvalues apart from the first factor > .83). If forced to retain two factors, the model shows that the new measures load onto one factor and the original measures load onto a second factor. These results suggest that our findings hold for brand evaluations that are measured in a variety of ways. See web appendix D for more details.

*Brand Attitudes.* Next, we conducted a between-subjects ANOVA with relative distraction, the order in which we collected brand interest and attitude measures, and their interaction as independent variables and the brand attitudes composite as the dependent measure. As expected, only a significant main effect of relative distraction emerged ($F(1, 911) = 7.91$, $p = .005$, $\omega_p^2 = .008$). Participants in the high relative distraction condition reported more positive attitudes for the advertised destination compared to participants in the low relative distraction condition ($M_{\text{high relative distraction}} = 2.16$ vs. $M_{\text{low relative distraction}} = 1.88$). No main effect of order ($F(1, 911) = .17$, $p = .680$, $\omega_p^2 = -.001$) or interactive effect emerged ($F(1, 911) = 1.76$, $p = .185$, $\omega_p^2 = .001$).

*Brand Interest.* Finally, we conducted a between-subjects ANOVA with relative distraction, the order in which we collected brand interest and attitude measures, and their interaction as independent variables and the brand interest composite from studies 1 and 2 as the dependent measure. A significant main effect of relative distraction emerged ($F(1, 911) = 17.45$, $p < .0001$, $\omega_p^2 = .018$). Participants in the high relative distraction condition reported greater interest in the advertised destination compared to participants in the low relative distraction condition ($M_{\text{high relative distraction}} = 4.96$ vs. $M_{\text{low relative distraction}} = 4.61$). A main effect of order also resulted ($F(1, 911) = 7.97$, $p = .005$, $\omega_p^2 = .008$). Across both relative distraction conditions, brand interest was higher when these measures were collected after the brand attitude measures. This result is not notable to us and, importantly, no interactive effect emerged ($F(1, 911) = .44$, $p = .506$, $\omega_p^2 = -.001$).

*Discussion.* Study 3 provides additional support for hypothesis 1 and further generalizes our findings using a new manipulation of relative distraction, an online adult sample, a more common focal task, and an advertisement that differs on several dimensions. See web appendix A for a conceptual replication using this relative distraction manipulation, the coloring focal task from studies 1 and 2, and a different audio advertisement for a low-involvement product category, breath mints.[8]

## STUDY 4

Study 4 builds on previous studies in several ways. In studies 1–3, participants were aware in advance that an advertisement would play in the background while they engaged in the focal task. In this study, participants experience incidental exposure to an advertisement playing in the background (i.e., they were not told it would be playing before hearing it or that it was part of the study). In addition, in study 3, after undergoing the relative distraction manipulation, participants responded to an open-ended question asking them to explain why their attention occurred the way it did, which could have been responsible for their inferences about distraction. In this study, we do not ask participants to explain their attention at all. Therefore, study 4 seeks to provide evidence that metacognitive inferences from distraction can arise after incidental exposure to a background advertisement.

Additionally, study 4 employs a new behavioral measure as the dependent variable. If participants infer that they have more interest and/or more positive attitudes toward a brand when relatively distracted by a background ad for that brand, they should be more likely to engage with the brand. To operationalize this, we assess whether participants chose to visit the brand's Instagram page (Hollebeek, Glynn, and Brodie 2014).

### Participants and Procedure

A total of 1,698 individuals (52.92% female; $M_{\text{age}} = 36.77$) participated in this study on MTurk for payment. This study used a two-cell (relative distraction: high or low) between-subjects design. As in study 3, participants browsed the internet at their leisure as the focal task while listening to an audio clip consisting of music and an advertisement in the background. The audio track was very similar to that of study 3, except the advertisement was now a roughly 60 second slice of the long-form car ad for Mercedes used in studies 1 and 2.

*Incidental Background Ad Exposure.* In order to ensure that exposure to the background ad was incidental, the cover story mentioned only that the study was about people's experience while browsing the internet and listening to music. The cover story no longer mentioned anything about secondary or background tasks or advertisements.

