COMMUNICATION BREAKDOWN? ESSAYS EXAMINING ATTENTION AND DISTRACTION IN TECHNOLOGY MEDIATED CONSUMER COMMUNICATIONS

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As one of our most central and powerful tools, communication can provide information, influence or motivate other individuals, and cultivate relationships. Given the importance of effective communication, it is imperative that marketers fully understand how consumers engage, receive and process communications. Furthermore, as the technological environment continues to evolve, marketers must recognize how digital and mobile mediums of communication influence consumers' behaviors and decisions. This dissertation explores the role of attention and distraction in technology mediated communications; first investigating consumers' reactions to persuasive communications and second examining the influence of mobile communication devices on consumer outcomes.

Essay 1 explores how consumers respond to communications containing information on the behaviors of other individuals. In particular, this essay probes the effectiveness of persuasive messages highlighting information on the actions of a majority (i.e. normative information) or minority (i.e. non-normative information) of individuals. I show that consumer susceptibility to interpersonal influence (SII) impacts attention to normative and non-normative information in a message. Surprisingly, I find that high SII consumers overlook normative and non-normative cues and therefore exhibit similar levels of compliance with normative and non-normative communications.

Essay 2 studies the impact of mobile communication devices, such as cellphones and smartphones, on consumers' in-store decision making. Specifically, this essay builds upon prior research demonstrating the substantial level of cognitive distraction associated with mobile communication device usage. I investigate consumers' lay beliefs of the benefits and limitations of in-store mobile communication device use and examine how these devices influence shopping outcomes including consumers' ability to recall in-store stimuli, number of unplanned purchases, and number of omitted planned items.

As a whole, the essays of my dissertation make novel contributions to the literatures studying persuasion, social influence, social norms, shopper marketing, and in-store decision making. Furthermore, the findings of my dissertation offer a series of practical implications for marketers, policy makers, and consumers.

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PREFACE

The scholar must be ready for bad weather, poverty, insult, weariness, repute of failure, and many vexations.

- Ralph Waldo Emerson, *The Scholar, 1876*

The past five years have been some of the most challenging yet rewarding of my life. Reflecting back on my time in the PhD program, I would not be where I am today without the help of my family, friends, and mentors. While advanced degrees are often looked at as an individual achievement, there are many individuals whose support and encouragement have been instrumental in my success

Professionally, I am indebted to the marketing faculty at the University of Pittsburgh for the countless hours they invested in my coursework, research, and professional development. I am especially grateful for the advice and assistance provided by my advisors, Jeff Inman and Cait Lamberton. Jeff, your insights on marketing and the research process have helped me grow as an academic. Your patience and willingness to give your time have been instrumental in my success. Cait, your vast knowledge and selfless guidance have allowed me to grow and persevere. Your advice and recommendations have helped me manage the PhD process and provided invaluable perspective. Furthermore, I am appreciative of the guidance afforded by Andrew Stephen and Rebecca Walker Naylor. As co-authors, both have offered their considerable expertise and support.

In addition to the members of the University of Pittsburgh marketing faculty, I owe a considerable debt of gratitude to Carrie Woods and Chris Fedor. Both have helped me navigate the intricacies of the PhD program and have been integral to my success. Similarly, I am grateful for the friendship and encouragement offered by former and current Katz PhD students. I am looking forward to continuing our friendships as we progress in our academic careers.

Personally, I would like to thank all of my friends and family for their unwavering support. I am eternally grateful to my mom and dad for their encouragement and love. I am lucky to have such caring parents who have shaped my respect for education and hard work. Similarly, I am grateful to mom and dad Casey for their love and support. Your understanding of the ups and downs associated with graduate school has strengthened my resolve.

While there have been occasions over the past five years in which Emerson's words have struck a note of truth, there has been one individual in my life who has loved me and supported me unconditionally. Without the encouragement of my wife Kate, I know this achievement would not be possible. Her love and support have billowed my spirits during tough times and provided the inspiration to be successful. Her patience, understanding, and many sacrifices throughout this journey have turned bad weather to good, weariness to liveliness, and rendered vexations inconsequential. Kate, your caring and generous nature has changed my life for the better. You have motivated me to achieve my goals and helped me to maintain perspective on my true aspirations. In some respects, you too have earned this degree; however, I do not think you can fit any more letters after your name.

1.0 INTRODUCTION

Communication is one of our most central and powerful tools. When applied effectively, communication can provide information, influence others, and cultivate relationships. When mismanaged, communication can have unintended or disastrous consequences. Given the importance of effective communication, marketers continue to expand their understanding of how consumers receive and act upon information. A growing body of recent scholarship in marketing has investigated communications from a number of different perspectives, including consumer to consumer (Berger and Schwartz 2011; Godes and Mayzlin 2004; Moore 2012; Naylor et al. 2011; Stephen and Galak 2012), firm to consumer (Elder and Krishna 2010; Thompson and Malaviya 2013; Xu and Jr. 2010), and consumer to firm (Dunn and Dahl 2012; Mattila and Wirtz 2004; Maxham III and Netemeyer 2002). However, as the focus on consumer communications continues, there is little doubt that attention is a critical prerequisite for successful transmission. In fact, due to the increasing fragmentation of media and clutter in the competitive environment, some have argued that organizations are facing an attention crisis and that attentional constraints significantly diminish the overall effectiveness of marketing (Davenport and Beck. 2002; Sacharin 2004).

More recently, the manner in which consumers communicate and gather information has changed dramatically (Perkins 2014). The advent of the Internet and rapid penetration rate of mobile devices has provided consumers unprecedented access to an extensive variety of

communication from both other consumers (e.g., Chen and Xie 2008; Trusov et al. 2009; Zhu and Zhang 2010) and marketers (e.g., Agarwal et al. 2011; Ansari and Mela. 2003; Manchanda et al. 2006). However, in order to tap into the wealth of opportunity offered by digital advancements, it critical that marketers understand how technologies influence consumers' decisions, interactions, and perceptions.

While digital advancements allow consumers to communicate and interact with firms, products, and other individuals in a truly unique manner, the ubiquity of technology requires that marketers compete for consumer attention in a virtual arena. For example, the proliferation of grass-roots movements to recapture attention (e.g. life hacking), the increase in diagnoses of attentional disorders and reliance on distraction fighting drugs, and the popularity of dinner games meant to dissuade phone use (See Goessl 2012), all suggest that our society has a problem with technological distraction. Therefore, it is critical for marketers to understand how digital mediums impact consumer attention, decision-making, and outcomes.

This dissertation is comprised of two essays that investigate the outcomes of consumer attention and distraction related to technology-mediated communications. Essay 1 explores how consumers respond to online communications containing information on the behaviors of other individuals. In particular, this essay probes the effectiveness of persuasive messages highlighting information on the actions of a majority (i.e. normative communication) or minority (i.e. non-normative communication) of individuals. I show that consumer susceptibility to interpersonal influence (SII; Bearden et al. 1989) impacts attention to normative and non-normative information in a message. Surprisingly, I find that high SII consumers overlook normative and non-normative cues and therefore can find non-normative information to be more persuasive than normative information.

Essay 2 investigates the influence of in-store mobile communication devices on consumers' purchase behaviors. This essay builds upon prior research demonstrating the substantial level of cognitive distraction associated with mobile communication device usage. For example, research on distracted driving acknowledges that mobile device use can impair individual visual functioning and limit the amount of cognitive resources available for concurrent tasks. I argue that using mobile devices in-store can handicap shoppers' ability to focus on the task and lead to poor decisions. I show that, contingent upon use, in-store mobile device usage is linked to a number of important consumer implications, including purchasing unplanned items, omitting planned items, limiting shoppers' ability to recall in-store stimuli, and hindering overall shopping accuracy.

Taken together, this research builds upon marketing communication research in three important ways. First, this dissertation adds to the literature studying persuasion, social influence, and social norms. While much of the previous literature has focused on the communication value of normative information (Cialdini 2009; Goldstein et al. 2008), I am the first to consider the influential nature of non-normative information. Furthermore, I identify an important moderator of the social proof effect and demonstrate the importance of attention in reactions to normative and non-normative information.

Second, this dissertation takes a broader view of communications and investigates the influence of communication devices on consumer outcomes. Moving beyond what is said, this dissertation focuses on the medium of communication transfer and identifies how device use can affect consumer purchases. Given my focus on in-store settings, this dissertation also contributes to the literature in shopper marketing (Hui et al. 2013; Inman and Winer 1998; Inman et al. 2009; Kollat and Willett 1967; Stilley et al. 2010). Furthermore, my results contribute to the literature

base on mobile distraction (Drews et al. 2008; Strayer et al. 2003) and highlight environments beyond the nation's roadways in which communication device use may have lasting implications.

Finally, this dissertation outlines unanticipated consequences of communications in two unique contexts. In both contexts, I show that communications that previous literature or lay theory may predict will be negligible in their effects may have stronger or more negative consequences than anticipated. For example, in Essay 1 my findings qualify prior theories that suggest that non-normative appeals should be generally ineffective when compared to normative appeals, such as Latané's Social Impact Theory (Latané 1981; Latané and Wolf 1981; Nowak et al. 1990), Tanford and Penrod's Social Influence Model (Tanford and Penrod 1983; Tanford and Penrod 1984), and social proof theories (e.g., Cialdini 2009; Goethals and Darley 1977), all of which predict that individuals are more likely to conform to the attitudes, beliefs, or behavioral tendencies of a numerical majority rather than a numerical minority. Similarly, in Essay 2 I found that many consumers hold strong beliefs regarding the positive benefits of using mobile communication devices in retail locations. Mainly, shoppers believe mobile devices enrich their decisions and help with their shopping tasks. Conversely, shoppers believe that these devices do not act as a significant form of distraction from their shopping and have no influence on the nature or number of products purchased. Contrary to these beliefs, my results indicate that in-store mobile device use can have substantial repercussions, especially when used in a manner unrelated to the shopping trip.

1.1 ABSTRACT OF ESSAY 1

Recent research shows the power of social norms in cuing consumers to engage in a wide range of desirable behaviors, from reusing hotel towels to voting. But what if we want to motivate actions that are currently only undertaken by a minority of consumers? This essay reports a pilot study and four experiments that suggest that such situations are not hopeless; that is, marketers and policymakers may not be dependent on normative information to persuade consumers. Rather, as consumer susceptibility to interpersonal influence (SII) increases, consumers show less differentiation in their response to normative and non-normative information. Therefore, for high SII individuals, non-normative information can motivate behavior equally as well as normative information. I show that this effect occurs because higher SII reduces attention to whether information about others' behavior is normative or non-normative. Given that SII has reliable demographic correlates, these findings have important implications for marketers, consumers, and public policymakers.

1.2 ABSTRACT OF ESSAY 2

In-store decision making, a common occurrence for many consumers, is a critical topic of interest to marketing scholars and practitioners (Inman and Winer 1998). One understudied factor impacting in-store decision-making is the role of mobile technologies such as cell phones and smartphones. Mobile technologies have been praised for helping consumers make better decisions; however, prior research has identified unintended visual and cognitive impairments associated with these devices. Therefore, I investigate the impact of in-store mobile technology

use on consumers' purchase behavior. In an online experiment, I show that the intensity and duration of mobile device use negatively impacts shoppers' ability to recall in-store stimuli and accurately complete a shopping task. Furthermore, across two field studies conducted in grocery stores and mass merchandisers I demonstrate that in-store mobile technology use is associated with a number of important consumer implications, including the purchase of more unplanned items and failing to purchase more planned items. Finally, I find that shoppers are twice as likely to use their mobile devices in a mass merchandiser as in a grocery store.

2.0 ESSAY 1 - A NEW HOPE FOR THE EMPTY BANDWAGON: DO WE ALWAYS NEED CONSENSUS TO SHAPE CONSUMER BEHAVIOR?

If everyone else jumped off a bridge, would you? While a familiar exchange between parents and children to dispel the contention that the behaviors of a large group of people must be right, it appears that we have yet to learn our lesson. Research suggests that information about others' actions plays a powerful role in shaping our own attitudes and behaviors (Aarts and Dijksterhuis 2003; Cialdini et al. 1990; Hogg and Terry 2001; Kerr 1995; Naylor et al. 2012). Recently, information about the behavior of a majority of consumers has been used to curb binge drinking among college students (e.g., Haines and Spear 1996; Lewis and Neighbors 2006), increase environmentally friendly actions (e.g., Goldstein et al. 2008; Nolan et al. 2008; Schultz et al. 2007), and motivate individuals to vote (e.g., Gerber and Rogers. 2009).

Collectively termed "bandwagon effects" by political scientists and economists (Bartels 1988; Granovetter and Soong 1986; Henshel and Johnston 1987; Nadeau et al. 1993), such effects rely on the presence of a strong social norm. As actions are espoused by a greater number of individuals, they gain more power to impact behaviors. That is, as they become more normative, they become more influential. Such work suggests that managers and public policymakers must devote substantial resources to building majority support for a desired behavior and communicating this support to their target audience. Without credible normative

information, there is little reason that consumers will be persuaded to engage in the desired behavior.

But what can be done when we want to prompt consumers toward behaviors that are not presently normative, for example, to make prosocial but atypical choices (e.g., considering labor practices of manufacturers as an important determinant of which brand we choose to buy) or act in ways that may improve well-being even when others are not engaging in the behavior (e.g., undergoing preventative medical screenings)? Despite the fact that the overwhelming majority of past literature on social influence supports the notion that consumers are more persuaded by information about what majorities are doing, hints exist that marketers and policymakers may also be able to influence attitudes using information about what a minority of others has done (Maass and Clark 1984; Moscovici 1985; Moscovici 1980; Wood et al. 1994). However, while some research has explored the influence of specific minority in-groups on members of that in-group (e.g., Hildebrand et al. 2013), no research has explored when information about the behavior of a relatively small percentage of a general group of other consumers is influential.

The present essay fills this gap in our understanding, aiming to identify cases where normative information may *not* be necessary to shape consumer behavior. In particular, I explore the role of consumers' susceptibility to interpersonal influence (SII) (SII, Bearden et al. 1989; McGuire 1968) – a psychographic measure with reliable demographic correlates – in determining sensitivity to normative versus non-normative information. I formally define normative information as information about the behavior of a majority of consumers and non-normative information as information about the behavior of a minority of consumers.

A pilot study and four studies demonstrate that lower SII individuals act in accordance with the principle of social proof (Cialdini 2009). That is, they are more persuaded by normative

as opposed to non-normative information. However, as SII increases, consumers show less differentiation in their response to normative versus non-normative information; for high SII individuals, non-normative information can be just as influential as normative information. Further, I show that this effect is driven by a failure of high SII individuals to pay attention to whether information about others' behavior is normative or non-normative.

My experimental studies therefore demonstrate that even without majority support, marketers can highlight the actions of a minority of relevant others and still engender conformity in high SII consumers. Therefore, marketers looking to promote new, unfamiliar, or less popular products or behaviors (e.g., an innovative social program, healthy eating habits, or a new product with unique health benefits) would benefit from targeting higher SII individuals to build an initial support base. Thus, this research is consistent with past work in marketing suggesting that SII and other personality traits can be used successfully to segment the market to develop appropriate interventions (Rose et al. 1996) or to understand consumer response to prosocial offerings (Wood 2012). I also report data from a broad-scale correlational survey that identifies behavioral, psychographic, and demographic characteristics related to consumer SII so that these individuals can be identified. As such, my work can be used by marketers to reestablish hope for an empty bandwagon, prompting at least some segments of consumers to build the consensus that may persuade others to conform as well.

2.1 MISSING THE PROOF: THE INFLUENCE OF NON-NORMATIVE INFORMATION

2.1.1 Majority influence and descriptive norms

Early models of social influence highlight the strong power of normative information to influence individual conformity (Asch 1951; Gerard et al. 1968; Rosenberg 1961). The power of majority opinion has been attributed to individuals' desire to conform to the expectations of others and the belief that majority positions accurately depict reality (Deutsch and Gerard 1955). More broadly, past work on social influence explains that, by indicating what a majority of others have done in that setting, normative information sets the rules for behavior that is expected or appropriate (Cialdini et al. 1991; Cialdini et al. 1990; Gilbert 1995; Stiff and Mongeau 2003). The greater the number of people engaging in a behavior, the more correct the behavior is presumed to be (Thibaut and Kelley 1959). Consistent with this idea, social proof theory acknowledges that individuals determine what is correct in a certain situation by looking to the behavior of others (Cialdini 2009; Lun et al. 2007). While marketers have long relied on this effect, it has also been used recently with great success by public policymakers. For example, work by Gerber and Rogers (2009) showed that get-out-the-vote scripts that suggested that a large proportion of voters would turn out for an election generated higher voter turnout than did get-out-the-vote scripts that suggested that only a small proportion would – people seemed more interesting in jumping on a crowded as opposed to empty bandwagon.

But what if the truth is that most people do *not* intend to vote, donate, or engage in other actions that are beneficial at a personal or societal level? Despite the fact that the overwhelming majority of past literature on social influence supports the notion that consumers are more

persuaded by information about what majorities are doing, hints exist in the literature that minorities may also be able to influence the attitudes of others (Maass and Clark 1984; Moscovici 1985; Moscovici 1980; Wood et al. 1994). A well-known example of the potential power of a minority are Asch's (1951) conformity studies, where the presence of a single individual disagreeing with the majority opinion substantially decreased participants' conformity with the majority.

Why then does some research suggest that only normative information about the behavior of majorities can influence consumers while other work suggests that non-normative information about the behavior of minorities can be just as impactful? I propose that the power of normative appeals versus non-normative appeals varies systematically with consumer susceptibility-to-interpersonal influence ((SII) Bearden et al. 1989; McGuire 1968).

2.1.2 Consumer susceptibility to interpersonal influence

Susceptibility to interpersonal influence is defined as "the need to identify or enhance one's image with significant others through acquisition and use of products and brands, the willingness to conform to the expectations of others regarding purchasing decisions, and/or the tendency to learn about products and services by observing others and/or seeking information from others" (Bearden et al. 1989, p. 474). SII has been shown to have a wide range of effects on consumer product preferences and message responses. For example, individuals high in SII prefer products that induce positive attributions (Netemeyer et al. 1992) and are socially visible (Batra et al. 2001). Further, high SII individuals respond positively to protective marketing messages (Wooten and Reed II 2004) and favor testimonial product information to attribute information (Martin et al. 2008). In general, it has been argued that SII reflects a reluctance to stand out from

the crowd, even if differentiation would be positive (Wooten and Reed II 2004). This suggests that normative information may be particularly appealing to high SII individuals, as it identifies what the "crowd" is doing, while non-normative information may be quite unappealing.

