Drawing Conclusions While Multitasking: Distracting Background Ads Cue Consumers to Infer Product Interest Through Metacognitive Inferences

Daniel M Zane, Ohio State University, USA
Robert W Smith, Ohio State University, USA
Rebecca Walker Reczek, Ohio State University, USA

Marketing stimuli are often non-focal background stimuli rather than the focus of consumers’ undivided attention. This research explores how interest in products in background advertisements is driven by metacognitive inferences about distraction. These inferences can lead to increased or decreased interest in products depending on what lay theory is accessible.

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When Consumer Multitasking Emerges and How It Reshapes Consumer Behavior

Chair: Christilene du Plessis, Rotterdam School of Management, The Netherlands

Paper #1: Juggling When Low in Control: The Effect of Control on Choice to Multitask
Jerry Han, University of Texas at Austin, USA
Susan Broniarczyk, University of Texas at Austin, USA

Paper #2: Drawing Conclusions While Multitasking: Distracting Background Ads Cue Consumers to Infer Product Interest Through Metacognitive Inferences
Daniel M. Zane, Ohio State University, USA
Robert W. Smith, Ohio State University, USA
Rebecca Walker Reczek, Ohio State University, USA

Paper #3: How Multitasking Influences Consumer Learning of Brand Associations
Christilene du Plessis, Rotterdam School of Management, The Netherlands
Steven Sweldens, Rotterdam School of Management, The Netherlands
Stijn van Osselaer, Cornell University, USA

Paper #4: A Change is as Good as a Rest: Changing Contexts Restores Self-Control
Nicole Mead, University of Melbourne, Australia
Jonathan Levav, Stanford University, USA

SESSION OVERVIEW

Today, consumers multitask more than ever. Technological advances such as mobile devices allow consumers to simultaneously consume multiple media at home or while on the move. For example, while watching TV, US consumers simultaneously use a second device 77% of the time (Google 2012). While multitasking may have substantial implications for consumer behavior and decision-making, research on consumer multitasking is scarce. In this session, we explore the impact of consumer multitasking across a variety of behaviors and contexts by focusing on two questions: (1) what are the drivers of consumer multitasking and (2) what are the consequences of consumer multitasking.

The first paper investigates a unique driver of multitasking and its impact on decision-making and consumer well-being. In three experiments, Han and Broniarczyk examine how incidental feelings of low control boost consumers’ propensity to multitask. The authors also observe that this multitasking subsequently results in impaired decision-making and lower well-being.

However, multitasking may not always negatively impact consumer judgments. Zane, Smith and Reczek find that the impact of distracting background advertisements on product judgments depends on metacognitive inferences about distraction. Across three studies, the authors show that consumers’ metacognitive inferences about distraction can lead to increased or decreased interest in products.

The next project investigates how multitasking influences consumers’ ability to learn brand associations, and it challenges previous work which has shown that multitasking tends to have a negative impact on consumer learning. In two experiments, du Plessis, Sweldens and van Osselaer show that performing tasks simultaneously facilitates predictive learning of brand associations by motivating consumers to allocate more attention to the outcome that is the focus of prediction in the primary learning task.

The increased prevalence of consumer multitasking is due in part to consumers now being able to complete certain tasks without having to interrupt their daily routines. For example, instead of having to set aside time to go shopping exclusively, consumers can now shop on their mobile devices while completing their daily routines. Thus, consumers often perform a given action across multiple contexts (e.g., initiating product search on a smartphone while out of the house and finalizing the transaction on a laptop once home). The final paper in this session explores the consequences of such context shifts for self-control performance in sequential tasks. In four experiments, Mead and Levav find support for the theory that changes in mental and physical contexts reset self-control.

Overall, this session advances our understanding of consumer multitasking by shedding light on the antecedents and consequences of multitasking. The session should appeal to a broad audience of researchers and practitioners because (1) it investigates an emerging phenomenon that has profound implications for the “modern” consumer, (2) speaks to several established literatures in consumer research, including decision-making, power, learning and self-control, and (3) and illustrates how technological advances can reshape fundamental psychological processes and influence consumer well-being.