*Relative Distraction Manipulation.* Relative distraction was manipulated in a similar manner as in study 3. However, in this study participants did not respond to an

8 Given that past research has shown that metacognitive inferences arise when mental experiences deviate in either direction (positive or negative) from an expected level, an open question is whether consumers infer more positive brand evaluations from high perceived distraction toward a background ad or less positive brand evaluations from low perceived distraction. In web appendix B, we report the results of an additional study using the same basic methodology as study 3 (Bahamas ad, internet browsing focal task, MTurk sample) that adds a moderate distraction condition in addition to the high and low distraction conditions. The results of show that perceived high relative distraction resulted in directionally more positive brand evaluations compared to perceived average distraction (all $p$s $< .10$). However, there was weaker evidence of any difference in brand evaluations between participants in the perceived low and average distraction conditions. This pattern suggests that metacognitive inferences from distraction may more likely be driven by cases where consumers perceive themselves to be relatively distracted by a background ad (compared to a baseline, or average, amount of distraction) as opposed to not very distracted by a background ad (compared to a baseline amount). However, these results need to be interpreted with caution due to marginal significance.

open-ended question asking them to explain why their attention occurred the way it did. This allows us to more naturally assess metacognitive inferences from distraction. In addition, the relative distraction manipulation was presented graphically in addition to clearly stating whether the participant was more or less distracted than others.

*Measures.* In order to capture a behavioral DV that would be a good operationalization of brand interest in the online environment, we asked participants to choose whether they would like to view the official Instagram page of the brand from the background advertisement versus the official Instagram page of a competing brand in lieu of self-reported brand interest/brand attitude measures. Participants were actually taken to this Instagram page based on their choice (as they were told that they would review and rate a brand's Instagram page as part of a later task in the HIT), so this study captures real click behavior with consequences for the participant. After viewing the Instagram page of their choice, participants then completed the manipulation-check item from study 3, followed by demographic and hypothesis guessing questions.

## Results and Discussion

Data from three participants (.002% of participants) were removed because these individuals correctly guessed the hypothesis. Data from 97 participants (5.71%) were removed because these participants admitted to turning their computer volume completely off while the advertisement was playing. Data from 88 participants (5.18%) were removed because these individuals reported either giving 0% or 100% attention to the advertisement. The rationale for excluding these individuals is described in study 3. Finally, data from 46 participants (2.71%) were removed because these individuals ignored our instructions to complete the study on a computer and instead used a mobile device (for which the study was not optimized).[9] The same pattern of results holds if the full sample is used.

*Manipulation Check.* First, we conducted a between-subjects ANOVA with relative distraction as the independent variable and the manipulation-check item as the dependent measure. As expected, a significant main effect of relative distraction emerged ($M_{\text{high relative distraction}} = 2.33$ vs. $M_{\text{low relative distraction}} = 2.08$; $F(1, 1462) = 17.92$, $p < .0001$, $\omega_p^2 = .011$).

*Instagram Page Choice.* Next, we conducted a binary logistic regression with relative distraction as the independent variable (0 = low relative distraction, 1 = high relative distraction) and participants' choice of Instagram page as the dependent measure (0 = the Instagram page of another luxury car brand, 1 = the Mercedes Instagram page). As expected, a significant main effect of relative distraction emerged ($b_{\text{unstandardized}} = .10$, SE = .05, $\chi^2$ (1, $n = 1464$) = 3.93, $p = .047$, odds ratio = 1.23). Participants in the high relative distraction condition were significantly more likely to view the official Mercedes Instagram page (54.15%) compared to those in the low relative distraction condition (48.97%).

*Discussion.* Study 4 demonstrates that consumers engage in interest-driven behaviors with a brand after being relatively distracted during incidental exposure to a background advertisement for that brand. See web appendix C for a conceptual replication of this study in a lab environment (using the coloring focal task from studies 1 and 2) in which music was playing naturally from the start of the study and no mention of even the music was made at any point.

# STUDY 5

Study 5 provides additional evidence for our proposed metacognitive inferential process by demonstrating that perceived distraction is less likely to enhance brand evaluations when the distraction = interest lay theory is not perceived to be applicable to the current context. We propose that this occurs when consumers have very little interest in the product category of the brand being advertised. In this case, a more applicable explanation is that executional elements of the ad (e.g., the narrator's voice, sound effects) were distracting, and a more appropriate conclusion for consumers is that the advertisement itself was good at capturing people's attention. We provide evidence for this account by examining to what factor consumers attribute their distraction (i.e., their own interest in the contents of the ad vs. attention-grabbing executional elements of the ad) and showing that consumers' relative attributions of distraction to these factors mediate the relationship between perceived level of distraction and brand evaluations.