Somewhat paradoxically, however, I believe that high SII consumers may show particular biases in attending to whether information about relevant others is normative or non-normative. As a result of these attentional tendencies, these consumers may engage in behaviors even when they lack normative support or high levels of social proof. High SII individuals have been shown to easily trust the judgments and behaviors of a single interpersonal source and see this information as a reliable foundation of reality and sufficient for making decisions (Deutsch and Gerard 1955; Mourali et al. 2005). Furthermore, Martin et al. (2008) found that high SII individuals show biased attentional processing when viewing marketing messages. In particular, when making a decision, high SII individuals relied heavily on the actions of a single individual (i.e., a product testimonial) and ignored other important and useful attributes relevant to the decision (i.e., product information).

In this research, I argue that high SII consumers fail to adequately attend to all relevant information when making a decision. As prior research suggests, I propose that high SII individuals will note that other consumers are engaging in a given behavior or taking a given viewpoint. However, I propose that they will fail to pay attention to information that would lead them to differentiate between normative and non-normative support. Thus, these individuals fixate more on the action of others (i.e., "other people have bought this product") rather than on the details related to the behavior (i.e., whether a majority or a minority of other consumers have done so). The strong drive to base their decisions on cues from others thus overrides tendencies to deeply process information about the size of the source, making the normative or non-

normative nature of the source irrelevant in determining the conformity of high SII individuals. This prediction is consistent with the definition of SII, which does not provide any guidance on how many "others" are necessary to persuade or influence the behavior of those high in the SII trait. Formally, I therefore propose:

H1: As SII increases, the relative advantage of normative information over non-normative information in generating conformity will decrease.

Further, given that I propose that this effect will be driven by attentional differences, I should be able to moderate the effect as follows:

H2: Attentional cues to attend to whether information about the behaviors of others is normative versus non-normative will moderate the effect of SII on conformity, such that:

a.) When no attentional cue is given, as SII increases, the relative advantage of normative information over non-normative information in generating conformity will decrease.

b.) When an explicit attentional cue is given, the relative advantage of normative information over non-normative information in generating conformity will be preserved.

2.2 PILOT STUDY

As a preliminary test of my primary hypothesis, I ran a pilot study to test whether SII moderates one of the most compelling recent demonstrations of the effectiveness of normative information in a marketing setting, Goldstein et al.'s (2008) hotel field study. That research demonstrated that using descriptive norms highlighting the actions of a majority of consumers increased hotel guests' participation in an environmental conservation program (by giving guests information about the number of previous guests reusing their towels) when compared to traditional appeals. Therefore, in an online scenario-based study, I asked participants to imagine that they were staying seven nights in a hotel. In the normative condition, participants viewed the following message from the hotel manager, adapted from Goldstein et al. (2008):

> Almost 75% of guests who are asked to participate in our new resource savings program do help by using their towels more than once.

Conversely, in the non-normative condition, participants saw the following message:

> Almost 25% of guests who are asked to participate in our new resource savings program do help by using their towels more than once.

The dependent variable was how many consecutive nights individuals would be willing to reuse their towels (0 nights – 7 nights). Consistent with my theory, I found a significant interaction between the normative cue condition and consumer SII ($F(1, 115) = 4.18$, $p < .05$). Participants lower in SII (below an average value of 2.20 on the seven-point SII scale) exhibited

behaviors consistent with social proof, pledging to reuse their towels for more nights in the normative condition compared to the non-normative condition (all *p*'s < .10). This effect is consistent with results reported in Goldstein et al. (2008). However, participants higher in SII (above an average value of 2.20 on the seven-point SII scale) showed *no difference* in the number of nights of towel reuse between the normative and non-normative conditions.

Given this result, it appears that SII plays an important role in dictating response to normative and non-normative information. In the following sections I provide an overview of my studies and present the results of four studies and a broad-scale correlational survey to further investigate the interplay between normative cues and consumer SII.

2.3 OVERVIEW OF STUDIES

After obtaining this initial result, I designed three additional experimental studies to test my predictions. In Study 1 I manipulated normative and non-normative information associated with an electronics purchase and assessed the role of SII in persuading consumers to engage in a specific behavior. In Study 2 I further probe the interplay between consumer SII and normative cues using an ethically-based decision and normative cue manipulation. Both Study 3 and Study 4 examine the impact of attentional cues emphasizing normative and non-normative information, demonstrating process via moderation as advocated by Spencer, Zanna, and Fong (2005). Finally, I report the results of a correlational analysis undertaken to isolate demographic and psychographic characteristics associated with SII.

2.4 STUDY 1

After obtaining initial support for my basic hypothesis in the pilot study, Study 1 was designed to test H1 by examining consumers' reactions to a product website that includes either normative or non-normative information.

2.4.1 Method

A total of 50 undergraduate participants completed this study as part of a lab session involving several unrelated studies. The study uses an SII × normative cue (normative information vs. non-normative information) between-subjects design, where SII was a measured, continuous variable and the normative cue was manipulated. Prior to beginning the study, participants completed an instructional manipulation check (IMC) to identify individuals not following directions (Oppenheimer et al. 2008). One participant failed the check three times in a row and was excluded from the analysis, leaving a final sample size of 49.

Participants were first asked to imagine that they were in the market for a new set of audio headphones. All participants were shown an online webpage for a set of headphones similar to an Amazon.com product page. The page included a picture of the product, a list of product features, and a positive consumer review advising participants to purchase the headphones (see Appendix A for stimuli). In the normative information condition, participants were informed that 82 out of 104 individuals viewing the product purchased the headphones. In the non-normative information condition, participants were informed that 4 out of 104 individuals viewing the product purchased the headphones. Immediately following the presentation of the product information, participants indicated their likelihood of purchasing the

headphones on a scale from zero ("Very Unlikely") to 100 ("Very Likely") and indicated evaluations of product quality. After completing approximately 10 minutes of unrelated filler tasks, they then completed Bearden et al.'s (1989) 12-item measure of SII, which was indexed for analysis ($\alpha = .90$, $\bar{x} = 3.81$, s.d. = 1.08).

2.4.2 Results

To understand how SII and normative cue interact to influence likelihood of purchasing the headphones, I conducted a regression analysis with contrast-coded normative cue, consumer SII (mean-centered for analysis), and the interaction between SII and normative cue as predictors of purchase likelihood. Prior research has demonstrated the importance of perceived quality in influencing expectations of product quality and purchase intentions (Boulding et al. 1993; Zeithaml 1988). I note that perceived quality did not result in any significant two or three-way interactions (all p's > .50), but would reasonably explain variance in purchase intentions. I therefore included it as a covariate in my analysis (mean-centered, $\bar{x} = 4.46$, s.d. = 1.08) to see effects of SII and normative cue above and beyond quality inferences.

As one would expect, participants who thought the headphones were of higher quality were more likely to purchase them ($F(1, 44) = 12.39$, $p = .001$, $\beta = 10.17$). There were no main effects of normative cue ($F(1, 44) = 2.94$, $p > .05$) or consumer SII ($F(1, 44) = 0.05$, $p > .80$). However, as predicted in H1, a significant interaction between normative cue and consumer SII emerged ($F(1, 44) = 4.23$, $p < .05$, $\beta = 5.99$).

To interpret the interaction between normative cue and consumer SII, I used a floodlight analysis (Hayes and Matthes 2009). A floodlight analysis shows the range of values for which a simple effect is significant and for which a simple effect is not significant (Spiller et al. 2013).

Therefore, in the context of my study, the floodlight analysis identified the range of consumer SII values for which there is a significant difference in purchase likelihood in the normative versus non-normative information condition and the range of values for which there is not a significant difference in purchase likelihood.

This procedure revealed that participants scoring below an average value of 3.65 on the seven-point SII scale (i.e., relatively low SII individuals) were more likely to purchase the headphones in the normative information condition compared to the non-normative information condition (*p*'s < .05). By contrast, normative cues did not generate different levels of conformity for higher SII individuals across conditions (individuals scoring above 3.65 on the SII measure, *p*'s > .05). Figure 1 provides a graphical representation of these results, and Table 1 captures the crossover values for all studies, beginning with this set of results.

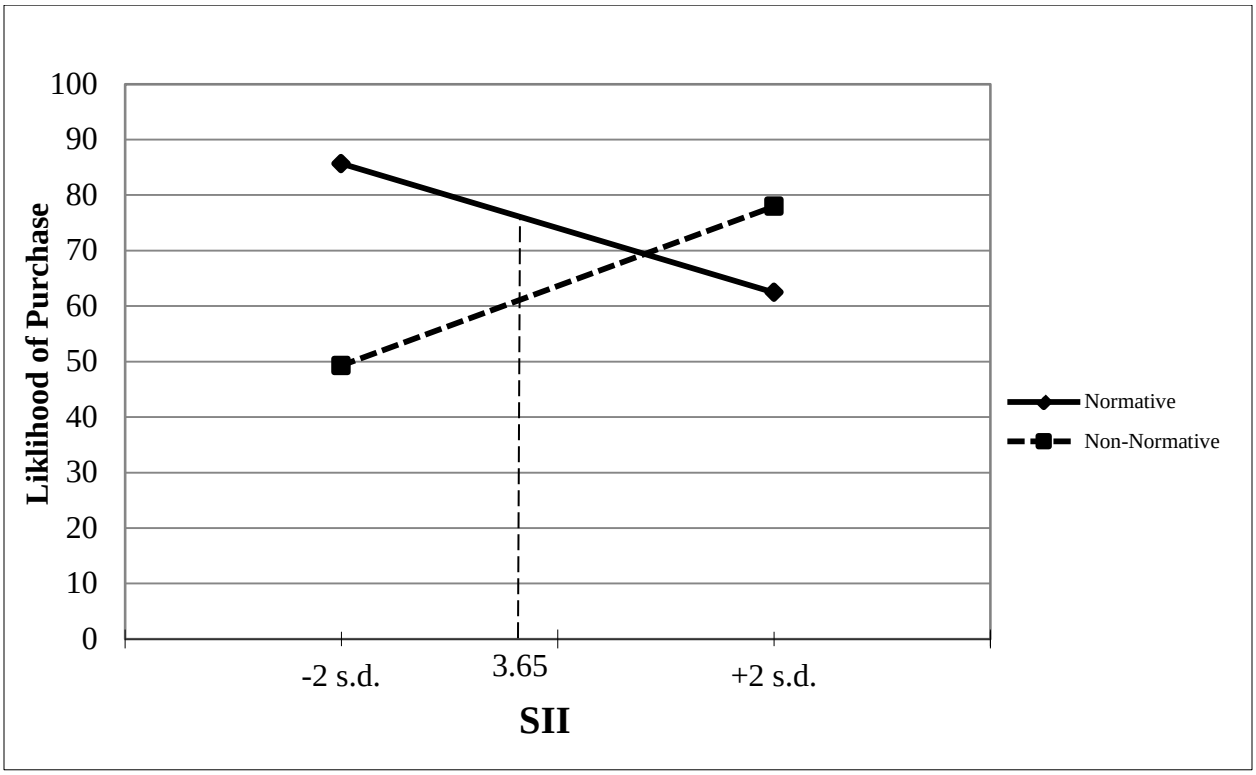


Figure 1. Interaction of Normative Cue and SII on Likelihood of Purchase

Table 1. Consumer SII Crossover Values for Floodlight Analyses Across All Studies

	Significant SII Crossover Values From the Floodlight Analyses	**Average SII Value For Study**
Study 1	≤ 3.65	3.81
Study 2	≤ 2.96	3.02
Study 3: No Attention	≥ 2.42	3.21
Study 3: Attention	≤ 3.12	3.21
Study 4: No Attention	≤ 2.10 and ≥ 4.51	3.69
Study 4: Attention	≥ 4.23	3.69

Note – The crossover values shown above indicate the value of SII at which the floodlight test reached statistical significance for each study. The floodlight test shines on a range of values of our continuous predictor SII and demonstrates for which values the group differences (normative vs. non-normative information) are significant (Spiller et al. 2013). For example, in Study 1, this table indicates that for SII values less than or equal to 3.65 we see a significant difference in purchase likelihood between the normative and non-normative information groups. At SII values greater than 3.65 there was no significant difference in purchase likelihood between the experimental groups.

2.4.3 Discussion

Study 1 investigated the influence of normative versus non-normative information about others' purchase behavior on participants' own purchase likelihood. First, I note that without SII in the model, the data does not suggest the existence of a social proof effect (Cialdini 2009). Only perceived quality would have explained purchase intentions, while there was no main effect of normative cue. Capturing SII allows us to see exactly where a social proof effect might emerge. Specifically, consumers who were moderate to low in SII were more likely to purchase a product

when the product page indicated that a majority of consumers who viewed the product had purchased it (thus creating a norm). In contrast, consumers higher in SII failed to differentiate between normative versus non-normative information and were equally likely to buy the headphones regardless of whether a majority or minority of others viewing the same product information had done so. Thus, accounting for SII both affirms prior findings regarding the importance of a "crowded bandwagon" and shows that some consumers only see that a bandwagon exists, but may not care whether it is full or empty. These findings have important implications for marketers who are interested in promoting desirable behaviors that do not have a crowded bandwagon, as they offer a welcome sign of hope that a high SII segment of consumers can still be persuaded to adopt the behavior, even without majority support.

2.5 STUDY 2

Study 2 examines consumers' reactions to qualitative normative and non-normative information in a car-buying scenario. I adapt the conjoint procedure employed by Irwin and Naylor (2009) to quantify reactions to normative versus non-normative information. Further, in this study I focus specifically on behavior that is prosocial and policy-relevant (i.e., taking the labor practices of the manufacturer into account when making a car purchase decision) in order to demonstrate that the results of Study 1 extend to such broadly important decisions.

2.5.1 Method

Seventy-six participants recruited using Amazon Mechanical Turk participated in Study 2 in exchange for a small monetary incentive. Study 2 employed an SII × normative cue (normative information vs. non-normative information) between-subjects design, where SII was a measured continuous variable and normative cue was manipulated. As in Study 1, participants completed an IMC to identify individuals not following directions (Oppenheimer et al. 2008). Participants imagined that they were in the market for a new automobile and were asked to share their opinions on a variety of cars that differed on three main attributes: price, performance, and an ethical labor attribute. Participants were informed that the cars they would be evaluating did not differ in any ways other than these three attributes:

> **Price**: The final negotiated cost of the car.
>
> **Performance**: Performance ratings for the car, from a leading consumer magazine. The performance ratings range from 1 to 10, with 10 being the highest.
>
> **Labor Practices of the Car Manufacturer**: The manufacturers differ in their treatment of their workers. The best measure of this treatment is the number of lawsuits brought by employees against the management.

The explanation of the labor practices of the car manufacturer clearly stated that the number of lawsuits against management had no bearing on the quality of the car, only the treatment of employees. Participants were then provided with a recommendation from a casual

acquaintance on how to proceed with their car search. In the normative information condition, participants were provided with the following recommendation:

> "Most people consider the labor practices of car manufacturers when purchasing a car since that provides a good indication of how ethical the organization is. Like everyone else, you should consider labor practices as an important factor in your decision."

In the non-normative information condition, participants saw the following recommendation:

> "Most people don't consider the labor practices of car manufacturers when purchasing a car. However, unlike everyone else, you should consider labor practices as an important factor in your decision since that provides a good indication of how ethical the organization is."

After participants saw this recommendation they viewed and rated all possible car combinations that could be formed using the attributes previously discussed. Since each attribute had three levels, participants viewed and evaluated 27 different cars (labeled from car A through car AA). The three levels of the price attribute were $15, 977, $18,385, and $20,793. The three levels of the performance attribute (on a 10-point scale) were 6.0, 7.75, and 9.5. The three levels of the ethical labor attribute were “fewer than average,” “average,” and “more than average.” These categories corresponded with the following descriptions: “one or two lawsuits every few years,” “five to ten lawsuits per year,” and “many complaints, including assault charges.”

Finally, after completing a short filler task, participants completed Bearden et al.'s (1989) 12-item measure of SII, which was indexed for analysis ($\alpha = .92$, $\bar{x} = 3.02$, s.d. = 1.17).

2.5.2 Results

I applied a sequential process to analyze the data, first obtaining conjoint weights for each participant and then testing whether the weights were dependent upon normative cue and SII. Consistent with Irwin and Naylor (2009), negative slopes were converted to zeros for the second part of the analysis[1]. Given that participants were advised to take labor practices into account when evaluating the vehicles, I investigate labor practice weights as a proxy for conformity. Greater weights on the labor attribute indicated greater conformity with the recommendation provided. I conducted a regression analysis with contrast-coded normative cue, consumer SII (mean-centered for analysis), and the interaction between SII and the normative cue as predictors of weights for the labor attribute. Consistent with Study 1, there was no main effect of whether the recommendation was normative or non-normative ($F(1, 72) = 2.82$, $p > .05$). However, there was a main effect of SII ($F(1, 72) = 4.82$, $p < .05$, $\beta = 0.17$), such that an increase in SII resulted in greater conformity. Most importantly, a significant interaction between normative cue and consumer SII emerged ($F(1, 72) = 4.42$, $p < .05$, $\beta = 0.16$).

To understand the interaction between the normative cue and consumer SII, I again applied a floodlight analysis (Hayes and Matthes 2009). This procedure revealed that participants scoring below an average value of 2.96 on the seven-point SII scale weighted the labor attribute more heavily in the normative information condition compared to the non-normative information

[1]Results remain consistent without converting negative slopes to zeros.

condition (p's < .05). However, the normative cue did *not* generate different weighting of the labor attribute for high SII individuals (individuals scoring above 2.96 on the SII measure, p's > .05). Figure 2 provides a graphical representation of the results. This finding provides additional support for H1 and illustrates high SII individuals' general conformity with a recommendation, regardless of whether the recommendation is normative or non-normative.