EXTENDED ABSTRACT

The development of portable devices has resulted in an environment where consumers are constantly multitasking, which refers to “rapidly switching from one task to another or juggling multiple tasks at the same time” (Lee et al. 2012). Multitasking is related to the distraction and cognitive load literature in that it involves a dispersion of attention or decrease in the amount of cognitive resources available for a task. However, multitasking is distinct in that it is a volitional behavioral mode in which consumers choose to engage in simultaneous task performance even though they have the opportunity to complete tasks sequentially. Despite the widespread nature, there is a lack of investigation into the antecedents and consequences of multitasking in a consumer context. We examine the effect of an important consumer variable, perceived control, on multitasking tendencies. Interestingly, we find that those experiencing low control are more likely to multitask, but that this has deleterious effects as multitasking leads to lower task performance and well-being.

Past work has shown the negative effects of multitasking on attention and subsequent memory recall. For example, chronic multitaskers were more susceptible to interference from irrelevant environmental stimuli and representations in memory (Ophir, Nass, and Wagner 2009). Although such work is shedding light on the effects of multitasking, little work has looked into the triggers of multitasking behavior. Work that has looked into the cause of multitasking has been limited to correlational research methods (e.g. Wang and Tchernev 2012).

Past research has argued that people feeling low control become motivated to restore control (Fiske, Morling, and Stevens 1996). Bardhi, Rohm, and Sultan (2010) report that people believe multitasking provides higher control as it entails increased decision and choice making. Similar to this view, Duff et al. (2014) reported a correlation between high chronic multitasking and feelings of low control. Thus, we predicted that people feeling low control would be more likely to choose to multitask on subsequent tasks, compared to those feeling...
high control. Moreover, we expected that such multitasking would lead to a decrease in subsequent task performance and increase in negative affect.

In study 1, participants first completed a control manipulation, where they recalled a time when they either had high or low control (Whitson and Galinsky 2008). Then, participants were instructed to complete two tasks: a vocabulary task and a video task. For the vocabulary task, participants were given 4 minutes to memorize a list of German vocabulary words. For the video task, participants watched a 4-minute-long video documentary about twins. Participants were asked whether they wanted to complete the tasks sequentially or simultaneously (i.e. multitask). Participants who selected the sequential option completed each task independently. Participants who selected the multitasking option saw a screen split in half where half of the screen displayed the vocabulary list, whereas the other half displayed the video. Task performance was measured via five vocabulary quizzes and 4 video comprehension questions. As expected, people feeling low incidental control were more likely to multitask on subsequent tasks compared to those feeling high control ($\chi^2 (1) = 3.4, p < .06$). Also, as predicted, those who multiltasked performed worse in both the German vocabulary test ($F(1, 186) = 15.37, p < .0001$) and the video task ($F(1, 186) = 41.04, p < .0001$).

Study 2 aimed to replicate the effect of control on multitasking while testing the effect of multitasking on consumer decision making. Specifically, we tested the effect of multitasking on people’s consideration of irrelevant attributes (Hutchinson and Alba 1991) multiattribute information about stereo speakers was presented to subjects in a training phase. However, only one attribute was diagnostic. Analytic processing (i.e., the ability to isolate the diagnostic attribute in a subsequent test of product knowledge when making purchase decisions. The procedure of study 2 was similar to study 1 except that participants completed a consumer task instead of the vocabulary task. In the consumer task, participants read a description of a friend’s product preference and were asked to choose between two products. One of the products had fewer attributes but was more in line with the preference of the friend, whereas the other product had more attributes but was less in line with the friend’s preference. We also measured participants’ preference for multitasking. The results again showed that people feeling low control were more likely to multitask on subsequent tasks ($\chi^2 (1) = 9.51, p < .002$). Also, as in study 1, multitaskers performed worse in the two tasks than those who worked sequentially ($F(1, 100) = 6.06, p < .01$). Moreover, perceived control also had a significant effect on task performance ($F(1, 100) = 5.87, p < .02$), and this effect was mediated through people’s preference to multitask (95% CI: [.0014, .1762]; Preacher and Hayes 2004) formal significance tests of indirect effects are rarely conducted. After a brief overview of mediation, we argue the importance of directly testing the significance of indirect effects and provide SPSS and SAS macros that facilitate estimation of the indirect effect with a normal theory approach and a bootstrap approach to obtaining confidence intervals, as well as the traditional approach advocated by Baron and Kenny (1986).