## Participants and Procedure

A total of 868 individuals (54.15% female; $M_{\text{age}} = 36.17$) participated in this study on MTurk for payment. We captured participants' general interest in the advertised product category (cars) as a measured variable and counterbalanced the order in which this was measured (before or after the main study). The procedure of the main study exactly followed that of study 3, except in this study, the

9 We note that we did not use this exclusion criterion in study 3 because we had not preregistered it, but the results of study 3 hold if this exclusion criterion is applied (and a similar percentage of respondents, 16 participants or 1.60% of the sample, would be excluded if this criterion were applied to study 3). We chose to apply this exclusion criterion in studies 4 and 5 after it came to our attention that portions of the study may not have functioned properly on a mobile device (specifically the audio). The metadata that allowed us to determine whether someone completed the study on a mobile phone was collected in all MTurk studies, but we failed to report that this was collected in the preregistration for study 3.

advertisement was the same 60 second Mercedes ad used in study 4. Thus, the study employed a 2 (relative distraction: high or low) × 2 (order of measuring general interest in advertised product category: before or after main study) between-subjects design, with general interest in advertised product category as a measured moderator.

*General Interest in Advertised Product Category.* As part of an ostensibly separate task, participants indicated their general interest in 10 product categories, including the focal category of cars, by answering the following question for each category on a nine-point scale (1 = Not interested at all, 9 = Extremely interested): "How interested are you, in general, in each of the following product categories?" The categories included cars, cruises, fast food restaurants, smartphones, TVs, laptops, small kitchen appliances, tableware, books, and video games. This list was presented either before or after the main study, and the order of this list was randomized across participants.

*Measures.* Following the manipulation of relative distraction, participants then indicated their agreement with the same four statements as in previous studies about their interest in the brand from the audio ad ($\alpha = .92$). Participants also answered two questions assessing to what they attributed their distraction (1 = Not at all, 7 = A lot): "How much did the fact that the brand being advertised was something you are interested in draw your attention to the ad?" and "How much did elements of how the ad was made draw your attention to the ad—things like the voice, the volume, the sound effects, etc." We combined these two measures into a difference score so we could analyze how relative attribution of attention to one's interest in the contents of the ad versus the executional elements of the ad mediated brand evaluations across conditions. Participants then completed the same manipulation-check item from previous studies. Participants also reported how much they enjoyed the focal task (–4 = Hated it, 4 = Loved it). This allowed us to analyze whether participants may attribute their high relative distraction to a lack of interest in the focal task, especially when they were uninterested in the advertised product category. Finally, they reported whether they turned their computer volume off while the ad was playing, completed an open-ended suspicion check, and provided demographic information.

## Results

No participants correctly guessed the hypothesis. Data from 16 participants (1.84% of participants) were removed because these participants indicated that they were unable to hear the audio due to technical difficulties. Data from 35 participants (4.03%) were removed because these participants admitted to turning their computer volume completely off while the advertisement was playing. Data from 36 participants (4.15%) were removed for the same reason described in study 3 (because these individuals reported giving either 0% attention or 100% attention to the ad). Finally, data from six participants (.69%) were removed because these individuals ignored our instructions to complete the study on a computer and instead used a mobile device. The same pattern of results holds when we use the full sample. The order of when participants were asked about their general interest in the advertised product category (before or after the main study) did not interact with the relative distraction factor to produce any significant two-way or three-way interactions on any of the measures reported below. Thus we collapse across this order variable in all subsequent analyses for simplicity.