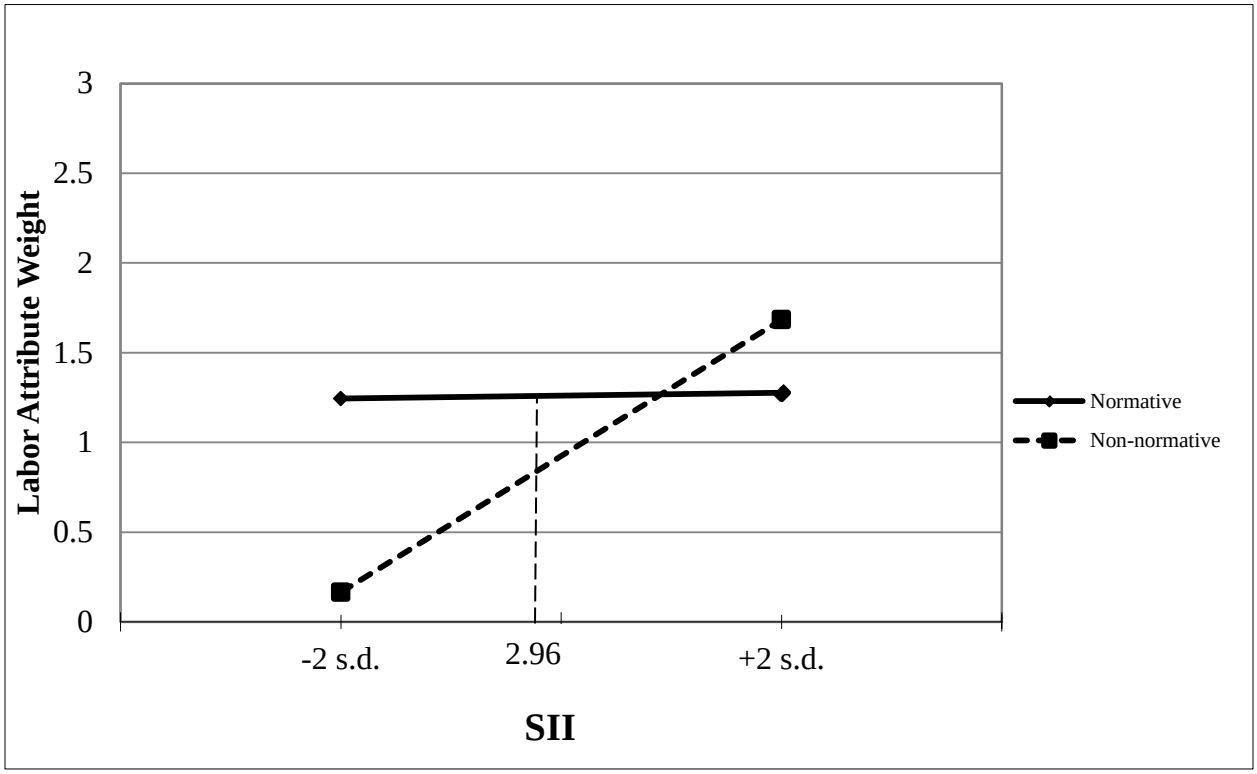


Figure 2. Interaction of Normative Cue and SII on Labor Attribute Weights

2.5.3 Discussion

Study 2 replicates Study 1's effects using a different normative cue manipulation and consumer context. I again demonstrated that consumers' response to normative versus non-normative information is dependent upon SII. In particular, I found that lower SII individuals acted in

accordance with the principle of social proof and responded differently to normative versus non-normative recommendations, conforming to normative information to a greater extent than to non-normative information. In contrast, higher SII participants failed to differentiate between recommendations that were accompanied by normative versus non-normative information. For these individuals, it was unimportant whether most others did or did not consider a given attribute when making their decision. Furthermore, Study 2 demonstrated that this effect holds even when the descriptive norm is framed in a qualitative (i.e., "most people") rather than quantitative manner. Thus, the results of Studies 1 and 2 suggest that the high SII segment of consumers is a particularly attractive segment for marketers and public policymakers to target when advocating a new prosocial behavior as part of a public service announcement (e.g., encouraging consumers to buy fair trade) or attempting to build support for a new prosocial initiative (e.g., using reusable grocery bags). Targeting these individuals initially be an effective way to ultimately build the majority support that would be needed to persuade low SII consumers.

2.6 STUDY 3

Study 3 tested my prediction that the failure of high SII individuals to differentially weigh normative and non-normative information is attributable to attentional differences. If high SII consumers' failure to differentiate between normative and non-normative information is driven by an attentional failure, highlighting the need to pay attention to this information should change the way that high SII individuals react to normative cues. For this study, I take an experimental-causal-chain approach to demonstrate my proposed process. By manipulating both the

independent variable and the proposed process measure, this approach allows us to make inferences about the causal chain driving our results (Spencer et al. 2005). In addition, in the prior studies I captured whether consumers were persuaded by normative versus non-normative information in terms of purchase intention or attribute weighting. However, neither of these variables necessarily impose a time cost on the consumer. In this study, I therefore use intentions to terminate search at the suggested product (conformity) or to keep searching (non-conformity) as the dependent variable. As stopping search is easier than continuing it, this sets conformity as a stronger default, providing a more robust test of my theory. In this study, I examine individuals' likelihood to stop searching after they identify a product that is high in recycled content.

2.6.1 Method

A total of 190 participants recruited using Amazon Mechanical Turk participated in Study 3 in exchange for a small monetary incentive. Sixty-two of the participants did not pass the IMC and were dropped from the analysis leaving a usable sample of 128 participants. Although I note that this was a relatively large percentage of the sample to drop, the focal manipulation was concerned with attention. Thus, removing these participants from the sample was not only consistent with my approach in prior studies, it was particularly important to only use participants in the analysis who demonstrated sufficient attention prior to viewing the study manipulations. Study 3 employed an SII × normative cue (normative information vs. non-normative information) × attentional cue (present vs. absent) between-subjects design, where SII was a measured continuous variable and normative cue and attentional cue were manipulated.

The procedure for this study was similar to that used in Study 1; however, rather than evaluating headphones, participants in this study evaluated facial tissues.

To begin, all participants were asked to imagine that they were in a store shopping for facial tissues. While browsing in the store, participants were informed that they came across an in-store public service announcement (PSA) related to tissue purchase. Participants then viewed the print PSA which advised consumers to consider recycled content when making their purchase (See Appendix B for details). In the normative information condition participants were informed that: "Most people consider recycled content when purchasing facial tissues." By contrast, in the non-normative information condition participants saw the following information: "25% of people consider recycled content when purchasing facial tissues."

In addition to manipulating the normative cue, we also manipulated the presence of an attentional cue. Specifically, participants were told:

> "Remember that sometimes recommendations are followed by a lot of people and sometimes they are followed by just a few people. Good decision-makers take this information into account when they make their decisions."

In the attentional cue absent condition, this reminder was withheld.

After seeing the PSA, participants were presented with a picture of a box of tissues and a list of product features and were asked to imagine that they saw this product on the shelf while shopping. Among other features, the product included production from 100% recycled content (see Appendix B for the stimuli). As previously discussed, my dependent measure asked participants how likely they would be to continue searching for a different tissue on a scale from

zero (“Very Unlikely”) to 100 (“Very Likely”). In this case, higher intention to continue searching indicates lower conformity with the PSA, which endorsed buying products with recycled content. After viewing the facial tissues and completing an approximately 10 minute filler task, as in Studies 1 and 2, participants completed Bearden et al.’s 12-item measure of SII ($\alpha = .92$, $\bar{x} = 3.21$ s.d. = 1.14).

2.6.2 Results

I conducted a regression analysis with the contrast-coded normative cue, contrast-coded attentional cue, consumer SII (mean-centered for analysis), and all possible interactions as predictors of intentions to continue search. I found that individuals in the non-normative information condition were significantly more likely to continue searching for additional tissue brands than individuals in the normative information condition ($F(1, 120) = 4.10$, $p < .05$, $\beta = 5.18$). All other main effects and two-way interaction effects were non-significant (p’s > .10). However, as predicted, results revealed a significant three-way interaction among the normative cue condition, attentional cue condition, and SII ($F(1, 120) = 8.46$, $p < .01$, $\beta = 6.49$).

To further investigate this three-way interaction, I separately examined the impact of the normative cue and consumer SII within the attentional cue present and attentional cue absent conditions. In both conditions, I conducted separate regression analyses with normative cue, consumer SII, and the interaction between SII and normative cue as predictors of likelihood of continued search.

Results in the attentional cue absent condition replicated the pattern established in Studies 1 and 2. The effect of normative cue ($F(1, 57) = .18$, $p > .60$) and consumer SII were not significant ($F(1, 57) = .18$, $p > .60$). However, I found a significant interaction between

normative cue and SII ($F(1, 57) = 3.75$, $p < .06$, $\beta = -6.55$). A floodlight analysis (Hayes and Matthes 2009) revealed that participants scoring below an average value of 2.42 on the seven-point SII scale were more likely to continue searching for additional tissue brands in the non-normative information condition compared to the normative information condition (all p's < .10). In contrast, the normative cue did not generate different search likelihoods for high SII individuals (individuals scoring above 2.42 on the SII measure, p's > .10). Figure 3 provides a graphical representation of the interaction. This result is conceptually consistent with the findings in Studies 1 and 2 and provides support for H2a.

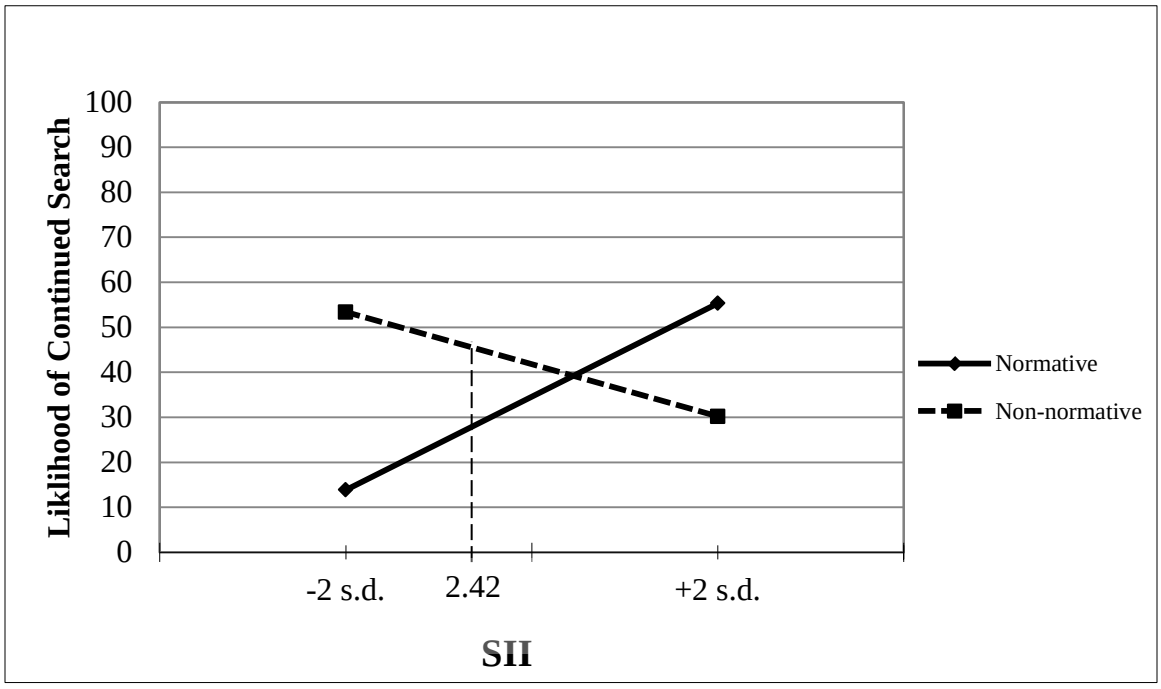


Figure 3. No Attention: Interaction of Normative Cue and SII on Likelihood of Continued Search

In the attentional cue present condition, the effect of normative cue was significant ($F(1, 63) = 4.63$, $p < .05$, $\beta = 7.03$), such that individuals in the normative information condition showed lower likelihoods of continued search compared to individuals in the non-normative information condition. Further, the effect of SII was not significant ($F(1, 63) = 2.35$, $p > .10$).

Finally, I found a significant interaction between normative cue and SII ($F(1, 63) = 4.79$, $p < .05$, $\beta = 6.43$). Most importantly, the interaction in the attentional cue present condition was the opposite of the interaction found in the attentional cue absent condition. A floodlight analysis (Hayes and Matthes 2009) revealed that participants scoring above an average value of 3.12 on the seven-point SII scale were less likely to continue searching for additional tissue brands in the normative information condition compared to the non-normative information condition (all p's < .05). Figure 4 provides a graphical representation of the results. This finding provides support for H2b and shows that a tendency to overlook whether information about others' behavior is normative or non-normative results in equally higher conformity for high SII consumers. This is a key result because it shows that when provided with an attentional cue highlighting the importance of using all information when making a decision (i.e., information about the number of people who have engaged in an action and not just information that others have engaged in the action), individuals higher in SII can effectively differentiate between normative and non-normative information.

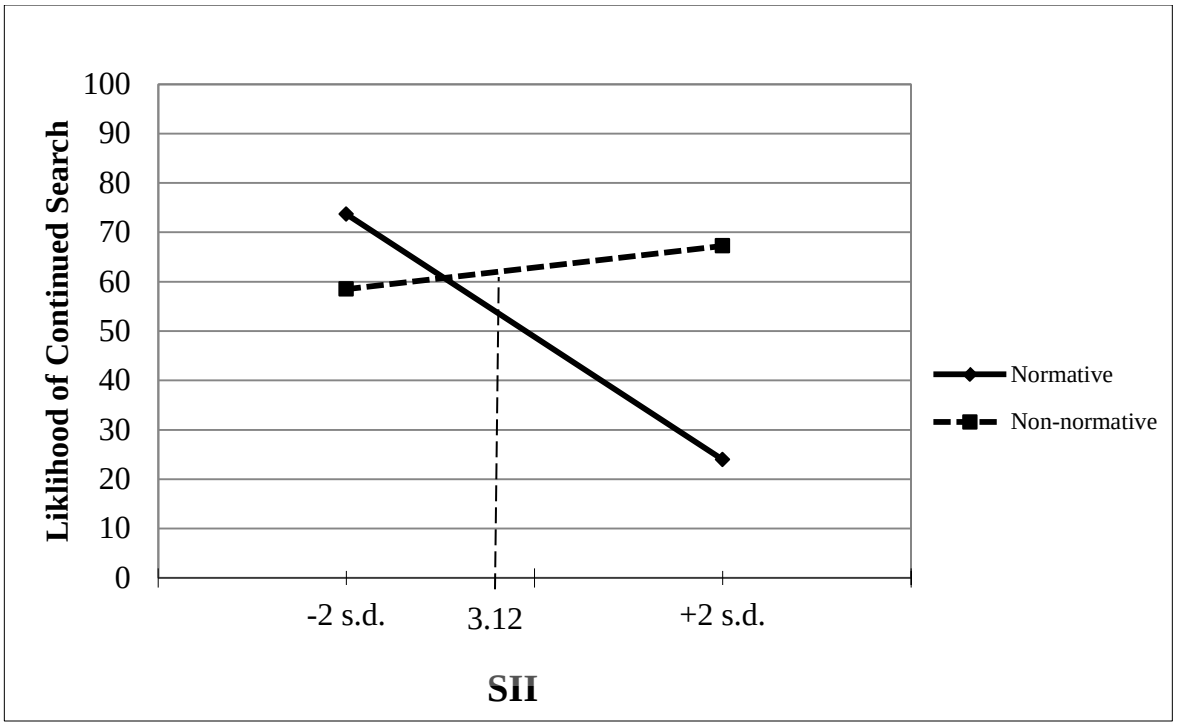


Figure 4. Attention: Interaction of Normative Cue and SII on Likelihood of Continued Search

2.6.3 Discussion

Study 3 demonstrates that attentional cues prompting consumers to deliberate on whether others' behavior is normative or non-normative moderate the interactive effect of SII and normative cue on conformity. By showing this moderation, the results of Study 3 provide evidence of my proposed process (Spencer et al. 2005). The results thus support my theory that attentional differences drive high SII consumers' failure to differentiate between normative and non-normative information. Importantly, an attentional intervention is something that marketing managers or public policymakers can easily implement in the type of public service announcement used as the stimulus for this study; assuming the goal is to ensure that even high

SII consumers recognize the difference between the behavior of a majority and that of a minority.

Therefore, the results of Study 3 suggest that if a community has, for example, developed broad-based support for a positive behavior (e.g., participation in a recycling program), they may wish to draw explicit attention to such information in communications about that behavior (e.g., by not just reporting the percentage of households that participate, but explicitly pointing out that this percentage represents the majority of the community and not a minority). Such a practice would ensure that both low and high SII consumers would be persuaded by the fact that the behavior was engaged in by a majority and non a minority of their neighbors. Without this cue, the majority information may be lost on high SII consumers. Conversely, if the goal of a PSA is to discourage a given behavior by pointing out how few people engage in the behavior (e.g., driving drunk), it is critical that these type of attentional cues are used to make sure that low SII consumers attend to the fact that only a small percentage of consumers engage in the negative behavior (rather than simply focusing on the fact that other people do engage in it).

2.7 STUDY 4

Study 3 provides support for H2a and H2b and highlights the role of attention in stimulating high SII individuals' differentiation between normative and non-normative information. While high SII consumers are capable of discriminating between normative and non-normative information when their attention is prompted, the manipulation of attention applied in Study 3 was emphatic. In more ecologically-valid situations, consumers may find it odd or intrusive for marketers to highlight normative information using such a forceful approach. Therefore, in Study 4, I explore

whether high SII consumers might be capable of differentiating normative and non-normative information when a subtler attentional cue is applied.