Study 3 sought to further explore the consequences of multitasking on consumer well-being. We also measured people’s performance expectations in order to rule out alternative explanations. The procedure was similar to study 2, except that we asked participants how well they expected to perform after they made their choice to multitask or not and measured their stress and negative affect after completing the tasks. As before, participants feeling lower control were more likely to choose to multitask compared to those feeling high control ($\chi^2 (1) = 3.76, p < .05$). Also, those who multitasked performed worse on both the product choice task ($F(1, 139) = 9.82, p < .002$) and the video task ($F(1, 139) = 88.62, p < .0001$). More relevant to our goals, we found that those who chose to multitask experienced higher levels of stress ($F(1, 139) = 8.96, p < .01$) and negative affect ($F = 11.69, p < .001$). Mediation analyses also confirmed that feeling low control resulted in higher stress and negative affect, and that these effects were mediated through choice to multitask (Baron and Kenny 1986). Finally, the data also showed that pre-task expected performance was not affected by the control manipulation or the choice to multitask, ruling out an alternative explanation based on biased expectations.

The current research advances our understanding regarding the antecedents of consumer multitasking behavior and documents the detrimental effect of multitasking on subsequent task performance and well-being.

**Drawing Conclusions while Multitasking: Distracting Background Ads Cue Consumers to Infer Product Interest through Metacognitive Inferences**

**EXTENDED ABSTRACT**

Consumers multitask more than ever (e.g., 84% of Americans use a second device while watching television; Nielsen 2010). These tendencies toward multitasking often relegate marketing messages to the background while consumers focus on other tasks. This research explores whether consumers draw metacognitive inferences based on how distracting they find a background ad relative to expectations, and what they conclude from this distraction.

Consumers tend to believe that they are able to effectively multitask (Sanbonmatsu et al. 2013). However, consumers are prone to being distracted away from a focal task by a background stimulus (Finley, Benjamin, and McCarley 2014). Thus, when consumers find their attention moving away from a focal task towards a background stimulus, they experience distraction, which is often unexpected given consumers’ beliefs that they can successfully multitask. We theorize that when consumers find themselves more distracted than expected by a background advertisement, they draw on an underlying lay theory that distraction implies interest in the contents of the distracter to make the metacognitive inference that they are interested in the advertised product. We also identify important boundary conditions for this effect, including accessibility and diagnosticity of the lay theory.

In study 1, 110 undergraduates participated in a three cell between-subjects experiment. All participants colored a drawing while simultaneously listening to a long-form car advertisement. Participants in the “high perceived distraction” condition first read that students are good at tuning out advertisements while focusing on creative tasks. Participants in this condition should also seem unexpected. After reading the lay theory.

To analyze the between-subject conditions, we created orthogonal contrasts comparing (1) the high perceived distraction and control conditions to the low perceived distraction condition and (2) the...
high perceived distraction condition to the control condition. Regression revealed a main effect of the first contrast \((F(1, 107) = 8.86, p < .01)\), such that mean brand interest in the high perceived level of distraction and control conditions \((M = 5.25)\) was significantly greater than mean brand interest in the low perceived level of distraction condition \((M = 4.64)\). There was no significant main effect of the second contrast \((F(1, 107) = 1.16, ns)\); mean brand interest was the same in the high perceived level of distraction condition \((M = 5.11)\) and the control condition \((M = 5.37)\). Study 1 establishes initial evidence that consumers infer their level of interest in an advertised product from their perceived level of distraction towards a background ad.