*Manipulation Check and Enjoyment of Focal Task.* First, we regressed the manipulation-check item on the manipulated relative distraction factor (low relative distraction = –1, high relative distraction condition = 1), participants' general interest in the advertised product category as a measured continuous variable (mean-centered), and their interaction (Irwin and McClelland 2001), in that order. As expected, a significant main effect of relative distraction resulted ($b_{\text{unstandardized}} = .26$, SE = .04, $t(771) = 5.80$, $p < .0001$, $\omega_p^2 = .040$), such that participants in the high relative distraction condition reported giving more attention to the ad relative to the music compared to those in the low relative distraction condition ($M_{\text{high relative distraction}} = 2.92$ vs. $M_{\text{low relative distraction}} = 2.40$). A significant main effect of the measured interest in the advertised product category variable also emerged ($b_{\text{unstandardized}} = .07$, SE = .02, $t(771) = 4.02$, $p < .0001$, $\omega_p^2 = .019$), such that general interest in the product category was positively correlated with paying greater attention to the ad relative to the music. This is to be expected, but most importantly, the interaction was not significant ($b_{\text{unstandardized}} = .02$, SE = .02, $t(771) = .87$, $p = .383$, $\omega_p^2 = .000$).

The regression model with participants' reported enjoyment of the focal task revealed no main effect of relative distraction ($b_{\text{unstandardized}} = –.02$, SE = .05, $t(770) = –.34$, $p = .731$, $\omega_p^2 = –.001$), no main effect of participants' general interest in the advertised product category ($b_{\text{unstandardized}} = .02$, SE = .02, $t(770) = 1.04$, $p = .297$, $\omega_p^2 = .000$), and no interactive effect ($b_{\text{unstandardized}} = .01$, SE = .02, $t(770) = .26$, $p = .797$, $\omega_p^2 = –.001$). These results suggest that participants did not attribute their perceived distraction to their enjoyment of the focal task.

*Brand Interest.* Next, we regressed brand interest on the manipulated relative distraction factor, participants' general interest in the advertised product category as a continuous measured variable, and their interaction. The model revealed a significant main effect of relative distraction ($b_{\text{unstandardized}} = .28$, SE = .05, $t(771) = 5.57$, $p < .0001$, $\omega_p^2 = .037$) and a significant main effect of the measured interest in the advertised product category

variable ($b_{unstandardized}$ = .23, SE = .02, $t(771) = 11.33$, $p < .0001$, $\omega_p^2 = .141$). Most pertinent to our hypothesis, a significant interaction also emerged ($b_{unstandardized}$ = .04, SE = .02, $t(771) = 2.19$, $p = .029$, $\omega_p^2 = .005$). Floodlight analyses revealed that there was a significant conditional effect of relative distraction only among participants who had a score of 2.30 or above on the general interest in the advertised product category measure (79.35% of participants; $M = 5.24$). Specifically, when participants are at least somewhat interested in the advertised product category, those in the high relative distraction condition reported more interest in the advertised brand than those in the low relative distraction condition. This difference was attenuated among participants who are not interested in the advertised product category (below 2.30), suggesting that the lay theory that distraction = interest is not applicable for these participants. These results support hypotheses 1 and 3, and are illustrated in figure 2.

*Distraction Attribution.* Next, we regressed the difference score measuring participants' relative attribution to their own interest in the contents of the ad (i.e., the advertised brand) versus executional elements of the ad on the relative distraction factor, participants' general interest in the advertised product category, and their interaction. The model revealed a significant main effect of the measured general interest in the advertised product category variable ($b_{unstandardized}$ = .46, SE = .04, $t(766) = 12.65$, $p < .0001$, $\omega_p^2 = .171$), and, most pertinent to our hypothesis, a significant interaction ($b_{unstandardized}$ = .13, SE = .04, $t(766) = 3.55$, $p < .001$, $\omega_p^2 = .015$). No main effect of the relative distraction factor emerged ($b_{unstandardized}$ = .01, SE = .09, $t(766) = .16$, $p = .874$, $\omega_p^2 = -.001$). Floodlight analyses to explicate the interaction revealed that there was a significant conditional effect of relative distraction among participants who had a score of 3.39 or below on the general interest in the advertised product category measure (28.18% of participants). Specifically, under this cutoff, as participants reported being less interested in the advertised product category, those in the high relative distraction condition attributed an increasingly greater amount of their distraction to executional elements of the ad and less to their own interest in the contents of the ad compared to participants in the low relative distraction condition. Among individuals who reported high levels of general interest in the advertised product category (above 6.75), this trend reversed, such that participants in the high relative distraction condition now attributed more of their distraction to their own interest in the contents of the ad and less to executional elements of the ad compared to participants in the low relative distraction condition. These results support hypothesis 3.