2.7.1 Method

Two-hundred and forty three participants recruited using Amazon Mechanical Turk participated in Study 4 in exchange for a small monetary incentive. Prior to beginning the study, participants completed an IMC to identify individuals not following directions (Oppenheimer et al. 2008). Three of the participants failed the IMC three times and were dropped from the analysis. To create a realistic environment my stimuli used pictures and information from a real boutique hotel. Thirty-nine individuals indicated that they had stayed in this hotel or were familiar with this hotel. Therefore, I dropped these individuals from the analysis bringing my usable sample to 201 participants. Similar to Study 3, Study 4 used an SII × normative cue (normative information vs. non-normative information) × attentional cue (present vs. absent) between-subjects design, where SII was a measured continuous variable and normative cue and attentional cue were manipulated. The procedure for this study was similar to that used in Studies 1 and 3; however, rather than evaluating headphones or facial tissues, participants in this study evaluated a hotel.

All participants were asked to imagine that they were planning a trip to a major American city in the next three months. Participants then viewed information on one hotel that they were considering as potential lodging for their trip. The page information viewed by participants was similar to an Expedia.com product page and included pictures of the hotel rooms, grounds, and amenities, a star rating of the hotel, and a positive consumer review recommending that individuals stay at this particular hotel property (see Appendix C for stimuli).

In the normative information condition, the hotel page indicated that "75% of people viewing this page booked this hotel in the last 48 hours." Conversely, in the non-normative information condition, the hotel page indicated that "25% of people viewing this page booked this hotel in the last 48 hours." In addition, to manipulate attention, I changed the size, color, and location of the normative cue information. In the attentional cue present condition, the normative cue information was presented in a 12 point font, which was bolded and red in color against a white background. The positioning of this information was directly below the star ratings for the hotel (highly relevant information would naturally be a focal point for participants). Thus, the location and font for this information were designed to draw attention to this information. Conversely, in the attentional cue absent condition, the normative cue information was presented in a 10 point font, which was white in color against a blue background. The positioning of this information was physically separated from the star ratings for the hotel and was instead shown in the middle of the page.

After seeing the hotel page, participants completed my dependent measure, which asked how likely they would be to book this hotel for their trip and was measured on a scale from zero ("Very Unlikely") to 100 ("Very Likely"). Finally, after an approximately 15 minute filler task, participants completed Bearden et al.'s 12-item measure of SII ($\alpha = .92$, $\bar{x} = 3.69$, s.d. = 1.25).

2.7.2 Results

I conducted a regression analysis with the contrast-coded normative cue, contrast-coded attentional cue, consumer SII (mean-centered for analysis), and all possible interactions as predictors of the likelihood of booking the hotel. All main effects and two-way interaction effects were non-significant (p's > .10). However, as predicted, results revealed a significant

three-way interaction among the normative cue condition, attentional cue condition, and consumer SII ($F(1, 193) = 10.31$, $p < .01$, $\beta = 3.33$).

To further understand this three-way interaction, I separately examined the impact of the normative cue and consumer SII within the attentional cue present and attentional cue absent conditions. For both, I conducted a regression analyses with normative cue, consumer SII, and the interaction between SII and normative cue as predictors of likelihood of booking the hotel.

Results in the attentional cue absent condition were again consistent with the pattern established in Studies 1 and 2. The effect of normative cue ($F(1, 101) = .56$, $p > .40$) and consumer SII were not significant ($F(1, 101) = 1.11$, $p > .20$). However, I found a significant interaction between normative cue and SII ($F(1, 101) = 6.20$, $p < .05$, $\beta = -4.43$). A floodlight analysis (Hayes and Matthes 2009) revealed that participants scoring below an average value of 2.10 on the seven-point SII scale were more likely to book the hotel in the normative information condition compared to the non-normative information condition (all p's < .10). In contrast, participants scoring above an average value of 4.51 on the seven-point SII scale were more likely to book the hotel in the non-normative information condition compared to the normative information condition (all p's < .05). Figure 5 provides a graphical representation of the interaction. This result is conceptually consistent with the findings in previous studies and provides additional support for H2a.

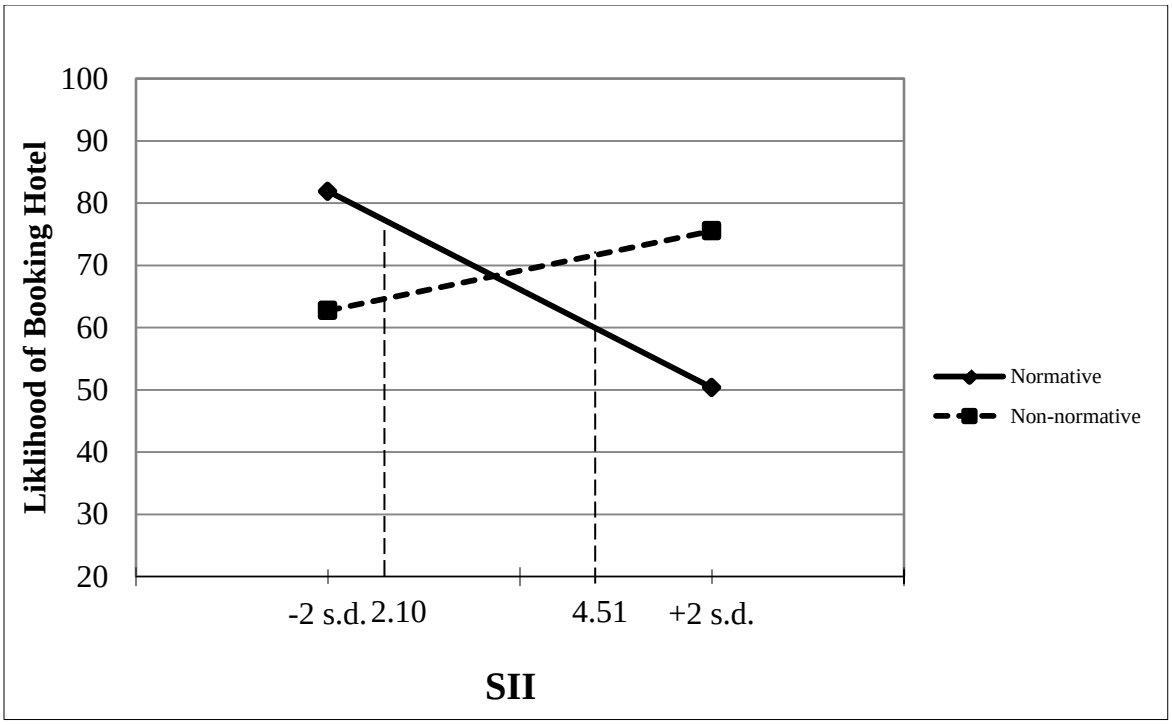


Figure 5. No Attention: Interaction of Normative Cue and SII on Likelihood of Booking Hotel

In the attentional cue present condition, the effect of normative cue ($F(1, 95) = 1.57$, $p > .20$) and consumer SII were not significant ($F(1, 95) = .33$, $p > .50$). However, I found a significant interaction between normative cue and SII ($F(1, 95) = 4.07$, $p < .05$, $\beta = 2.22$). Similar to the findings in Study 3, a floodlight analysis (Hayes and Matthes 2009) revealed that participants scoring above an average value of 4.23 on the seven-point SII scale were now more likely to book the hotel in the normative information condition compared to the non-normative information condition (all p's < .05). Figure 6 provides a graphical representation of the results. This finding again provides support for H2b and shows that when properly highlighted, high SII consumers can, in fact, correctly differentiate between normative and non-normative information.

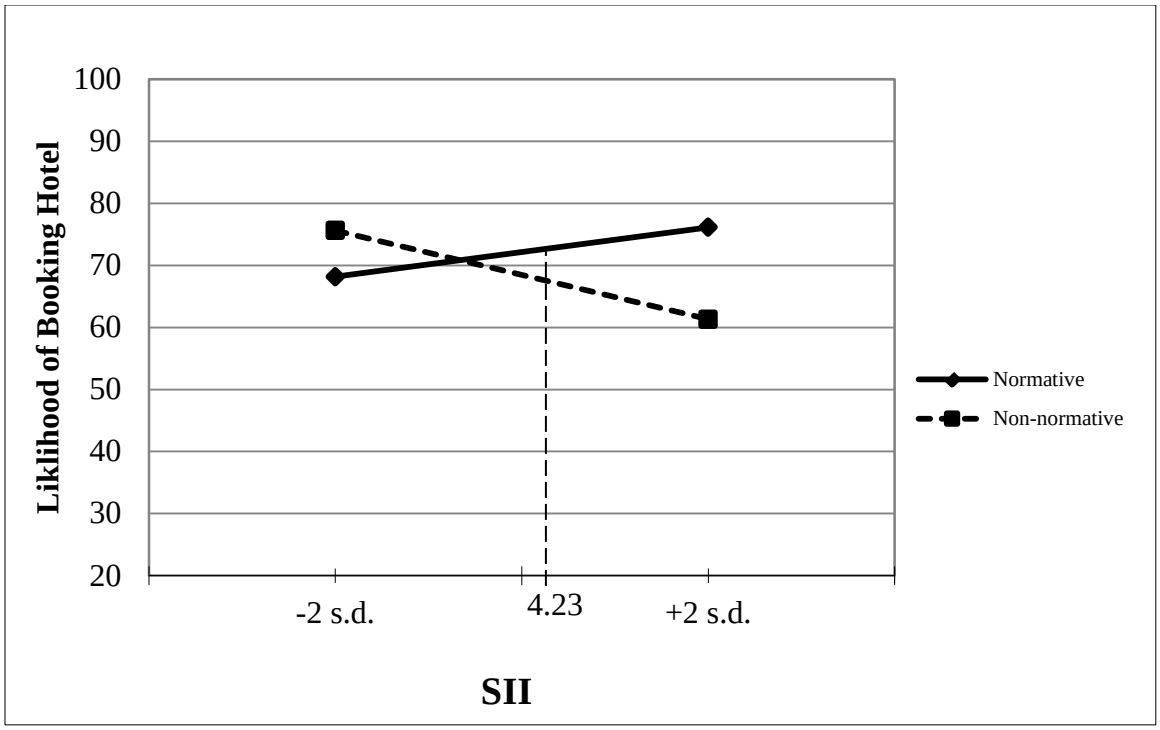


Figure 6. Attention: Interaction of Normative Cue and SII on Likelihood of Booking Hotel

2.7.3 Discussion

Study 4 replicates my findings from Study 3 and further establishes the importance of attention in high SII consumers' response to normative and non-normative information. In particular, this study again provides evidence of my proposed process (Spencer et al. 2005) and demonstrates that attention to normative information moderates the interactive effect of SII and normative cue on conformity. Furthermore, Study 4 identifies a relatively easy attentional cue that managers or public policy makers can use to draw explicit attention to normative and non-normative information. I have shown that through a straightforward attentional signal that visually highlights normative and non-normative information, high SII consumers can effectively

differentiate between these two types of information and therefore act in a manner that is consistent with the bandwagon effect and social proof theory

2.8 STUDY 5

Though it often provides important theoretical insights, one critique of work that focuses on individual differences as a moderator is that it is challenging for this type of research to shape practice. How can people of various trait characteristics be identified and reached, after all? Thus, to present a legitimate discussion of the practical implications of my work, I sought reliable demographic and psychographic correlates of SII. To do so, I conducted a survey of 582 consumers using Amazon's Mechanical Turk panel, who completed the survey in return for a nominal payment. (M_{age} = 31.34, range 18 years to 70 years, 44% female). The measures used are found in Appendix D.

For continuous measures, I conducted a regression analysis with responses to the shopping behaviors, personality characteristics, and attitude items as predictors of consumer SII. For categorical measures, I ran ANOVA analyses with a Bonferroni correction for multiple comparisons. Results revealed that higher SII is associated with greater shopping impulsiveness (β = .08, p < .05) and, interestingly, better ability to manage money (β = .12, p < .01). Higher SII was also associated with a more liberal as opposed to conservative political orientation (β = -.07, p < .05), greater environmentally responsible consumer behaviors (β = .16, p < .001), and strong feelings of nationalism (β = .21, p < .001). Further, consumers higher in SII showed lower levels of conscientiousness (β = -.13, p < .01) and less openness to experiences (β = -.10, p < .01).

Looking at lifestyle and media habits, higher SII was positively associated with feelings of general time pressure (β = .15, p < .001) and prevalence of dining out in a restaurant (β = .07, p < .05). Similarly, SII was positively related to time spent on the Internet for fun (β = .01, p < .05) and time watching cable television (β = .02, p < .05). Interestingly, consumers who do not smoke showed higher levels of SII compared to consumers who smoke (p < .001).

Perhaps of most use to marketers and policymakers, I also found that age was negatively associated with SII (β = -.03, p < .001) and that men showed higher levels of SII when compared to women (p < .01). In addition, consumers who are single had higher SII than consumers who are married (p < .001).

To enhance these findings, I applied an index procedure similar to the one employed by the Nielsen company to identify measures likely to be successful in targeting high SII consumers (ACNielsen et al. 2006). For this analysis, I compared the overall mean (n = 582) to the mean of those in the top quintile of SII (n = 123) for each measure. Measures in which those in the top SII quintile was greater than or less than 15% of the overall mean are likely to be successful in targeting higher SII individuals[2]. Using this procedure, the results revealed that shopping impulsiveness, nationalism, frequency of eating out, hours using the Internet for fun, hours spent watching cable television, and age are all measures that can be used to effectively target higher SII consumers.

Interestingly, these results suggest that higher SII consumers may be both relatively easy to reach and likely to benefit from persuasion toward more positive behaviors. Internet and television ads are more likely to be viewed by higher SII individuals. Further, higher SII

[2] For example, the overall mean (all 582 participants) for the nationalism scale was 3.12. The mean of those in the top quintile of SII (123 participants) for the nationalism scale was 3.69. In this case, 3.69 is greater than the overall mean plus 15% (3.12 *1.15 = 3.59). Similarly, the overall mean (all 582 participants) age was 31.33 years. The mean age of those in the top quintile of SII (123 participants) was 26.15 years. In this case, 26.15 years is less than the overall mean less 15% (31.33 *0.85 = 26.63). Therefore, both nationalism and age may be successful in targeting high SII individuals.

individuals may well benefit from interventions aimed at curbing impulsive spending, which can lead to debt, an important target of an organization such as the U.S. Consumer Financial Protection Bureau. Similarly, their propensity to eat out often may make them an important target for nutritional interventions like those managed by the USDA that encourage people to more carefully monitor their diet (e.g., http://www.choosemyplate.gov/supertracker-tools/supertracker.html.) My theory suggests that if these consumers can be persuaded to be responsive to such interventions, they may well form a bandwagon for others – an implication I explore in the General Discussion.

2.9 GENERAL DISCUSSION

Prior research recognizes the benefits of building and emphasizing normative information as a means to influence consumers (Cialdini 2009; Goldstein et al. 2008). Highlighting the persuasive powers of social proof and bandwagon effects (Bartels 1988; Granovetter and Soong 1986; Henshel and Johnston 1987; Nadeau et al. 1993), business bloggers and writers have continually recommended that organizations invest in generating majority support to increase compliance (e.g., Dowdeswell 2013; Ward 2012; Zych 2013). However, the present work demonstrates that for certain consumers, an investment in bandwagon creation may be unnecessary to persuade them to change their behaviors. Across three studies, I show that high SII individuals overlook the descriptive norm at work within the environment, leading to conformity with the behavior of others in both normative and non-normative situations. Therefore, this work extends prior theory that established high SII individuals' tendency to emulate others (Bearden et al. 1989), fit in, and avoid attention (Batra et al. 2001; Wooten and Reed II 2004), showing that the drive of high SII

individuals to do so can divert attention from other important and useful information, specifically the number of people who are engaging in the behavior they are following.

This work provides a number of novel theoretical insights. First, I extend knowledge surrounding the consumer SII construct (Bearden et al. 1989) by showing that a tendency to overlook whether information on relevant others is normative or non-normative can lead high SII individuals to comply with positions deemed unlikely by prior research. Second, in addition to extending work on SII, my research adds to the bandwagon literature in political science and economics, which acknowledges the persuasive power of rising consensus on individual behaviors (Bartels 1988; Granovetter and Soong 1986; Henshel and Johnston 1987; Nadeau et al. 1993). Interestingly, there is inconsistent evidence about whether the efforts to build a crowded bandwagon are worthwhile (e.g., Daschmann 2000; Dizney and Roskens 1962; Myers et al. 1977). My findings indicate that part of the inconsistency in past results may be because normative cues do not affect all consumers in the same way. I find that low SII individuals acknowledge and utilize normative cues, leading to behaviors consistent with the bandwagon effect. Conversely, high SII individuals appear highly sensitive to the actions or recommendations of other consumers, regardless of whether the behavior is exhibited by a majority or minority of others.

Further, my application of two types of normative cue presentations (i.e., quantitative norms in Study 1 and qualitative norms in Study 2) demonstrates that the outlined effect holds across multiple conditions. This is an important finding because it suggests that marketers and public policy makers can display normative information in either a qualitative or quantitative manner and still achieve the desired effect. Finally, I show that high SII consumers' are equally persuaded by information about other consumers that is normative or non-normative regardless

of whether the information is presented as part of a favorable product review (Study 1 & Study 4), a direct recommendation from another consumer (Study 2), or a persuasive message from a non-profit organization (Study 3). Similarly, I demonstrate the effect using a variety of dependent variables, including purchase likelihood (Study 1 & Study 4), attribute weights (Study 2), and likelihood of continued search (Study 3). These results highlight the versatility of the effect and establish that the message source or situation fails to dampen high SII consumers' general desire to comply with others' behavior, regardless of how many people they are complying with.

2.9.1 How can this research inform policy, practice, and consumers?

My experimental studies demonstrate that even without majority support, marketers can highlight the actions of a minority of relevant others and still persuade high (but not low) SII consumers. Further, I find that SII is likely to be a targetable characteristic, using both demographic and lifestyle variables. As such, my research is consistent with past work exploring the intersection of marketing and public policy that suggests that SII and other personality traits can be successfully used to segment the market to more effectively develop appropriate interventions to reduce undesirable behaviors like teen substance abuse (Rose et al. 1996) or to better understand consumer response to and interest in prosocial behaviors like social entrepreneurship (Wood 2012). I now discuss the specific implications of my findings.