In **study 2**, we demonstrate that when the diagnosticity of the “distraction=interest” lay theory is questioned, consumers who are more distracted than expected no longer infer greater interest in the advertised product (Feldman and Lynch 1988; Schwarz et al. 1991). In this study, 207 undergraduates participated in a 2 (Perceived Distraction: high, low) x 2 (Diagnosticity of Distraction: high, low) between-subjects experiment. They all completed the same tasks as in study 1. Participants’ perceived level of distraction was manipulated as in study 1. We also manipulated whether the “distraction=interest” lay theory appears diagnostic. Participants in the “low diagnosticity of distraction” condition read that students are [are not] good at tuning out advertisements, “regardless of whether they are interested in the product being advertised,” thus challenging the diagnosticity of the lay theory. Those in the “high diagnosticity of distraction” condition did not read any additional material and hence diagnosticity of the lay theory was not challenged. Once the advertisement ended, participants indicated their interest in the brand. The interaction of these two factors was significant \((F(1, 203) = 3.64, p = .057)\). When distraction was diagnostic, participants in the high perceived distraction condition reported significantly greater interest in the brand \((M = 5.35)\) than those in the low perceived distraction condition \((M = 4.90); F(1, 203) = 3.99, p = .05)\). There was no difference in interest across perceived distraction conditions in the conditions where the diagnosticity of the “distraction=interest” lay theory was challenged \((M = 5.01 \text{ vs. } 5.17; F(1, 203) = 0.48, ns)\).

**Study 3** explores whether priming consumers to access a competing lay theory (i.e., that “distraction=annoyance”), Deval et al. 2014; Schwarz 2015 results in opposing metacognitive inferences about their interest in the advertised product. This study used a 2 (Perceived Distraction: high, low) x 2 (Lay Theory Prime: “distraction=interest,” “distraction=annoyance”) between-subjects design. Participants first read an article that primed one of the lay theories by arguing that marketers use interesting [annoying] ads to grab attention. Participants were instructed to learn to predict either the bou-

**How Multitasking Influences Consumer Learning of Brand Associations**

**EXTENDED ABSTRACT**

This research explores how multitasking influences consumer learning of brand associations. Brand associations are learnt either through predictive (van Osselaer and Alba 2000) or incidental (Anderson and Bower 1973) learning processes. In predictive learning, the degree to which a cue is associated with an outcome depends on how diagnostic the cue is of a change (e.g., increase) in the outcome. For example, imagine a consumer learning about wine who first tries a wine from a particular region and finds it has good quality. Next she tries another wine from the same region which carries the brand of a particular estate, and finds it to be of the same good quality. Whereas the first experience will have led her to associate the region cue with ‘good quality,’ the same will not occur for the estate cue she encountered in the second learning trial. The reason is that the region cue already perfectly predicted the ‘good quality’ outcome. This type of ‘blocking’ effect is a staple finding in predictive learning where cues interact and compete for associative strength with outcomes. Other known examples are ‘conditioned inhibition’ and ‘unblocking’ (Kamin 1969).

Such cue interaction effects do not occur in incidental learning. Here, the degree to which a cue is associated with an outcome depends on the frequency with which they co-occur. Predictive and incidental learning can occur simultaneously; consumers engage in predictive learning of outcomes they are trying to predict, but incidental learning of outcomes they are not trying to predict (van Osselaer and Janiszewski 2001). Hence, the consumer in the previous example might have acquired an association between the estate cue and ‘good quality’ via incidental learning instead, but only if she wasn’t primarily focused on learning about quality (but rather on, say, the aging potential of the wine).

In this research we investigate how multitasking, operationalized by a cognitively demanding secondary task, influences these learning processes. Theoretically, countervailing predictions can be made. From a resource dependence viewpoint, predictive learning should suffer from cognitive capacity constraints because prediction is effortful (van Osselaer, Janiszewski and Cunha 2004). In contrast, incidental learning has been found to occur when people expend less effort on learning (De Houwer, Hendrickx, and Baeyens 1997).

In contrast, attention management theories allow for the possibility that multitasking could facilitate predictive learning. Because additional cognitive load arising from the secondary task increases task difficulty, consumers need to invest more effort into predictive learning. Based on prior research showing that attention narrows and becomes more directed when tasks require more effort (Kahneman 1973) or when motivation increases (Gable and Harmon-Jones 2010), one could predict that consumers will allocate more attention to the outcome that is the focus of prediction when they are multitasking. We test these countervailing accounts in two experiments.