*Mediation.* Next we tested our full model using moderated mediation, with the relative distraction factor as the IV, the general interest in the advertised product category measure as a continuous moderator of the relationship between the IV and the mediator, the attribution difference score measure as the mediator, and the brand interest composite as the DV (PROCESS model 7; Hayes 2013).

The moderated mediation model (figure 3) yielded expected differences across values of the general interest in the advertised product category measure, as evidenced by the index of moderated mediation ($b_{unstandardized}$ = .03, SE = .01, 95% CI: .015, .054; Hayes 2015). Among participants who reported high general interest in the advertised product category (roughly above the cutoff value of 6.75 from the floodlight analysis above), those in the high relative distraction condition reported higher scores on the brand interest composite than those in the low relative distraction condition, and this was driven by greater attribution of their distraction to personal interest in the contents of the ad relative to executional elements of the ad (at a score of 7 out of 9 on the general interest in the advertised product category measure: $b_{unstandardized}$ = .06, SE = .03, 95% CI: .007, .054). This mediation was attenuated among those reporting moderate levels of general interest in the advertised product category, as their attributions shifted toward executional elements of the ad relative to their own interest in the contents of the ad. Although not explicitly included in our theorizing, the mediation pattern actually reversed at low levels of general interest in the advertised product category (roughly below the cutoff value of 3.39 from the floodlight analysis above). Participants with very low interest in the advertised product category attributed their distraction to executional elements of the ad more so relative to personal interest in the contents of the ad, and this had an indirect effect on lowered scores on the brand interest composite (at a score of 3 out of 9 on the general interest in the advertised product category measure: $b_{unstandardized}$ = –.07, SE = .03, 95% CI: –.136, –.014). Overall, the moderated mediation analysis supports hypothesis 3 and is illustrated in figure 3.

## Discussion

The results of study 5 provide evidence for an additional moderator of the general effect that inferences from distraction lead to more positive evaluations of brands advertised in background ads: whether consumers have at least moderate a priori general interest in the product category. When a consumer does not, we propose that the distraction = interest lay theory is not perceived to be applicable to the experience of being distracted by the background ad because the consumer realizes the distraction = interest lay theory does not overlap with (i.e., apply to) the experience of being distracted by an ad for a brand from a product category in which they already know they are not interested. Additionally, this study shows how consumers' attributions of their perceived distraction determine whether they draw metacognitive inferences about their evaluations of the

**FIGURE 2**

STUDY 5: FLOODLIGHT ANALYSIS SHOWING THAT DISTRACTION IMPLIES BRAND INTEREST WHEN LAY THEORY IS PERCEIVED TO BE APPLICABLE

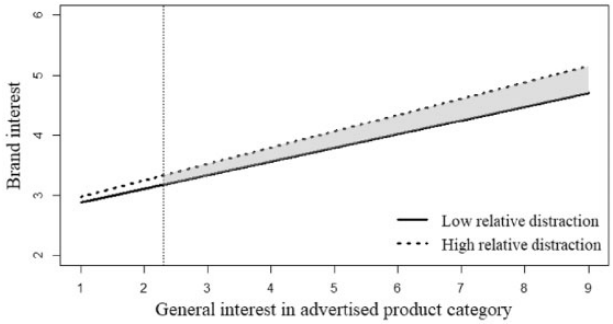
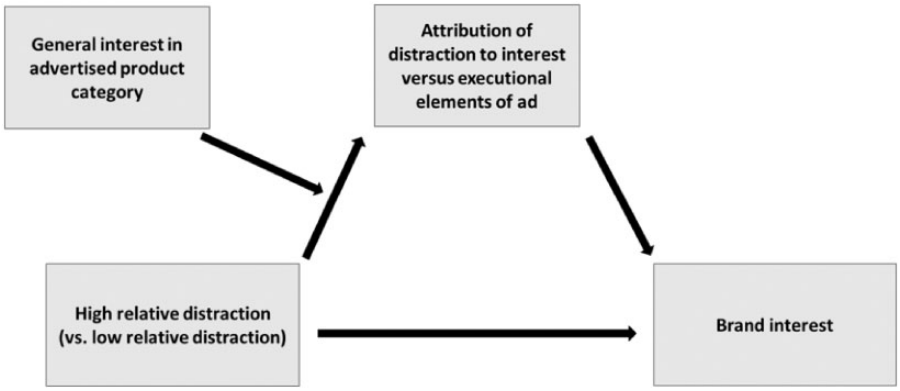