2.9.1.1 Encouraging Non-Majority Behaviors My results can provide considerable guidance for marketers seeking to encourage consumers to engage in non-majority (i.e., non-normative) behaviors, such as environmentally friendly or other prosocial actions like those considered in

Studies 2 and 3 or other behaviors that, at least initially, may be less popular. My findings indicate that marketers can first target high SII consumers who I have demonstrated to be particularly sensitive to any information on the actions of other consumers, regardless of whether the actions of others are consistent with a majority or minority. This initial targeting of high SII consumers can help to establish initial support for the behavior that can later be used to influence low SII individuals.

Consider, for example, the use of reusable grocery bags. To reduce the amount of plastic litter accumulating within garbage dumps, cities across the United States have instituted or contemplated instituting bans on the use of plastic bags within grocery stores (Gabrielsen 2013; Rosenthal 2013). However, in cities where the bans have been levied, reductions in plastic bag waste have been lacking (Gabrielsen 2013). This failure likely stems from the absence of a strong norm against plastic bag use. Rather than instituting and enforcing bans, my results suggest that cities and environmental organizations can target high SII consumers and highlight the actions of the minority of consumers already using reusable bags. After persuading high SII consumers, cities can start to employ norms-based appeals against plastic bag usage in persuasive messages, leading to conformity among low SII consumers as the power of social proof becomes overwhelming.

2.9.1.2 Building support for a new product or brand My results also demonstrate that managers introducing a new product may find it easier to initially persuade higher as opposed to lower SII consumers. If high SII individuals form a support base, they can therefore help to build a strong enough norm to persuade consumers lower in SII. The ability to target and persuade high SII consumers even without majority support is critical since chance plays a large part in

popularizing new products. Therefore, much the same way that innovators and early adopters are critical targets for innovation diffusion through the marketplace (Rogers 1995), high SII individuals may be essential early targets for any new product. This is likely to be especially true for new products that may lack hedonic benefits because their primary benefits are prosocial or focus on the consumer's well-being. These products may have a difficult time finding support otherwise, so targeting high SII consumers may be a particularly effective way to build long-term support for pro-social, pro-environmental, or healthy products.

Along with informing marketing practice for both firms and public policymakers, my results can also be valuable in enhancing consumer well-being. Prior research highlights high SII individuals' desire to blend into the crowd and refrain from drawing attention (Wooten and Reed II 2004); however, my results suggest that high SII individuals' failure to note whether information on relevant others is normative or non-normative may lead to behaviors that lead to differentiation from others. Therefore, high SII consumers must be certain to process and attend to all information. These consumers can benefit from asking themselves if an advocated position or behavior is consistent with a majority or minority before conforming. For example, high SII consumers purchasing products on a website such as Amazon.com must be aware of their tendency to overlook normative and non-normative information while shopping. If they are able to do so, they will be able to better recognize that a product with a four-star rating from one consumer is very different from a product with a four-star rating from 1,000 consumers.

Further, though I have focused on marketers desire to prompt certain actions, they may also want to persuade consumers to refrain from certain detrimental behaviors. For the higher SII consumer, being exposed to information that even a minority of other individuals have, for example, cheated on their taxes or engaged in binge drinking, may be detrimental to these efforts.

As such, policymakers may wish to recommend that if non-normative information is used to dissuade consumers from behaving in a certain way, a substantial amount of attention should be drawn to the non-normative nature of the behavior, using external prompts, visual devices, or explicit framing, consistent with my findings in Study 3 and Study 4.

3.0 ESSAY 2 – SMART PHONES, BAD CALLS? IN-STORE MOBILE TECHNOLOGY USE AND CONSUMER PURCHASE BEHAVIOR

A critical topic of interest to marketing scholars and practitioners, in-store decision making is a common occurrence. In fact, previous research reports that over half of all consumer purchases are unplanned prior to entering the store (Inman and Winer 1998). One understudied factor impacting consumer decision-making is the role of technology, and in particular, the power of mobile technologies such as cell phones and smartphones. With the increasing popularity of cell phones and smartphones, individuals can now make phone calls, send text or email messages, and surf the Internet from almost any location, including retail sites. In fact, a recent study by Deloitte Digital reveals that almost 60% of consumers owning a smartphone have used it during a shopping trip (Brinker et al. 2012). Further, Brinker et al. (2012) report that mobile technology influenced 5.1% of all retail sales in the United States or roughly $159 billion of sales in 2012. As mobile devices continue to grow in popularity, it is critical that marketers understand how shoppers utilize these technologies in retail environments.

Recently, mobile technologies have been praised for helping consumers make quicker and better decisions. For instance, new applications for smartphones allow users to scan product barcodes and instantly compare prices across retailers or obtain store coupons in a digital format (Story 2007). Further, via the Internet, consumers can utilize numerous interactive decision tools to augment the decision process (Murray and Häubl 2008). Using third and fourth generation

mobile telephone connections and in-store Wi-Fi hotspots, shoppers have access to enormous amounts of information to aid in judgment. The prevalence of shopping apps and decision aids suggests that mobile technologies should have a beneficial effect on consumer welfare.

However, this may not always be the case. Research on the use of mobile devices while driving highlights the pitfalls of such technology (e.g., Strayer et al. 2003; Strayer and Johnston 2001). For example, mobile technology use can impair visual function and limit cognitive resources available for simultaneous tasks (Hyman et al. 2010). This suggests that when used in retail environments, new technologies such as cellular phones and smartphones may handicap a shopper's ability to focus on the task and could potentially result in poor decisions. Further, while using mobile technologies in retail environments, consumers may interact with in-store stimuli differently. Therefore, I argue that the use of mobile technologies in shopping environments acts as a double-edged sword with both positive and negative implications for shoppers and marketers.

Before beginning my focal investigation, I conducted a preliminary study examining the positive and negative outcomes shoppers ascribe to the use of mobile devices in retail settings. To do this, I utilized the critical incident technique (Flanagan 1954; Gremler 2004; Keaveney 1995) in which recollections and stories were collected from shoppers regarding their in-store mobile technology use. I systematically intercepted 30 shoppers at a large outdoor shopping center and asked them to describe a situation where they used their cell phone or smartphone in a retail setting. After describing the situation in detail, shoppers were asked to compare their identified trip with a similar trip on which they did not use their mobile device. In comparison to the scale midpoint (4 out of 7), shoppers felt that their phones did not distract them during their shopping trip, $M = 2.47$, $t\ (29) = -5.77$, $p < .001$; felt that they did not buy more than they

normally would have if not using their phone, $M = 3.06$, $t\ (29) = -2.38$, $p = .01$; and disagreed that they failed to purchase more items than they normally would have if not using their phone, $M = 1.53$, $t\ (29) = -12.97$, $p < .001$. Furthermore, participants felt that their phones helped them while shopping, $M = 6.13$, $t\ (29) = 7.90$, $p < .001$; and agreed that their phones enhanced their decision making, $M = 5.47$, $t\ (29) = 6.93$, $p < .001$. The results of this preliminary study demonstrate the strong beliefs that shoppers hold regarding the positive benefits of using these devices in retail locations. Mainly, shoppers believe mobile devices enrich their decisions and help with their shopping tasks. Conversely, shoppers believe that these devices do not act as a significant form of distraction from their shopping and have no influence on the nature or number of products purchased.

My research makes a threefold contribution. First, in an experiment (Study 1), I demonstrate that mobile device use can in fact lead to negative shopping implications, including limiting shoppers' ability to remember in-store stimuli and degrading accuracy in completing the shopping task. Second, I demonstrate that in-store mobile technology use is associated with the nature and amount of products purchased by consumers. Across two national field studies conducted in grocery stores (Study 2) and mass merchandisers (Study 3), I find that mobile device use is linked to the number of unplanned purchases and the number of omitted planned items. Finally, I find that shoppers are twice as likely (31%) to use their mobile device when shopping in a mass merchandiser than in a grocery store (15%).

This paper is organized as follows. In the next section, I draw from research on distraction and distracted driving to identify some of the limitations of mobile device use. Following this I present the results of an online experiment investigating shoppers ability to use mobile devices in a simulated shopping setting. I next dig deeper into the ways in which

shoppers use their devices in store environments to predict how in-store mobile device use may impact real-world shopping outcomes. I then present the results of two field studies investigating shoppers' use of mobile technologies in retail settings. Finally, I close with a discussion of the implications for research and practice.

3.1 DISTRACTION AND MOBILE DEVICE USE

Distraction is often conceptualized as the act of diverting or directing attention from one object to another or apportioning attentional resources in multiple directions (Lavie 2005; Lavie et al. 2004; Strayer and Johnston 2001). Consistent with this conceptualization, I view distraction as the diversion of attentional and/or processing resources away from a focal object to a source of distraction.

Numerous theories have been advanced to explicate the limits of our attentional capacities. First, bottleneck theories of dual processing contend that mental operations are carried out in a sequential fashion and when two tasks simultaneously require the same mental process, a bottleneck occurs (e.g., Broadbent 1958; Fagot and Pashler 1992; Welford 1952). Therefore, the simultaneous engagement in tasks may slow or inhibit reactions as operations queue at the bottleneck (Pashler and Johnston 1998). A second account of task interference likens attention to a single pool of resources which are allocated among tasks (e.g., Kahneman 1973; Navon and Gopher 1980; Norman and Bobrow 1975). For example, according to Kahneman's theory of attention and effort, an individual flexibly distributes cognitive resources to tasks and is capable of changing the allocation policy over time. Individuals can focus attention on one particular activity or split the attentional resources on simultaneous tasks. Thus, single-resource models of

attention attribute slowdowns and hang-ups in processing to the sharing of resources among tasks. Finally, a third explanation of dual processing contends that attentional limitations can be traced to "crosstalk" in which the processing required for one task interferes with processing for a second task (e.g., Navon and Miller 1987) . However, as acknowledged by Pashler and Johnston (1998), a cross talk explanation of task interference is not entirely incompatible with bottleneck theories of dual processing. It is possible that our mental processing runs sequentially simply because if allowed to run simultaneously, crosstalk would interfere (Kinsbourne 1981). While the specific process driving our attentional capabilities and failures remains a point of debate, the theories of attentional capacity are in agreement that the simultaneous performance of multiple tasks can influence and delay individual responses (Pashler and Johnston 1998).

Interestingly, the results of my preliminary analysis revealed that consumers tend to dismiss potential limitations of mobile device use in store environments. However, prior research identifies the considerable distraction associated with mobile device usage (Briem and Hedman 1995; Brookhuis et al. 1991; Drews et al. 2008; Strayer et al. 2003; Strayer and Johnston 2001). For example, a major danger of mobile device use is the limitation of visual processing. Strayer and Johnston (2001) find that mobile device use during a driving task results in inattentional blindness as a result of diverting attentional resources from driving to device use. Even when looking directly at environmental objects, participants engaged in device use were less likely to form explicit memories of external stimuli compared to those not using a phone (Strayer et al. 2003). Similarly, Hyman et al. (2010) report that individuals using their mobile devices while walking were less likely to notice unusual activity on their route than individual not using mobile technologies.

Furthermore, beyond limiting visual processing, prior research is clear that using a mobile device can significantly degrade performance. Strayer and Johnston (2001) find that individuals simultaneously conversing on a cell phone and driving a vehicle missed twice as many traffic signals as those not using a phone. However, it is not only mobile phone conversations that negatively impact driving performance. Prior research has found that the manual manipulation of mobile technologies (e.g., dialing a phone number, answering a phone, sending a text message) also impacts driving performance (Briem and Hedman 1995; Brookhuis et al. 1991). Most surprising, Strayer et al. (2006) report that the level of impairment associated with mobile device use while driving is comparable to being intoxicated at a .08 blood alcohol level.

Clearly, it appears that mobile device use can result in negative consequences, especially when driving. However, are there any limitations to using a mobile device in shopping settings? Or, might consumers be correct in assuming that in-store mobile device use does not affect in-store outcomes?

3.2 STUDY 1

In Study 1, I begin my investigation into in-store mobile device use by examining consumers' ability to accurately recall and complete a shopping task while utilizing mobile technologies. The purpose of this study is to examine the validity of consumers' belief that the limitations of in-store mobile device use are negligible. To do this I examine both the duration and intensity with which mobile devices are used in the store environment.

One factor that is likely to influence consumer-shopping outcomes is the intensity of mobile device use. I conceptualize intensity as the amount of attentional resources a consumer

must devote to their mobile device. Therefore, consumers engaging in high intensity device use should devote more of their attentional resources to the device compared to consumers engaging in low intensity device use. Prior work on distracted driving has identified mobile device usage intensity as an important factor capable of influencing attentional resources and degrading performance (Dula et al. 2011; McKnight and McKnight 1993). For example, McKnight and McKnight (1993) show that intense cell phone conversations are significantly more distracting than casual less-intense conversations. Similarly, Dula et al. (2011) find that intense cell phone conversations caused drivers to engage in more dangerous driving behaviors compared to mundane conversations. Given these results, it follows that the intensity of in-store mobile device use should also play an important role in shoppers' overall performance. Based on prior research, I argue that shoppers engaging in high intensity device use will have a smaller pool of attentional resources to focus on their shopping than shoppers using their devices in a low intensity manner

Like intensity, the duration of time shoppers use their mobile devices should also play an important role in influencing overall performance. Prior research has identified the significant negative impact that multitasking has on individual performance, observing that performing different tasks often leads to longer processing times and greater errors (Gopher et al. 2000; Rubinstein et al. 2001). Furthermore, research notes the considerable impairment that task time has on individual performance. For example, Boksem, Meijman, and Lorist (2005) report that while preforming a visual response task, individuals slowed down and made more mistakes as the duration of the task increased.

In direct opposition to consumer lay beliefs, I propose that in-store mobile technology use can result in significant limitations for consumers. In particular, I argue that both the

intensity and duration with which mobile devices are used in-store will impact shoppers' ability to accurately complete their trip. To investigate, I apply an experimental approach.

3.2.1 Procedure

Two-hundred and twelve participants recruited online participated in Study 1 in exchange for a small monetary incentive. Thirteen of the participants had technical difficulties during the study and were dropped from the analysis, leaving a usable sample of 199 participants. Study 1 employed a 2 (trip length: short vs. long) × 3 (mobile device intensity: low intensity mobile use vs. high intensity mobile use vs. no mobile use) between-subjects design.

All participants completed a grocery-shopping task in which they watched a first person perspective shopping video. In the video, an individual pushed a cart through a grocery store and placed grocery items in the cart to be purchased. Furthermore, the individual in the video picked up and inspected five grocery items but decided against purchase (i.e., did not put the item in the grocery cart). Finally, the individual in the video stopped and inspected a number of in-store displays. Each participant was asked to imagine that they were the person shopping in the video. As part of the shopping task, participants were provided with a shopping list containing items that they intended to purchase during the trip. Each participant was instructed to check off items from their shopping list as they were placed in the grocery cart. In addition to checking off items, individuals were told to attend to the shopping environment. After reading about the task, participants viewed a layout screen that provided additional directions on the shopping task and demonstrated the arrangement of all parts of the task so that participants could familiarize themselves with the design prior to beginning (see Appendix E for the basic layout of the shopping task).

To manipulate the duration of mobile use, I varied the length of the shopping video. In the long trip condition, participants watched an approximately 13 minute shopping video. Conversely, in the short trip condition, participants watched an approximately 6 ½ minute shopping video. The video used in the short trip condition was created by cutting scenes from the longer shopping video.

As a manipulation of in-store mobile device intensity, a group of participants were randomly selected to use their smartphone to look up answers to general knowledge questions while completing the shopping task. The general knowledge questions included questions such as "what is the longest river in Italy?" and "how many Federal Reserve banks are there?" The number of general knowledge questions varied depending on the condition and were presented next to the shopping video. In the high intensity mobile use condition, participants were provided with either 16 questions to answer (long trip condition) or 8 questions to answer (short trip condition). Note that regardless of trip length, participants in the high intensity mobile use condition had 48.75 seconds of video per question. In the low intensity mobile use condition, participants were provided with either 8 questions (long trip condition) or 4 questions (short trip condition). Again, note that regardless of trip length, participants in the low intensity mobile use condition had 97.5 seconds of video per question, twice as much video time per question as those in the high intensity mobile use condition. Finally, participants assigned to the no mobile use condition were not asked to use their smartphones to look up answers to general knowledge questions while completing the shopping task.

After completing the shopping task, participants were asked to list the products they recalled being picked up but not purchased and the products they recalled being advertised using an in-store display. Next, individuals who used their mobile devices (i.e., low intensity use, high

intensity use) answered questions related to how they used their devices during the task. Finally, all participants responded to a set of demographic measures.

3.2.2 Results

I am interested in two major shopping outcomes. First, I seek to examine the impact of mobile device use on participants' recall. As measures of recall I looked at the recall percentage of products picked up and recall percentage of in-store displays. Second, I wish to investigate the impact of device use on accuracy in completing the shopping task. To measure shopping task accuracy, I assessed the percentage of "purchased" items missed by participants.

3.2.2.1 Recall of products picked up Recall of products picked up was operationalized as the percentage of correct items recalled that were picked up and looked at but not purchased (i.e., not placed in the shopping cart). A two-way ANOVA analysis was employed to test the effects of trip length and mobile device intensity on recall percentage of products picked up. No trip length × mobile device intensity interaction emerged. However, a main effect of trip length was found, such that participants in the short trip condition exhibited a higher percentage of picked up products recalled than participants in the long trip condition (F (1, 193) = 6.28, $p < .05$). A main effect of mobile device intensity (F (2, 193) = 3.77, $p < .05$) also emerged.

Planned comparisons reveal that, participants in the high intensity mobile use condition had poorer recall of products picked up (M = 37.4%) than either participants in the low intensity mobile use condition (M = 49.4%), F (1, 193) = 5.86, $p < .05$ or participants in the no mobile use condition (M = 46.4%), F (1, 193) = 3.96, $p < .05$. However, no significant difference emerged

between participants in the low intensity mobile use condition and participants in the no mobile use condition. Figure 7 provides a graphical representation of the result.