**Study 1** (n=249) provides an initial test of the hypotheses. Participants were assigned to conditions in a 2 (focus: bouquet quality, aging potential) x 3 (cognitive load: low, moderate, high) x 2 (product attribute that uniquely predicts target benefit: attribute 1, attribute 2) mixed design. The first two factors were manipulated between-subjects. Participants were instructed to learn to predict either the bouquet quality or aging potential of wines. Before starting the learning trials, subjects memorized a pattern. Here we manipulated cognitive load using a dot probe task (Bethell-Fox and Shepard 1988). Next, all participants were exposed to six learning trials. The key depen-
dent variable was the difference in predicted bouquet quality when a wine was made with attribute 1 versus attribute 2.

It was predicted that, because subjects told to focus on bouquet quality will engage in predictive learning of bouquet quality, and predictive learning is characterized by cue-interaction effects, the difference in predicted bouquet quality should be positive (attribute 1 > attribute 2) due to unblocking of attribute 1, and blocking of attribute 2. In contrast, subjects told to focus on aging potential should engage in incidental learning of bouquet quality, as evidenced by a negative bouquet quality rating (attribute 2 > attribute 1). This will occur because attribute 2 was paired twice with a high bouquet quality whereas attribute 1 was paired once with this outcome. In line with the predictions from attention management theory, a significant positive trend was observed among participants told to focus on bouquet quality (b=.55, t=3.77, p<.001). The difference in bouquet quality was higher among those under high (M=.53, SD=.80) than moderate (M=1.10, SD=.71) and low (M=-.14, SD=.65) cognitive load. Further, the linear trend was not significant among participants told to focus on predicting aging potential (b=.32, t=.32, p=.75). These results indicate that cognitive load intensified predictive learning, and had no effect on incidental learning.

Because study 1 used unblocking and blocking as cue interaction effects, study 2 (n=320) sought to replicate these findings for a different type of cue interaction; conditioned inhibition. Participants were assigned to the same conditions as study 1, except that there were only two load conditions (low vs. high) and that the cue interaction effects characterizing predictive learning were unblocking of attribute 1 and conditioned inhibition of attribute 2.

As in study 1, we found that predictive learning improved under high cognitive load. Indeed, a contrast showed no difference in predicted bouquet quality based on attribute 1 versus attribute 2, among participants under low load (F(1,83)=2.19, p=.14) who focused on predicting bouquet quality. However, among participants under high load who focused on predicting bouquet quality, the contrast became significant (F(1,77)=4.62, p=.03).

In addition, cognitive load again did not impact incidental learning. Among participants told to focus on aging potential, attribute 2 was predicted to lead to higher bouquet quality than attribute 1 under low load (F(1,81)=13.46, p<.001) and high load (F(1,75)=7.63, p=.003). This research finds that multitasking can facilitate predictive learning without affecting incidental learning of brand associations. Thus, it contributes by showing that attention management, and not resource dependence theories, best describe how learning occurs when consumers are handling multiple cognitive operations simultaneously.

A Change is as Good as a Rest: Changing Contexts Restores Self-Control

EXTENDED ABSTRACT

Due to the increasing sophistication of mobile devices, consumers are increasingly making purchasing decisions while changing contexts. This enables them to initiate product search in one context, and finalize the transaction in another context. Indeed, it has been estimated that 67% of American consumers start shopping on one device but move to another screen to complete the shopping session (Google 2012). The present research examined how context changes influence consumer self-control.

According to the strength model (e.g., Baumeister et al. 1998), self-control works similar to a muscle: after initial exertion, it becomes fatigued and needs to be rested before it can become operable again. Recent theorizing suggests, however, that self-control failure after initial self-control exertion may stem from an unwillingness rather than inability to continue exerting self-control (Inzlicht and Schmeichel 2012). Building on this, we hypothesized that self-control may be contextually bound. More specifically, in the same context, people may become increasingly reluctant to engage in self-control because they are drawing from the same self-control account. However, a change in context may signal a new self-control account and hence may restore people’s willingness to exert self-control.

Given that self-control governs impulse buying (Vohs and Faber 2007), a shift in shopping context may have implications for purchasing decisions.

Four experiments tested the context hypothesis by assigning participants to complete a relatively more or less depleting task (task 1) and then randomly assigning them to complete a subsequent self-control task (task 2) in the same or different room. To establish the robustness of the effect, experiments 1-3 tested the basic hypothesis using diverse depletion manipulations and measures. To rule out the possibility that a context change improved self-control because of mere physical movement (which can induce arousal) or disruption, experiment 4 held constant physical movement and disruption while varying whether task 2 was completed in the same context as task 1. Rest replenishes self-control (e.g., Tyler and Burns 2008), so the amount of time that elapsed between the two tasks was held constant across all conditions in all reported experiments.