**FIGURE 3**

STUDY 5: CONCEPTUAL MODEL OF MODERATED MEDIATION




brand. When consumers attribute their distraction to their own interest in the contents of the ad relative to the executional elements of the ad itself, high perceived distraction leads to more positive brand evaluations. However, when consumers instead attribute their distraction to executional elements of the ad relative to their own interest in the contents of the ad, high perceived distraction no longer appears to enhance brand evaluations and actually may lower them.

## GENERAL DISCUSSION

In this research, we explore the metacognitive inferences that consumers draw when they perceive themselves to be relatively distracted by background advertisements (i.e., ads that individuals are exposed to while primarily focused on concurrent but unrelated tasks). In this research, we show that high perceived relative distraction by a background ad results in more positive brand evaluations and brand engagement (1) for both high involvement (e.g., luxury car and vacation destination) and low involvement (e.g., breath mints; see web appendix A) products, (2) using different focal tasks (coloring in studies 1 and 2 and browsing the internet in studies 3–5), and (3) under two different conditions that prompt metacognitive inference-making (i.e., when consumers perceive themselves to be more distracted relative to their expectations in studies 1 and 2 and when they perceive themselves to be more distracted relative to others in studies 3–5). We also provide evidence for the proposed metacognitive inferential process by demonstrating that perceived distraction does not

appear to enhance brand evaluations when the distraction = interest lay theory is not perceived to be diagnostic (Feldman and Lynch 1988) or applicable (Higgins 1996).

## Theoretical Contributions

Our findings illustrate that distraction serves as a metacognitive cue from which consumers form inferences about their evaluations of brands featured in background ads. Our work is thus the first to advance distraction as a new metacognitive experience affecting inferences on important consumption variables alongside previously established metacognitive cues such as ease of recall (Schwarz et al. 1991; Wänke et al. 1997), processing fluency (Labroo et al. 2008; Lee and Labroo 2004; Winkielman et al. 2003), and perceived passage of time (Sackett et al. 2010). Our results suggest that these metacognitive inferences are guided by diagnostic and applicable lay theories, consistent with previous work on the influence of lay theories on metacognitive inferences. In line with this past research, our results also suggest that inferences from distraction occur based on perceptions of one's relative metacognitive experience, as opposed to exclusively based on one's actual metacognitive experience.

We note that we also have data that suggests that actual metacognitive experiences of distraction (and not just one's relative experience) can also affect judgments of brands in background ads. Specifically, we examined the pattern of results among individuals in studies 3–5 and the studies reported in web appendixes A–C who reported giving either 0% or 100% attention toward the background ad (and were excluded from the main analyses for reasons outlined in study 3). These participants are individuals who naturally were not at all distracted or very distracted by the ad before receiving feedback about their relative level of distraction compared to others. Indeed, even after we controlled for the manipulation feedback, those reporting 100% attention expressed more positive evaluations of the advertised brand compared to those reporting 0% attention. Additionally, in study 4, those reporting 100% attention were more likely to choose to look at the advertised brand's social media page compared to a competing brand's page. This analysis demonstrates that actual distraction is also associated with positive brand evaluations, much like our manipulations of perceived distraction. See web appendix D for additional details of this supplementary analysis.

In addition to the literature exploring how metacognition impacts consumers, our research also adds to a large and growing literature about how distraction and interruption affect judgments. Although past work has explored how distractions can influence judgments of the focal task (Critcher and Gilovich 2010; Damrad-Frye and Laird 1989; Fisher 1998; Isikman et al. 2016; Kupor and Tormala 2015; Kupor et al. 2018) and how distractions and cognitive load impact processing of focal persuasive messages (Petty et al. 1976), our work is the first, to our knowledge, to examine how distraction by a background stimulus (and away from a focal task) influences evaluations of the distractor.