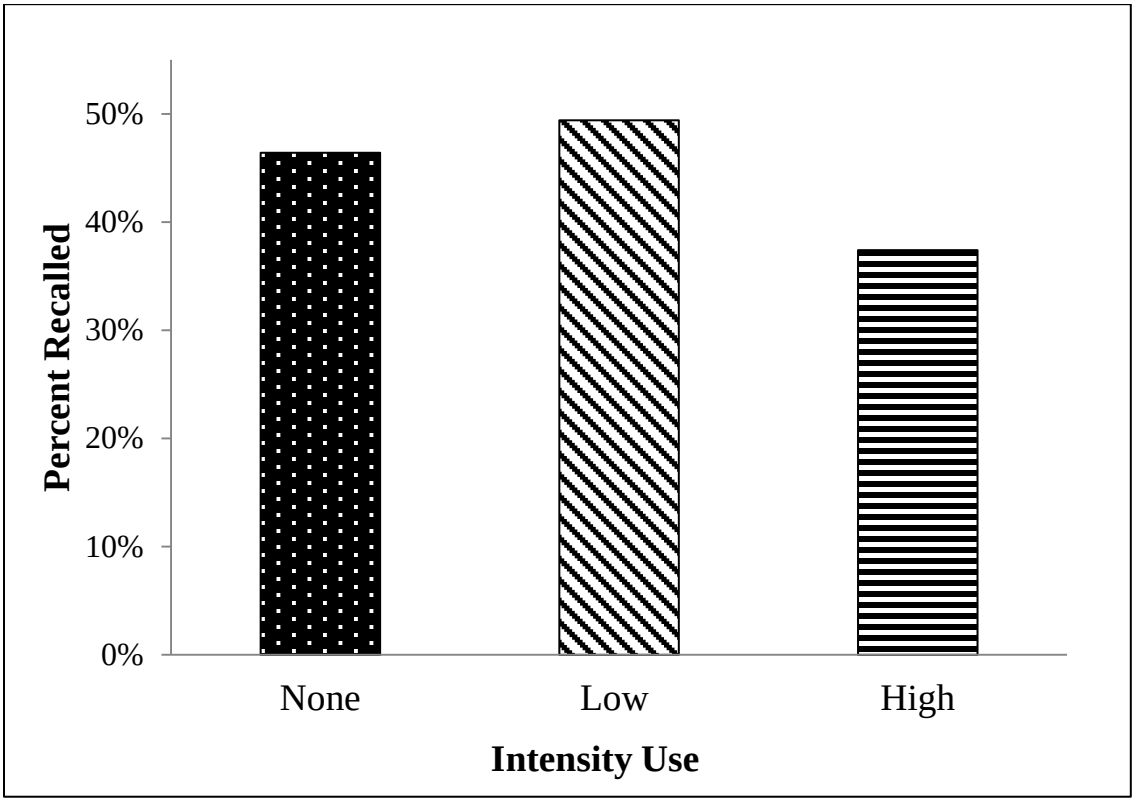


Figure 7. Effect of Intensity on Recall Percentage of Products Picked Up

3.2.2.2 Recall of products on display Along with examining recall of products picked up, I also assessed participants' recall of products on display throughout the store environment. This variable was measured as the percentage of displayed items that were correctly recalled. I again applied a two-way ANOVA to assess the impact of trip length and mobile device intensity on recall percentage of displayed products. Consistent with my previous recall result, the trip length × mobile device intensity interaction was not significant. However, I found a main effect of trip length, such that participants in the short trip condition recalled a greater percentage of products on display than participants in the long trip condition (F (1, 193) = 23.43, $p < .001$). Furthermore, I found a main effect of mobile device intensity (F (2, 193) = 3.81, $p < .05$).

Planned comparisons reveal that participants in the high intensity mobile use condition exhibited lower recall of products on display (M = 11.2%) than participants in the no mobile use condition (M = 15.8%), F (1, 193) = 4.69, $p < .05$. Additionally, participants in the low intensity mobile use condition showed lower recall of products on display (M = 11.8%) than participants in the no mobile use condition, F (1, 193) = 4.79, $p < .05$. No significant difference emerged between participants in the high intensity mobile use condition and participants in the low intensity mobile use condition. Figure 8 provides a graphical representation of the result.

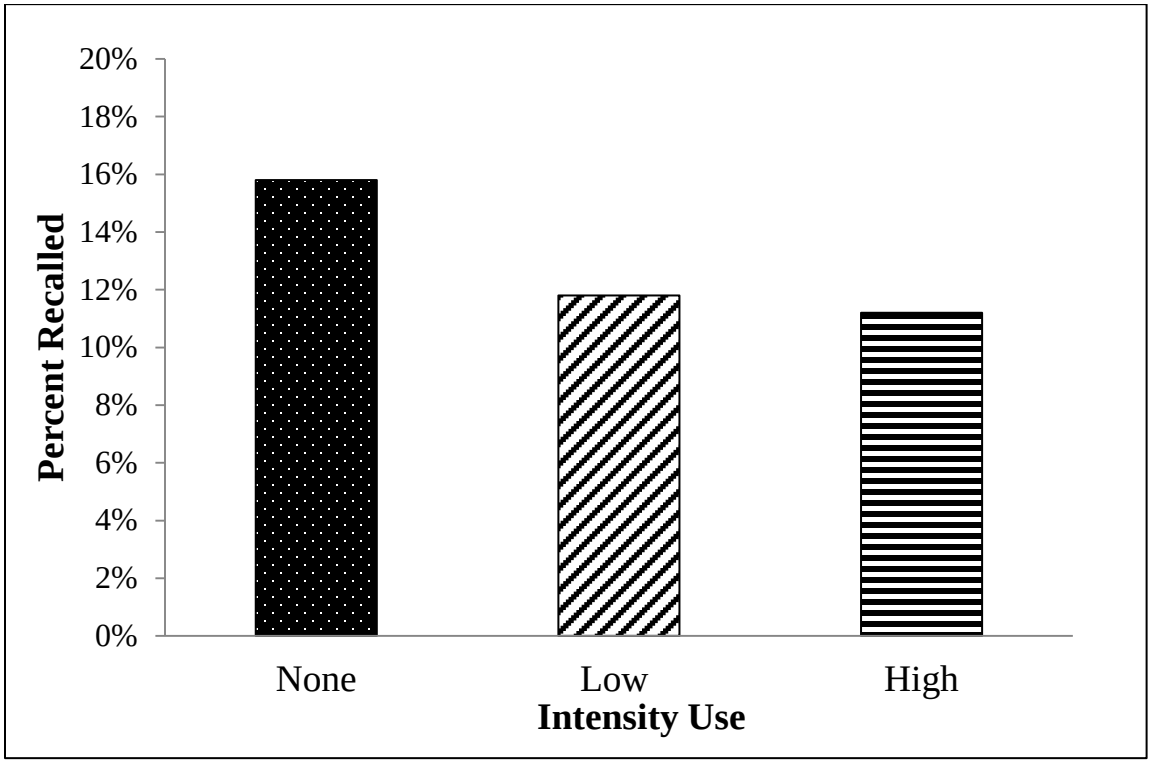


Figure 8. Effect of Intensity on Recall Percentage of Products on Display

3.2.2.3 Shopping accuracy The shopping accuracy variable was related to success in correctly completing the shopping task. As a measure of success, I examined the percentage of items that were "purchased" (i.e., picked up and put into the shopping cart), but not correctly marked off of the list by participants. This variable captures the percentage of items that

participants missed while completing the shopping task. A two-way ANOVA was performed to test the effects of trip length and mobile device intensity on percentage of items missed. No main effect of mobile device intensity was found. However, a main effect of trip length emerged, such that participants in the long trip condition missed a higher percentage of items compared to participants in the short trip condition (F (1, 193) = 7.17, $p < .01$). Finally, a trip length × mobile device intensity interaction was revealed (F (2, 193) = 3.19, $p < .05$).

Planned contrasts demonstrate that within the long trip condition, participants in the high intensity mobile use condition had a higher percentage of missed items (M = 11.4%) than participants in both the low intensity mobile use condition (M = 5.4%), F (1, 193) = 4.04, $p < .05$ and participants in the no mobile use condition (M = 3.9%), F (1, 193) = 6.76, $p < .05$. However, in the short trip condition, there were no differences between the three mobile device use conditions. This result demonstrates the importance of both mobile use duration and mobile use intensity in influencing consumers' ability to accurately complete a shopping task. See Figure 9 for a graphical representation of the result.

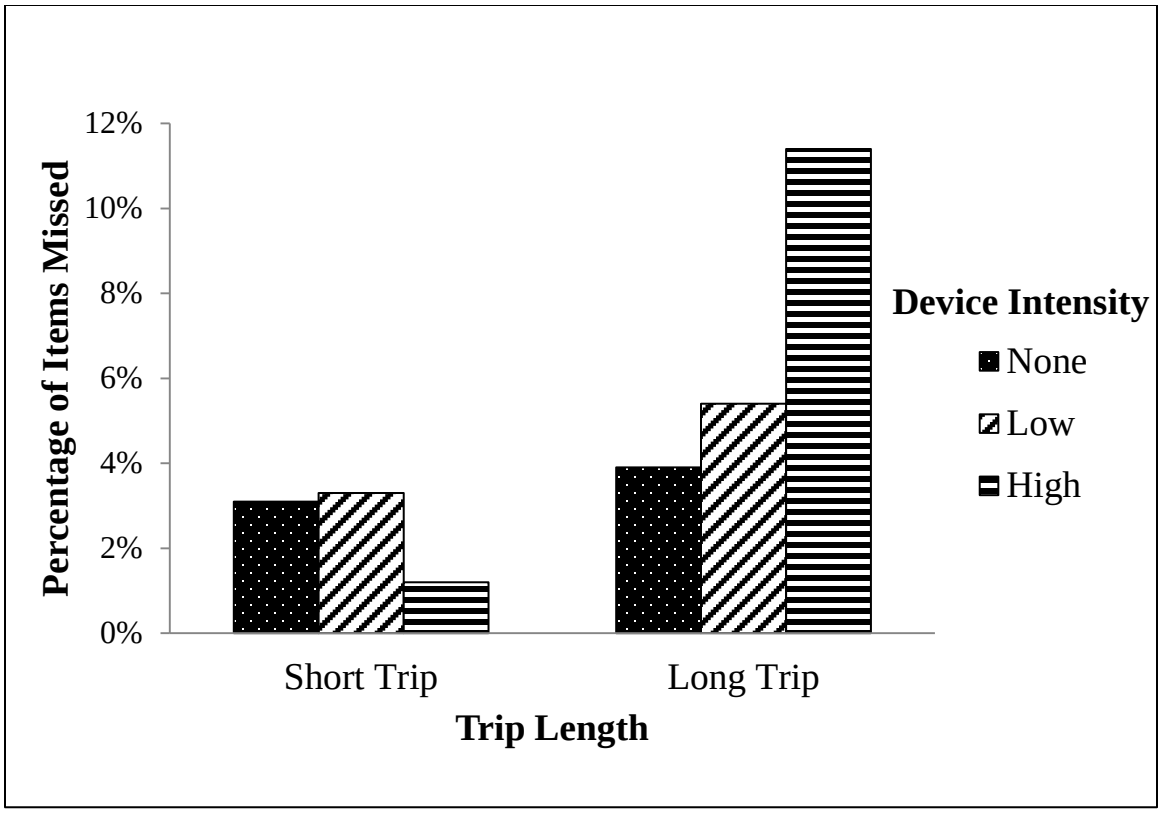


Figure 9. Interaction of Trip Length and Mobile Device Intensity on Percentage of Items Missed

3.2.3 Discussion

The results of Study 1 provide insight into the impact of mobile device use on shopping outcomes. Assessing recall, I find that higher intensity mobile device use significantly impedes recall of prominent environmental stimuli. This is evidenced by participants in the high intensity mobile device use condition exhibiting significantly lower recall for products picked up compared to participants in both the low intensity use condition and participants in the no mobile use condition. Interestingly, individuals using a mobile device in a low intensity manner showed no difference in their ability to recall picked up items compared to individuals not using a mobile device. This suggests that for more prominent environmental stimuli (in my experiment, items

picked up and looked at thoroughly), shoppers using their phones in a less intense manner can successfully encode and recall this information.

However, when assessing recall for less prominent shopping stimuli (i.e., displays), recall for participants in both the high intensity and low intensity mobile device use conditions is significantly attenuated compared to participants not using a mobile device. This is evidenced by my finding that individuals in both the high and low intensity device use conditions had significantly lower recall for in-store shopping displays compared to those not using a mobile device. Therefore, while low intensity mobile use may not impede recall of prominent environmental stimuli, it can have a significant impact on recall of less prominent stimuli (in our experiment, displays located throughout the shopping environment). This is an important finding since it suggests that shoppers using mobile devices at any intensity may miss environmental displays capable of stimulating additional purchases or reminding consumers of forgotten items.

Furthermore, the results of Study 1 provide insight into the influence of both trip length and mobile device use intensity on consumers shopping effectiveness. Of specific interest, I find that both trip length and mobile device intensity impact individuals' accuracy in completing the shopping task. When using a device in a more intense manner and for a longer duration, shoppers' ability to accurately identify "purchased" items was significantly degraded. In particular, individuals missed more items from their shopping list compared to individuals not using their devices or using their devices in a low intensity capacity. In contrast to consumer lay beliefs, my results highlight significant detriments of using a mobile device in a store environment. Clearly, it appears that these devices can in fact act as a significant source of distraction during the shopping trip.

While Study 1 demonstrates some drawbacks to using a mobile device in a store environment, the setting was artificial and lacked any consequential variables. Furthermore, I acknowledge that the manner in which shoppers use their devices in store may have a substantial impact on shopping outcomes. For example, shoppers can use their device in a manner that is directly connected to the shopping trip (i.e. a shopping-related use) or in a manner that is irrelevant to the shopping trip (i.e., a shopping-unrelated use). Therefore, in the next section I draw on literature in shopper marketing, attention and distraction, and distracted driving to predict how different types of mobile device (i.e., shopping-related and shopping-unrelated) use may impact real world shopping outcomes. Following this, I present the results of two field studies investigating shoppers' use of mobile technologies in retail settings.

3.3 MOBILE DEVICES AND IN-STORE OUTCOMES: THE ROLE OF SHOPPING-RELATED AND SHOPPING-UNRELATED DEVICE USE

Study 1 demonstrated the significant impact that mobile device use can have on in-store outcomes. While it appears that consumers overlook some of the negative implications associated with in-store mobile device use, I have yet to investigate any consequential shopping outcomes. Furthermore, I have yet to account for the differing ways in which consumer can utilize mobile devices in retail environments.

Recently marketing scholars have been intently focused on the role of marketing at the point of purchase to better understand how consumers in "shopping mode" make decisions in-store (Shankar et al. 2011). Prior research on shopper marketing and in-store decision making have explored a number of important in-store outcomes including unplanned purchasing (Inman

et al. 2009; Stilley et al. 2010b; Stilley et al. 2010a), and omitted planned items (Park et al. 1989a). Given the prior work assessing these outcomes, I question the role that both shopping-related and shopping-unrelated device use may play in influencing these important in-store variables. I first present H1a, H1b, and H1c, which investigate the interplay between in-store device use and number of unplanned purchases. In H2a, H2b, and H2c I make predictions about the relationship between mobile device use and omitted planned items. Figure 10 provides an overview of my general framework.

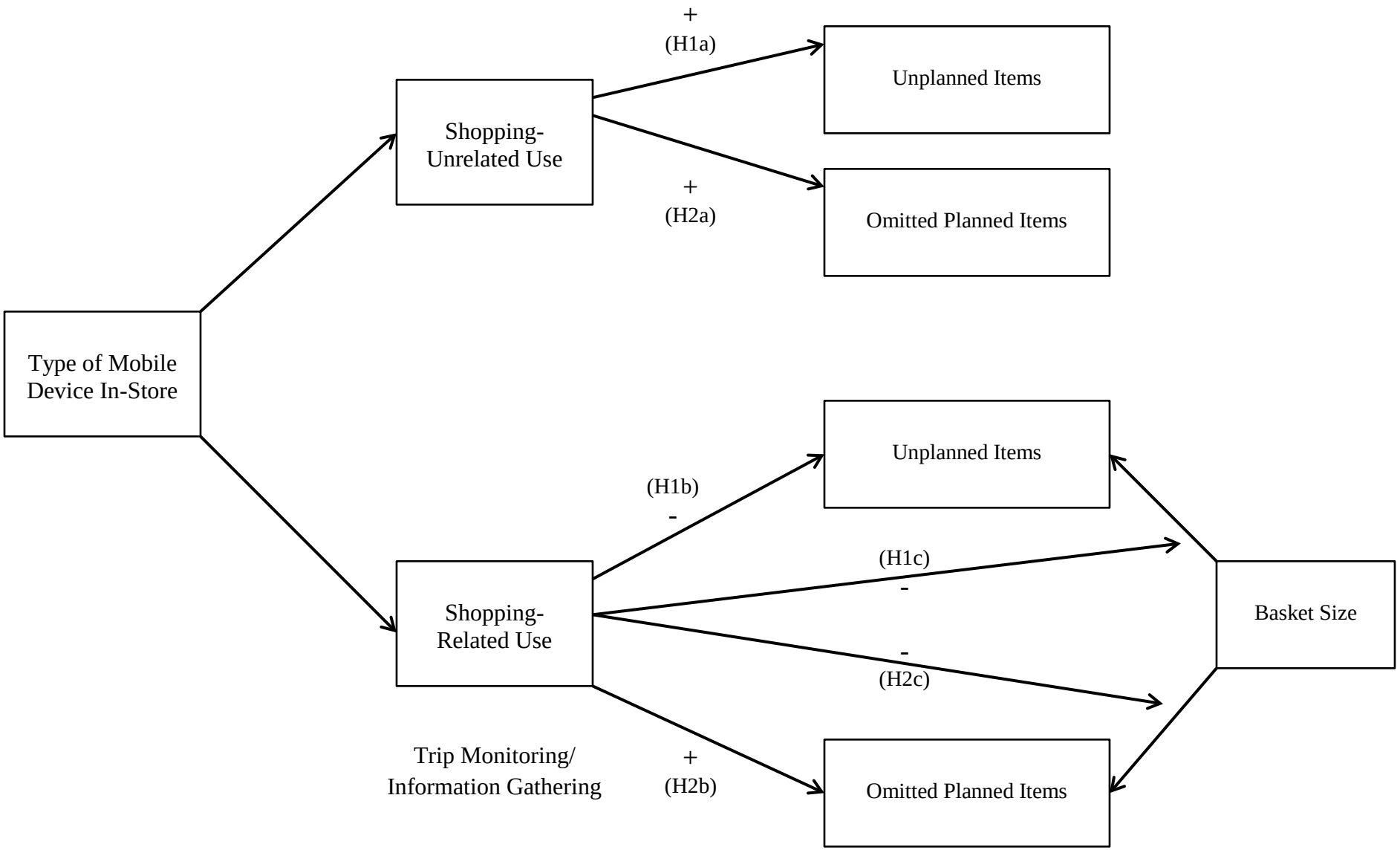


Figure 10. Conceptual Framework of In-store Mobile Device Use

3.3.1 Unplanned Purchases

I first consider the impact of in-store mobile device use on the number of unplanned purchases made by consumers. Previous research on self-regulation and resource depletion contends that acts of volition draw on a common inner resource similar to strength or energy (Baumeister et al. 1998). Such volitional acts include controlled high-level cognitive processes such as thinking, solving problems, exerting self-control, and consciously suppressing noise, thoughts, or emotions. Upon acting, individuals consume resources from the common pool and are subsequently left with a smaller stock to draw from. Evidence suggests that cognitive overload can interfere with individuals' self-regulatory behaviors as demonstrated by people who deviate from diets while experiencing periods of high stress (Herman and Polivy 2003) or fail at self-control when cognitively taxed (Baumeister et al. 1998; Vohs and Faber. 2007).