Study 1 examined performance on the Stroop task (Stroop 1935) as a function of prior self-control exertion (vs. no exertion) and context change (vs. no context change). To manipulate depletion, participants were or were not required to regulate their emotions while reading a neutral, boring passage (Vohs and Schmeichel 2003). For the second task, participants stayed in the same room or moved to a different room down the hall in the same laboratory. The key dependent measure was the time difference between completion of incongruent and congruent trials on the Stroop task. As predicted, an interaction between depletion and context emerged, F(1,184)=6.033, p=.015, η²=.032. Among participants who completed both tasks in the same room, participants in the depletion condition performed worse on the Stroop task (M=2.72s, SD=2.14) than their no-depletion counterparts (M=1.71s, SD=2.05; F(1,184)=6.730, p=.010), conceptually replicating previous ego-depletion effects. More important, depleted participants who switched rooms performed better on the Stroop task (M=1.72s, SD=1.55) than their non-depleted counterparts who stayed in the same room (F(1,184)=6.50, p=.012). Additionally, among participants who switched rooms, there was no effect of the depletion manipulation (F<1).

Study 2 examined consumption of a tasty but unhealthy snack. Participants randomly assigned to the depletion condition were asked not to think about a white bear during a thought-listing task, whereas participants assigned to the no-depletion condition were allowed to think about anything they liked, including thoughts of a white bear (Wegner et al. 1987). Participants then stayed in the same room or they were moved to a different room for task 2. The dependent measure was grams of potato chips consumed. Conceptually replicating study 1, there was a depletionxcontext interaction, F(1, 144) = 4.751, p = .031, η² = .032. Among those who completed both tasks in the same room, participants in the depletion condition ate more chips (M=40.65g, SD=23.90) than participants in the no-depletion condition (M=31.35g, SD=20.46; F(1,144)=2.71, p=.056) although that effect was only marginally significant. More important, participants in the depletion condition who changed contexts consumed fewer chips (M=28.67g, SD=14.99) than their depleted counterparts who did not change rooms, F(1,144)=6.16, p=.014.
Study 3 examined cheating, which is governed by self-control (Mead et al. 2009). The depletion manipulation concerned writing an essay that required participants to override the impulse to use words that contained common (vs. not common) letters. Participants in the depletion condition wrote an essay without using words that contained the letters ‘A’ and ‘N’ whereas those assigned to the no-depletion condition left out words containing the letters ‘X’ and ‘Z’ (Schmeichel 2007). The room manipulation was identical to that used in experiments 1 and 2. The measure of self-control was unethical – specifically, the amount of unearned money taken by participants. Conceptually replicating studies 1 and 2, participants in the depletion condition cheated more ($M=37$, $SD=.69$) than participants in the no-depletion condition ($M=11$, $SD=4.2$), but only when they completed both tasks in the same room, $F(1,116)=5.19$, $p=.025$. As predicted, participants in the depletion condition who switched rooms were less unethical ($M=6$, $SD=.25$) than their depleted counterparts who stayed in the same room, $F(1,116)=7.18$, $p=.008$.

Study 4 aimed to provide support for the context theory while ruling out the possibility that restoration of self-control in studies 1 to 3 was merely due to disruption or physical movement. To achieve this goal, study 4 included a comparison condition in which participants completed both tasks in the same room but in between the two tasks they were led outside of the room (vs. no change or change). The depletion manipulation was the same as that used in study 3 (essay task) and the dependent measure was performance on the incongruent trials of the Stroop task. Study 4 conceptually replicated the results of studies 1 to 3: changing rooms restored self-control ($p=.047$). However, that restoration was specific to a context change. Mere physical movement/disruption was not sufficient to restore self-control ($p=.227$).

In summary, four experiments suggest that consumers’ self-control may be contextually bound. Alternative explanations such as a boost in mood, physical movement, and mere disruption were ruled out and cannot account for obtained effects. The studies have practical implications for how self-control functions in daily life and theoretical implications for the strength model of self-control.

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