Exploring distraction as a determinant of attitudes is especially interesting because dual process models of attitude formation have shown that distraction (i.e., having one's attention shift back and forth between multiple tasks or stimuli) itself is a factor that leads to attitude formation via peripheral cues (per the Elaboration Likelihood Model; Petty and Cacioppo 1986). Thus, past work has shown that distraction is a factor that creates conditions of low involvement toward an ad, and our work suggests that consumers use this same distraction to form their attitudes via metacognitive inferences. Although other metacognitive experiences, such as the ease of recall of information about a brand, have been classified as peripheral cues in attitude formation (Greifeneder and Bless 2007; Greifeneder, Bless, and Pham 2011), distraction seems to be unique in that it both plays a role in determining what information and cues consumers use to form attitudes, while also serving as one of these cues itself. Our work therefore contributes to our understanding of the multifaceted role that distraction plays in attitude formation.

Our work also contributes to the literature on consumer lay theories (Broniarczyk and Alba 1994; Deval et al. 2013; Haws et al. 2017; Labroo and Mukhopadhyay 2009; Luchs et al. 2010; Mukhopadhyay and Johar 2005; Posavac et al. 2010; Raghunathan et al. 2006; Smith and Schwarz 2016) by showing that consumers hold beliefs about the relationship between distracting stimuli and one's interest in the contents of such distractors. It also contributes to literature on advertising and persuasion (Friestad and Wright 1994) by suggesting that consumers' persuasion knowledge about advertisements (i.e., whether consumers believe they were distracted by an advertisement's executional elements) also functions within the domains of metacognitive inferences and background advertisements.

Finally, the inference that attention implies interest may partially explain some previous findings in the marketing literature about attention and choice. The generally accepted notion among marketing practitioners and researchers is that increasing a consumer's attention toward a product increases the likelihood of the consumer choosing that product (Allenby and Ginter 1995; Chandon et al. 2009; Janiszewski, Kuo, and Tavassoli 2013). Although previous research has not delved into the psychological process behind why this might be the case, this relationship may occur, in part, because consumers infer they are interested in a brand based on their attention directed toward marketing information about it.

## Practical Implications

In today's society, consumers frequently encounter advertisements as background stimuli while multitasking and focusing on other tasks (e.g., doing household chores, browsing the internet, using their smartphone). To begin, one might wonder how perceived distraction toward a background ad affects brand evaluations compared to a situation in which consumers pay attention to the same ad when it is the only stimulus in the environment. Distraction toward a background ad (which we define as the amount of attention shifted toward a background ad) is unlikely to be as great as the amount of attention consumers would give to an advertisement they were processing as the sole object of their attention. Thus, to the extent that greater attention to a certain marketing message (or a greater shifting of attention) leads to more positive brand evaluations, we would not expect that consumers who perceive themselves to be relatively distracted by a background ad would evaluate the brand more positively than consumers who are paying attention to the same advertisement with no distractors present.

However, the good news for marketers is that all is not lost if consumers are not giving focal attention to their advertisement. Our results suggest a novel mechanism through which background ads can enhance brand evaluations. Therefore, understanding how consumers are affected by their metacognitive experiences with background advertisements should provide marketers with valuable insight for designing future campaigns. Ads must arguably be at least somewhat distracting so that they have the power to capture consumers' attention even when encountered in the background. However, our research suggests that the story is more complicated than this, and the unique benefits of background ads do not always occur. If the audience does not have at least moderate interest in the product category, our findings suggest that consumers who perceive themselves to be distracted by a background ad will instead be likely to attribute their distraction to attention-grabbing executional elements of the ad itself and not draw favorable inferences about the brand.

## Single-Paper Meta-Analysis, Limitations, and Future Directions

We conducted a single-paper meta-analysis (McShane and Böckenholt 2017) for reliability, including the additional studies reported in the web appendix and excluding study 4 (due to the different dependent variable). Following McShane and Böckenholt's (2017) suggestions, for this analysis we examined only high versus low perceived distraction conditions in every study (looking only within the high perceived diagnosticity of distraction condition in study 2, ignoring the continuous moderator in study 5, etc.). Also following their suggestion, if a study measured both brand interest and brand attitudes, we treated each composite as a separate study for the purposes of this analysis (see web appendix E for summary statistics). The single-paper meta-analysis estimated the effect size at .42 with a confidence interval that did not include zero (95% CI: .322, .518), indicating the robustness of our main effect across all studies (i.e., being relatively distracted by a background ad leads to more positive evaluations of the advertised brand).