When using a mobile device in a shopping setting, shoppers often engage in cognitively demanding tasks requiring divided attention and resource allocation. For example, shoppers may use their phones to access a social media site or to catch up on some emails as they choose a brand of crackers on the store shelf. To complete both tasks, shoppers will have to constantly switch their attentional focus between their mobile device and the store display. Therefore, I argue that the cognitive and attentional requirements of in-store multitasking will tax consumers' self-regulatory resources and impact the nature of decisions. This expectation is consistent with the research of Shiv and Fedorikhin (1999), who find that under conditions of low processing capabilities, individuals' choices are driven by affective reactions to choice options as opposed to cognitions. When relying on affective reactions to products, consumers are likely to make more hedonic or impulse decisions (Shiv and Fedorikhin 1999).

While I argue that mobile technology use will impact the total number of unplanned items, I acknowledge that there is a significant difference between shopping-related and shopping-unrelated device use. For example, when using mobile technology in a shopping-related manner, shoppers' expenditure of cognitive resources is directly related to the shopping task. This is not the case for shopping-unrelated use. For example, using a mobile device in a shopping-related manner can help consumers stay on track and complete the shopping trip as anticipated, much in the same way that a shopping list helps consumers focus on shopping goals (Inman et al. 2009; Thomas and Garland 1993).

Furthermore, shoppers using devices in a shopping-related manner may better equipped to track items or to gauge spending. Indeed, previous research notes that consumers incorporate a mental budget to account for unplanned purchases. Stilley et al. (2010a) argue that the amount remaining in the budget at any given point during a shopping trip influences consumer decision making and spending, and Beatty and Ferrell (1998) find that consumers who perceive a budgetary surplus make more unplanned purchases. Therefore, it is important that consumers track unplanned purchases and continuously update their budgetary figure to stay within intended spending limits. Due to the direct link between the shopping trip and shopping-related mobile device use, I argue that as the total number of purchases made by a shopper increases, using a mobile device in a manner related to the shopping trip will limit the number of unplanned purchases made by consumers. This is due to these shoppers' enhanced ability to actively update their budget and evaluate each additional unplanned purchase. More formally I hypothesize:

H1a: Compared to shoppers not using mobile devices, consumers using mobile technologies in a shopping-unrelated manner will make more unplanned purchases.

H1b: Compared to shoppers not using mobile devices, consumers using mobile technologies in a shopping-related manner will make fewer unplanned purchases.

H1c: As shoppers' basket size increases, using a mobile device in a shopping-related manner will attenuate consumers' unplanned purchasing.

3.3.2 Omitted Planned Items

I next address the number of omitted planned items. Looking first at shopping-related use, I note that shoppers using a mobile device to check prices or evaluate items may pass over a planned item that they deem too expensive or fails to meet their standards. Similarly, these shoppers may delay a planned purchase if a more attractive price or item is found at another retailer or through a different channel (e.g., online). Finally, shoppers using a mobile device in a shopping-related manner should be in a better position to manage and track their shopping budgets. As the total number of products purchased increases and shoppers get close to exceeding their budgetary limits, they should be more likely to forgo the purchase of certain planned items to stay within intended spending parameters. Hence, shoppers using their device in a shopping-related manner should be more likely to have more omitted planned items because their mobile device is enriching the decision process.

For shopping-unrelated device use, distraction may play an important role in influencing omitted planned items. When not using a shopping list, consumers must actively recall all of the planned items they wish to purchase. Prior research has found that divided attention during recall significantly limits individuals' ability to retrieve information (Craik et al. 1996; Park et al.

1989b). For example, Craik et al. (1996) presented participants with a set of common nouns and asked individuals to recall these words while either participating in a demanding secondary task or not. The authors found that engaging in a secondary task significantly impaired individuals' ability to recall information, with recall in the divided attention condition approximately 11% lower compared to participants in the full attention condition.

Further, when using a shopping list, consumers must accurately identify and process all of the information on the list. Gardiner and Parkin (1990) found that divided attention while reading words impaired processing of the information and resulted in subsequent failure to recollect seeing words. Moreover, both Craik et al. (1996) and Park et al. (1989b) found a significant impact of divided attention on encoding and processing of word lists. Taken together, these results suggest that unrelated-use can impact individuals' ability to recall products to be purchased and ability to process and manage shopping lists. Therefore, distraction from mobile devices may result in consumers omitting planned items. Given the previous discussion, I propose:

H2a: Compared to consumers not using mobile devices, consumers using mobile technologies in a shopping-unrelated manner will omit more planned items.

H2b: Compared to consumers not using mobile devices, consumers using mobile technologies in a shopping-related manner will omit more planned items.

H2c: As shoppers' basket size increases, using a mobile device in a shopping-related manner will increase omitted planned items.

To summarize, I propose that in-store mobile technology use will be associated with the number of unplanned purchases and the number of omitted planned items. I now test these hypotheses in two studies. Study 1 was conducted in a nationally representative sample of grocery stores, while Study 2 was completed in a nationally representative sample of mass merchandise stores.

3.4 STUDY 2: GROCERY SHOPPING

Study 2 employs data from the 2012 Point of Purchase Advertising International (POPAI) Shopper Engagement study. In particular, I investigate the impact of in-store technology use on the number of unplanned purchases (H1a, H1b, H1c) and number of omitted planned items (H2a, H2b, H2c). As part of the 2012 POPAI Shopper Engagement study, over 2,000 shoppers across four broad US geographic census regions were intercepted before they entered a grocery store. The shoppers completed a ten-minute entry interview that gathered information on the items they planned to purchase and preliminary shopping information. After completing the shopping trip, interviewers collected information from shoppers on the actual items purchased, store perceptions, and demographics. Previous research has shown that the pre- and post-shopping interview technique applied in the POPAI study does not affect consumer spending (e.g., Kollat and Willett 1967; Stilley et al. 2010b). To investigate the impact of mobile technology use, I included a question in the exit interview asking shoppers about their smartphone or cellular phone use during the shopping trip (see Table 2 for the mobile usage categories collected and number of shoppers within each category).

Table 2. Mobile Usage Type and Frequency by Study

Use	Study 2	Study 3
Shopping-Related		
Compare prices of products	5	91
Compare different retailers for best deal	0	52
Look at manufacturer's website	3	36
Look at retailer's website	2	54
Look at retailer's mobile app*	-	59
Create, store, or access a shopping list	44	114
Scan a QR code on a package or display	4	19
Use a calculator*	-	145
Engage in conversation related to the shopping trip	110	136
TOTAL Related	**168**	**706**
TOTAL Incidence Related	**164**	**486**
Shopping-Unrelated		
Engage in conversation unrelated to the shopping trip	116	194
Check or send emails	9	133
Look at websites unrelated to the shopping trip	3	41
Send personal text messages	42	291
Listen to music	0	58
Play games	1	42
TOTAL Unrelated	**171**	**759**
TOTAL Incidence Unrelated	**156**	**482**
No Mobile Use	**1729**	**1806**

Notes: Shoppers could select more than one category to describe their use of mobile technologies during the shopping trip. Therefore, Total Related identifies the total number of related uses selected across participants, while Total Unrelated identifies the total number of unrelated uses selected across participants. Furthermore, Total Incidence Related identifies the total number of participants who used their device for at least one shopping related use, while Total Incidence Unrelated identifies the total number of participants who used their device for at least one unrelated use.

* Category only collected in Study 3

3.4.1 Sample

Due to missing or incomplete responses from 371 individuals, the usable sample of respondents was 2030 (74% female). For my analyses, I grouped shoppers into four mobile device usage groups: no mobile device use (1729 shoppers; 85%), related mobile device use (145 shoppers; 7%), unrelated mobile device use (137 shoppers; 7%), and related *and* unrelated mobile device use (19 shoppers; 1%).

3.4.2 Focal Measures

Three variables to capture shopper mobile technology use are applied (Related, Unrelated, and Both). Mobile technology use was classified as shopping-related if the respondent indicated they used their phone to compare prices of products, to compare different retailers for the best price, to look at a manufacturer's website, to look at a retailer's website, to create, store or access a shopping list, to scan a QR code on a package, and/or to call someone for help with a decision (see Table 2). Mobile technology use was classified as shopping-unrelated if the respondent indicated they used their phone to engage in a private conversation with another individual, check or send emails, look at websites not related to the shopping trip, send personal text messages, listen to music, and/or to play games. Finally, shoppers who indicated that they used their mobile device in at least one shopping-related and one shopping-unrelated manner during the trip fell into the "both" category. Along with mobile technology use, I included a number of important shopping variables and demographics in my models as controls in line with prior research (Hui et al. 2013; Inman et al. 2009; Stilley et al. 2010b). Explanations of these measures are reported in Appendix F.

I am primarily interested in two major dependent variables. First, the number of unplanned purchases was operationalized as the total number of items that were purchased by the shopper but were not planned prior to beginning the shopping trip (i.e., not mentioned by the shopper during the entry interview). Second, the number of omitted planned items was operationalized as the number of items that the shopper planned to purchase prior to beginning the shopping trip but subsequently failed to purchase.

3.4.3 Results

3.4.3.1 Unplanned items In modeling the number of unplanned items purchased by shoppers, I estimate a negative binomial model with the number of unplanned items as the dependent variable. The negative binomial model is a generalization of a Poisson regression model and accounts for overdispersion in the data by including a disturbance or error term ($\sigma\varepsilon_i$). Overdispersion is the occurrence of greater variability than would be expected and occurs frequently in applied analysis of count data (Barron 1992). Specifically, I include the three mobile device usage categories and the control variables in the model. In my analyses, I used the no phone use group as the comparative reference for the three mobile categories. Table 2 shows all of the variables and the results. The ratio of the Pearson χ^2 divided by its degrees of freedom provides a means of assessing the adequacy of the model (Ramsey and Schafer 1997). Ratios that are close to a value of one indicate a good fitting model, whereas ratios significantly above one indicate overdispersion and ratios significantly below one indicate underdispersion. The ratio for the negative binomial model is close to one, indicating a good fitting model. In addition, Table 3 shows that the full fitting model significantly outperforms the null model (χ^2 (17) = 2399.52, $p <$ .001).

Table 3. Number of Unplanned Purchases in Grocery Store Environment

	Parameter Estimate		**Wald χ^2**	
Intercept	1.687	***	4838.90	
Related	0.027		0.33	
Unrelated	0.104	**	4.63	
Both	0.179		2.31	
Impulsive	0.066	**	18.28	
Trip Time	0.002	***	9.32	
Shopping List	-0.079	***	38.80	
Basket Size	0.082	***	2033.67	
All Aisles	0.062	***	10.11	
Most Aisles	0.069	***	28.73	
Others Accompanying	0.042	***	10.25	
Gender	-0.018		1.67	
Age	0.002	***	6.78	
Income	0.000	**	4.80	
Household Size	0.001		0.01	
Related × Basket Size	-0.013	**	6.82	
Unrelated × Basket Size	-0.001		0.03	
Both × Basket Size	0.009		0.17	
Dispersion	0.126			
	Scaled Pearson χ^2	2112.0	**Log Likelihood**	-4937.62
	DF	2012	**χ^2 Value**	2399.52
	Value/DF	1.00	***p* Value**	< .001

Notes: DV = ln (Number of Unplanned Purchases). All continuous variables are mean centered. Results are substantively unchanged without covariates in the models.
***** $p < .10$ ****** $p < .05$ ******* $p < .01$

H1a, H1b, and H1c address the impact of in-store mobile technology use on the number of unplanned purchases. As predicted by H1a, in comparison to shoppers not using a cell phone or smartphone in-store, I find that individuals using mobile technology in a shopping-unrelated manner made significantly more unplanned purchases ($\beta_{Unrelated} = 0.104$, $p < .05$). Specifically, using mobile technology in a manner unrelated to the shopping task increases unplanned purchases on average by 11%. These results provide support for H1a and show that in-store mobile technology use is associated with unplanned purchases. This result is consistent with my theorizing that mobile device use consumes attentional resources and may limit consumers' stock of self-control resources to draw upon. However, inconsistent with H1b, I find no difference in number of unplanned items between shoppers using a mobile device in a shopping-related manner and shoppers not using mobile devices ($\beta_{Related} = 0.027$, *n.s.*)

H1c predicts that using a mobile device in a shopping-related manner would attenuate unplanned purchases for shoppers who made a large number of purchases (i.e., an interaction between related use and basket size). I find a positive relationship between basket size and the number of unplanned purchases ($\beta_{BasketSize} = 0.082$, $p < .01$), confirming prior findings (Inman et al. 2009; Kollat and Willett 1967). Importantly, consistent with H1c, I find that using a mobile device in a manner related to the shopping trip attenuates the positive relationship ($\beta_{Basket \times Related} = -0.013$, $p < .05$). This result demonstrates a potential positive implication of using mobile devices in-store, suggesting that shopping-related mobile devices may help shoppers to stay on track and limit additional unplanned purchases.

3.4.3.2 Omitted planned items To model the number of omitted planned items by shoppers, I again utilize a negative binomial model. I included the three mobile device usage categories and

control variables in the model with the number of omitted planned items as the dependent variable. Table 4 shows the model results and demonstrates that the full fitting model significantly outperforms the null model (χ^2 (17) = 164.19, $p < .001$).

As predicted, compared to shoppers not using mobile devices, shoppers using their phones in a shopping-unrelated manner showed more omitted planned items ($\beta_{Unrelated} = 0.287$, $p < .01$). Specifically, using mobile technology in a manner unrelated to the shopping task increased omitted planned items by an average of 32%. Furthermore, I find a marginally significant difference in the number of omitted planned items between shoppers using mobile technology in a shopping-related manner and those shoppers not using mobile technologies ($\beta_{Related} = 0.175$, $p < .10$). These results provide support for H2a and partial support for H2b.

Finally, recall that H2c predicted that as shoppers' basket size increases, using a mobile device in a shopping-related manner will increase the number of omitted planned items. I find a significant positive relationship between basket size and omitted planned items ($\beta_{BasketSize} = 0.041$, $p < .01$). However, inconsistent with H2c, no basket size by shopping-related use interaction emerged, ($\beta_{Basket \times Related} = 0.001$, *n.s.*).

Table 4. Number of Omitted Planned Items in Grocery Store Environment

	Parameter Estimate	**Wald χ^2**
Intercept	0.316 ***	28.66
Related	0.175 *	2.59
Unrelated	0.287 ***	6.81
Both	0.048	0.03
Impulsive	-0.037	0.95
Trip Time	-0.001	0.25
Shopping List	-0.083 ***	6.95
Basket Size	0.041 ***	92.03
All Aisles	0.055	1.19
Most Aisles	0.089 ***	7.94
Others Accompanying	0.048	2.15
Gender	0.044	1.84
Age	-0.003	2.09
Income	0.000 ***	8.52
Household Size	0.015	0.49
Related × Basket Size	0.001	0.01
Unrelated × Basket Size	-0.012	0.57
Both × Basket Size	-0.048	0.67
Dispersion	0.823	
	Scaled Pearson χ^2 2089.3	**Log Likelihood** -3206.02
	DF 2012	**χ^2 Value** 164.19
	Value/DF 1.04	***p* Value** < .001

Notes: DV = ln (Number of Omitted Planned Items). All continuous variables are mean centered. Results are substantively unchanged without covariates in the models.
***** $p < .10$ ****** $p < .05$ ******* $p < .01$

3.5 STUDY 3: MASS MERCHANDISERS

Study 2 provides insight into shopping-related and shopping-unrelated mobile device use in grocery settings and highlights how these technologies impact unplanned purchases and omitted planned items. To continue my investigation into in-store mobile device use and to enhance the external validity of my findings, I test my hypotheses in a different retail environment. Furthermore, in Study 3, I dig deeper into the exact manner in which mobile devices are used to better understand some of the implications of specific usage categories. In particular, I look at the use of mobile devices in mass merchandisers using data from the 2013 POPAI Shopper Engagement study. In this study, over 2500 shoppers across four broad US geographic census regions were intercepted before entering mass merchandisers. The data collection method paralleled the procedure used in the 2012 POPAI Shopper Engagement study in which shoppers completed a pre- and post-shopping interview. Furthermore, due to increased mobile device usage, I am able to further break down unrelated and related device use into specific usage categories. This partitioning will help tease out the specific types of shopping-related and shopping-unrelated uses driving each result.