There are several future directions in which this research could be extended. First, future research could explore how consumers' initial metacognitive inferences about a brand in a background ad are then integrated into memory and how they in turn affect these individuals' long-term attitudes toward the brand and/or inferences about specific attributes of the brand in the future. Our experiments measure consumers' evaluations of a brand only at the time the initial metacognitive inference from distraction is made. It could be the case that consumers' interest derived from their initial metacognitive inferences regarding their distraction by an advertisement could then lead them to infer that the brand scored extremely well on a specific attribute in the future (Sanbonmatsu, Kardes, and Sansone 1991). Perhaps this would occur because consumers would forget (or remain unaware) that their original positive evaluation stemmed from how distracting an ad is, not from direct information about the brand's specific attributes, similar to a false memory effect (Braun 1999; Rajagopal and Montgomery 2011).

Second, our research shows that distraction is a rich source of metacognitive inference-making, but does not fully explore the variety of lay theories that could drive such inferences. Although our findings suggest that consumers tend to rely on the dominant distraction = interest lay theory to infer interest in the brand in the background, metacognitive experiences (e.g., processing fluency or distraction) often have multiple accessible lay theories that can be brought to bear on a specific experience (Deval et al. 2013; Schwarz 2004; Smith and Schwarz 2012; Winkielman and Schwarz 2001). Future work should explore what other lay theories apply to distraction. For example, consumers likely realize that high distraction is occasionally associated with high annoyance (e.g., an intrusive cellphone conversation in a quiet place or a crying baby on a plane). If this alternative lay theory (i.e., distraction = annoyance) is more accessible or applicable at the time of judgment, consumers may even arrive at an opposite conclusion about their evaluation of the advertised brand.

Our research also begins to outline specific conditions under which distraction leads consumers to direct their inferences to different targets (e.g., their own interest in the contents of the ad vs. attention-grabbing executional elements of an ad). However, by no means do we fully explore when distraction may also lead consumers to draw a

conclusion about something other than their interest in the brand (attitudes toward the focal task, one's available mental resources, etc.) or even their own identity (as in Summers, Smith, and Reczek 2016). Future work should continue to document when individuals form conclusions about their interest in the contents of the distractor versus other factors. For example, what happens if consumers find that they are distracted by multiple background stimuli at the same time (e.g., both a background ad and a background conversation distract consumers away from a focal task)? Might consumers now direct inferences to the focal task because they conclude that they would rather pay attention to any of multiple background stimuli instead, or might the consumers' inferences still be directed toward one of the background tasks, depending on their relative salience to one another?

Finally, future research could also fruitfully examine other conditions in which perceived distraction is likely to spur metacognitive inferences. The modality (e.g., auditory vs. visual) of the primary and secondary tasks may play a role. For example, although television ads are often encountered as background audio while consumers view second screens, consumers' visual attention also often shifts toward the TV. Although this is difficult to test without introducing confounding variables, future work could explore what types of stimuli (e.g., single-channel vs. cross-channel distractions) lead consumers to become relatively distracted and thus to ultimately form metacognitive inferences. We leave this and other questions to future research.

## DATA COLLECTION INFORMATION

All studies and pretests were jointly designed and analyzed by the three authors. The first author jointly supervised the collection of data for the study 1 pretest and studies 1, 2, and the web appendix A study with the lab manager at the Fisher College of Business Behavioral Lab at The Ohio State University in September 2016, March 2016, April 2015, and January 2018, respectively. The first author supervised the collection of data for studies 3, 4, 5, and the web appendix B study using participants from Amazon Mechanical Turk in December 2017, April–May 2019, March 2018, and November–December 2017, respectively. The second and third authors jointly supervised the collection of data for the web appendix C study with the lab manager at the Fisher College of Business Behavioral Lab at The Ohio State University in September–October 2018.

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