3.5.1 Sample

There were missing or incomplete responses from 392 individuals, leaving a usable sample of 2599 respondents (77% female). For my analyses I grouped shoppers into four mobile device usage groups: no mobile device use (1806 shoppers; 69%), related mobile device use (311 shoppers; 12%), unrelated mobile device use (307 shoppers; 12%), and related *and* unrelated mobile device use (175 shoppers; 7%).

3.5.2 Focal Measures

I again use three variables to capture shoppers' mobile technology use (Related, Unrelated, and Both). To categorize mobile device use, I utilized a similar procedure to the one used in Study 2. Furthermore, as in Study2, I am interested in two major dependent variables: the total number of unplanned purchases and the number of omitted planned items. The operationalization of these variables was the same as in Study 2 (see Table 2 for the mobile usage categories collected and number of shoppers within each category).

3.5.3 Results

3.5.3.1 Unplanned items As in Study 2, I applied a negative binomial model with the number of unplanned items as the dependent variable. Furthermore, I included the three mobile device categories and control variables in the model. All of the variables used in the model and model results can be found in Table 5. The full fitting model significantly outperforms the null model (χ^2 (17) = 3454.94, $p < .001$).

Table 5. Number of Unplanned Purchases in Mass Merchandiser Environment

	Parameter Estimate		**Wald χ^2**	
Intercept	0.939	***	607.63	
Related	0.049		1.20	
Unrelated	0.123	***	7.85	
Both	0.003		0.00	
Impulsive	0.091	***	21.39	
Trip Time	0.004	***	32.14	
Shopping List	-0.041	***	7.46	
Basket Size	0.116	***	1809.33	
All Aisles	0.032		0.95	
Most Aisles	0.063	***	17.23	
Others Accompanying	0.062	***	18.80	
Gender	-0.049	***	8.09	
Age	0.002		2.69	
Income	0.000	***	8.89	
Household Size	-0.014		1.85	
Related × Basket Size	-0.014	**	5.87	
Unrelated × Basket Size	-0.004		0.33	
Both × Basket Size	0.005		0.36	
Dispersion	0.244			
	Scaled Pearson χ^2	2581.0	**Log Likelihood**	-5067.35
	DF	2581	**χ^2 Value**	3454.94
	Value/DF	1.00	***p* Value**	< .001

Notes: DV = ln (Number of Unplanned Purchases). All continuous variables are mean centered. Results are substantively unchanged without covariates in the models.
***** $p < .10$ ****** $p < .05$ ******* $p < .01$

Consistent with Study 2, when compared to shoppers not using mobile technologies in-store, shoppers using devices in a shopping-unrelated manner made significantly more unplanned purchases ($\beta_{Unrelated}$ = 0.123, $p < .01$). Specifically, using mobile technology in a manner unrelated to the shopping task increases unplanned purchases on average by 13%. Furthermore, I again find that using a mobile device in a shopping-related manner has no impact on the number of unplanned purchases ($\beta_{Related}$ = 0.049, *n.s.*). These results provide additional support for H1a and further demonstrate that the use of mobile devices in a shopping-unrelated manner is associated with more unplanned purchases. However, once again there was no support for H1b.

H1c predicts that shopping-related device use would attenuate unplanned purchases for shoppers who made a large number of purchases (i.e., an interaction between related use and basket size). Again, I find a positive relationship between basket size and the number of unplanned purchases ($\beta_{BasketSize}$ = 0.116, $p < .01$). Furthermore, consistent with H1c, I find that using a mobile device in a shopping-related manner attenuates the positive relationship ($\beta_{Basket \times Related}$ = -0.014, $p < .05$). Once again, this result suggests that shopping related mobile device use can help shoppers temper unplanned purchasing.

3.5.3.2 Omitted planned items In Study 2, I established that using a mobile device in-store is associated with more omitted planned items compared to shoppers not using mobile technologies. To further investigate the role of mobile technologies on omitted planned items, I again apply a negative binomial model with the three mobile device usage categories and control variables. All variables used in the model as well as the model results are in Table 6. The full fitting model significantly outperforms the null model (χ^2 (17) = 167.76, $p < .001$).

Table 6. Number of Omitted Planned Items in Mass Merchandiser Environment

	Parameter Estimate	**Wald χ^2**
Intercept	-0.093	1.77
Related	0.187 **	5.58
Unrelated	0.296 ***	14.65
Both	0.011	0.01
Impulsive	0.026	0.46
Trip Time	0.009 ***	38.62
Shopping List	0.181 ***	38.92
Basket Size	0.002	0.27
All Aisles	0.126 **	4.22
Most Aisles	0.046	2.43
Others Accompanying	0.076 ***	8.10
Gender	-0.013	0.16
Age	-0.001	0.24
Income	0.000 *	3.16
Household Size	0.002	0.01
Related × Basket Size	0.013	2.27
Unrelated × Basket Size	-0.005	0.19
Both × Basket Size	-0.030 *	3.54
Dispersion		
	Scaled Pearson χ^2 2594.8	**Log Likelihood** -3400.10
	DF 2581	**χ^2 Value** 167.76
	Value/DF 1.01	***p* Value** < .001

Notes: DV = ln (Number of Omitted Planned Items). All continuous variables are mean centered. Results are substantively unchanged without covariates in the models.
***** $p < .10$ ****** $p < .05$ ******* $p < .01$

As in Study 2, in agreement with H2a, I find that shoppers using their phones in a shopping-unrelated manner showed more omitted planned items than shoppers not using mobile devices ($\beta_{Unrelated} = 0.296$, $p < .01$). Specifically, using mobile technology in a shopping-unrelated manner increased planned but not purchased items by an average of 34%. Furthermore, as predicted by H2b, I find a significant difference in omitted planned items between shoppers using mobile devices in a shopping-related manner and shoppers not using mobile devices ($\beta_{Related} = 0.187$, $p < .05$). Using a mobile device in a shopping-related manner increased planned but not purchased items by an average of 22%.

Once again, consistent with Study 2, I do not find any support for H2c. There was no significant relationship between basket size and number of omitted planned items ($\beta_{BasketSize} = 0.002$, *n.s.*). Furthermore, there was no evidence of a shopping-related use by basket size interaction ($\beta_{Basket \times Related} = 0.013$, *n.s.*).

3.5.4 Ancillary Analyses

While the results from Study 3 triangulate with those reported in Study 2, an interesting question is whether the results are uniform across types of device usage. For example, the effects of texting may differ from the effects of chatting on the phone, both of which are shopping-unrelated usage types. To answer this question, I partition shopping-related mobile use and shopping-unrelated mobile use into specific usage types.

3.5.4.1 Unplanned items To better understand the types of device use driving my prior results, I decomposed the shopping-unrelated category into its six component categories (i.e., talk, email, web, text, games, and music) and the shopping-related use into its nine component categories

(i.e., check prices, compare retailers, access manufacturer website, access retailer website, use retailer's shopping app, access a shopping list, scan a QR code, use a calculator, and call someone for help). Consistent with my previous analyses, all phone use groups are compared to those shoppers not using devices. Once again, I estimated a negative binomial model with the number of unplanned items as the dependent variable and included the fifteen mobile device usage categories, the interaction between basket size and all device use categories, and the control variables in the model. Results of this model are reported in Appendix G.

First, it appears that shoppers using their phones for private conversation (β_{Talk} = 0.117, p < .05) and private text messaging (β_{Text}= 0.166, p < .01) are driving the difference in unplanned items between those using their devices in a shopping-unrelated manner and those not using a device. All other shopping-unrelated uses are non-significant. Next, looking at shopping-related uses, shoppers using their device to access a digital list showed more unplanned purchases compared to those not using a device ($\beta_{Digital\ List}$ = 0.132, p < .10). This is a particularly surprising result given prior research touting traditional lists as an effective tool to help consumers fulfill planned purchases (Block and Morwitz 1999). More recently, however, mobile shopping list applications have been adding features which make purchase suggestions, allow users to lookup items from previous trips, or even permit another shopper (such as a spouse or child) to add an item to the digital list. Therefore, it appears that additional research is warranted on the implications of digital shopping lists. All other shopping-related uses were not significant.

Turning to the interactions between shopping-unrelated mobile use and basket size, unrelated uses such as sending emails (β_{Email} = 0.023, p < .10) and surfing the web (β_{Web} = 0.043, p < .10) appear to play a role in unplanned purchasing as the total number of items purchased by

consumers increases. In particular, I find that using a device to send e-mail or surf the web increases unplanned purchasing as basket size increases.

Of even greater interest, it appears that the interaction between basket size and shopping-related uses is somewhat more nuanced than prior results indicate. Consistent with my hypothesized effect, accessing a retailer's shopping application ($\beta_{Basket \times RetailerApp} = -0.045$, $p < .01$), accessing a digital list ($\beta_{Basket \times DigitalList} = -0.042$, $p < .01$), and using a calculator ($\beta_{Basket \times Calculator} = -0.026$, $p < .05$) all attenuate unplanned purchasing as the total basket increases. This suggests that as the number of items increases, when used in these ways, shopping-related device use may help consumers stay on task and potentially slow their unplanned purchasing. However, I also find that uses such as checking prices ($\beta_{Basket \times Prices} = 0.038$, $p < .05$) and checking the retailer's website ($\beta_{Basket \times RetailerWebsite} = 0.057$, $p < .05$) increase unplanned purchasing as basket size increases. Given this result, there appears to be some negative implications of shopping-related use and how it relates to unplanned purchasing.

3.5.4.2 Omitted planned items Once again I estimated a negative binomial model with the number of omitted planned items as the dependent variable and included the fifteen mobile device usage categories, the interaction between basket size and all device use categories, and the control variables in the model. The results of the model are reported in Appendix G.

Personal conversations appear to be the main driver of omitted planned items ($\beta_{Talk} = 0.183$, $p < .10$); all other shopping-unrelated device uses were non-significant. Given this result, it appears that phone conversations may impair shoppers' ability to complete their shopping trip as planned and suggests that distraction is in fact playing an important role in the fulfillment of the trip. Turning to shopping-related uses, using a calculator ($\beta_{Calculator} = 0.324$, $p < .01$) is the

major contributor to the differences reported earlier. This result suggests that consumers using their device as a calculator may be opting out on planned items that are too expensive or may cause the shopper to exceed her trip budget. However, I do find that using a retailer's shopping app has a negative impact on number of omitted planned items ($\beta_{RetailerApp}$ = -0.500, $p < .05$). Therefore, in certain situations, using a retailer's shopping app might help consumers stay on track and complete the trip as planned. All other shopping-related uses were not significant.

Finally, analyzing the interactions among each phone use category and basket size, I find that accessing a retailer's shopping app ($\beta_{Basket \times RetailerApp}$ = 0.024, $p < .10$) and engaging in private conversation ($\beta_{Basket \times Talk}$ = 0.028, $p < .10$) increase omitted planned items as basket size increases. All other interaction terms were non-significant. Therefore, although using a shopping app may be helpful in completing the shopping trip as planned; it appears that as basket size increases, the benefit of using the device to access an app becomes less pronounced. Furthermore, it again appears that using a mobile device for private conversations can significantly increase the number of omitted planned items.

3.6 COMPARISON OF MOBILE DEVICE USE ACROSS STORE ENVIRONMENTS: STUDIES 2 & 3

Comparing the two field environments, I find that shoppers are twice as likely to use a mobile device when shopping in a mass merchandiser than when shopping in a grocery store. In the grocery store environment (Study 2), 301 of the 2030 shoppers (14.8%) reported that they had used a mobile device while shopping. In contrast, in the mass merchandiser environment (Study 3), 793 of the 2599 shoppers (30.5%) reported that they had used a mobile device.

Further, not only did more shoppers use their mobile device in mass merchandisers, they also used them in more ways. Shoppers could check more than one category on the mobile device use question, so I can calculate the average number of usage types by summing the usages and dividing by the number of shoppers who reported that they used a mobile device. The 301 grocery store shoppers who used a mobile device indicated 339 different usage types or an average of 1.13 different types (339/301). By comparison, the 793 mass merchandiser shoppers who used a mobile device indicated 1465 usage types, or 1.85 different types (1465/793).

While the usage frequency of mobile devices is markedly different between grocery stores and mass merchandisers, the most popular reasons for using mobile devices are very consistent. The top ways that mobile devices were used in a shopping-related manner when in a grocery store are for calling someone for help with the decision, accessing an electronic shopping list, and checking prices. The order of these three usages is the same in mass merchandisers, except that the additional usage type (not included in the grocery study) of using the calculator function is the most frequently stated reason for mobile device usage. The top two ways that mobile devices were used in a shopping-unrelated fashion are identical for grocery shoppers and mass merchandiser shoppers – talking on the phone and sending text messages - albeit the order is reversed across the channels.

3.7 GENERAL DISCUSSION

As mobile technologies continue to grow in popularity, it is critical that consumers and marketers understand the implications of using these devices while shopping. A major objective of this essay was to initiate the investigation into the role that mobile devices play in influencing

consumers' shopping outcomes. To do this, I integrate work in shopper marketing, attention and distraction, and distracted driving to explore some of the implications related to in-store mobile technology use.

Given the compelling literature on mobile technology use while driving (Strayer et al. 2003; Strayer and Johnston 2001) and the strong law enforcement strategies to mitigate mobile device use on the roads, it appears that policy makers are taking the risk these devices provide seriously (Short 2013). However, in 2011 more than two thirds of U.S. drivers admitted to using their cell phones while driving (Naumann and Dellinger 2013), suggesting that individuals do not acknowledge these dangers or simply do not care. Therefore, an initial goal of my research was to assess consumers' perceptions of the advantages and disadvantages of using these devices in retail locations, a much lower stakes environment compared to the nation's roads. The results of the preliminary study suggest that consumers generally do not believe their mobile devices to have any major negative implications for their shopping. Conversely, individuals tend to identify and focus on the positive outcomes associated with mobile devices such as enhancing decision making and helping with the shopping task.

In Study 1, and in direct opposition to consumer lay beliefs, I uncover some real negative limitations to using mobile devices in retail settings. In particular, I demonstrate the role that both mobile usage duration and intensity play in impacting in-store stimuli recall and shopping accuracy. I note that in-store mobile technology use can considerably restrict recall of in-store stimuli, regardless of usage intensity. Furthermore, I show that using a mobile device in a more intensive manner on long shopping trips can have significant effects on shoppers' ability to accurately complete their shopping task

In Studies 2 and 3, I investigate the impact of shopping-related and shopping-unrelated device use on in-store outcomes. Study 2 explored shoppers' use of mobile devices in grocery store settings, while Study 3 investigated shoppers' use of these devices in mass merchandisers. Examining the number of unplanned purchases and number of omitted planned items, I find that, contingent upon how devices are used, in-store mobile device use is associated with purchase behaviors. Once again, inconsistent with consumer lay beliefs, I establish that in-store mobile technology use has significant implications for consumers including the purchase of more unplanned items and omitted planned items.

The current research adds to the literature on shopper marketing (Hui et al. 2013; Inman and Winer 1998; Inman et al. 2009; Kollat and Willett 1967; Stilley et al. 2010b) and assesses the role that mobile technologies play in altering consumers' in-store behaviors. Recent research has begun the investigation into in-store marketing strategies tied to the proliferation of shopper mobile device usage (e.g., Hui et al. 2013). This essay continues this stream of research and question whether the use of these devices in-store may have broader implications for shoppers and retailers. Using field data from two differing retail environments, I demonstrate the significant impact of in-store mobile technology use on the nature and amount of shopper purchases. Furthermore, investigating mobile device use in both a grocery shopping environment as well as a mass merchandiser environment increases the generalizability of my findings. Finally, this research relies on multiple research methods to focus on the phenomena of in-store mobile technology use. The application of a multi-methods approach helps to shed additional light on consumers' use of mobile devices in retail settings, by providing data from both field and experimental settings.

3.7.1 Managerial Implications

My findings provide a number of implications for managers and retailers. First, I find that using mobile devices in a shopping-unrelated manner can result in more unplanned purchases by consumers. These finding suggests that retailers may be able to increase basket size by actively encouraging shoppers to utilize their mobile devices while shopping. This might be accomplished by highlighting the availability of Wi-Fi throughout the store and promoting the shopping environment as "technology friendly." Similarly, retailers might be able to entice shoppers to use their mobile devices via subtle advertisements or signage reminding shopper that it is smart to multi-task or catch up on conversations (both talking and texting).

Despite these positive findings for retailers, my results also suggest that managers need to be careful when it comes to in-store mobile device use. For example, both unrelated and related mobile use were found to increases omitted planned items. This finding suggests that using a mobile device potentially results in consumers failing to purchase items that they intended to purchase. In particular, it appears that individuals using their devices for casual conversation are the most prone to making this mistake. Actively encouraging consumers to engage in private conversations may therefore result in consumers leaving more planned items on the shelf and spending less overall. Yet, for highly store-loyal shoppers, this result may not be all bad for retailers. If a shopper misses or forgets an item, this may necessitate a second shopping trip. An additional trip might have positive implications for retailers in terms of additional unplanned and impulse purchases. Nevertheless, the risk remains that consumers may purchase omitted planned items from competitors, essentially forfeiting the sale entirely.

In addition to greater likelihood of failure to purchase, my results also suggest that unrelated mobile device use can have substantial impact on recall of in-store stimuli. I find that

both high and low intensity device use can impair consumers' recollections of displays and environmental stimuli. The attentional limits imposed by mobile devices may therefore impede retailers' attempts to communicate in-store with shoppers and limit the effectiveness of promotional materials meant to stimulate additional purchases.

Finally, there has been a recent push for retailers to enhance shoppers' in-store experience via mobile shopping applications (Konrad 2013). Research acknowledges the potentially immense influence inherent within mobile shopping applications, even to the point in which retailers can alter consumers shopping paths within store (e.g., Hui et al. 2013). Again, however, my results demonstrate that retailers must be aware of the negative implications associated with mobile device use and must weigh the advantages and disadvantages associated with the promotion of in-store mobile app use.

3.7.2 Consumer Implications

While my results provide guidance for managers and retailers, the findings also have major implications for consumers. The results of the preliminary study suggest that individual consumers tend to overlook or are unaware of some of the limitations associated with in-store mobile technology use. I find that shoppers are quick to tout their phones as shopping aids and discount the attentional limitations potentially imposed by the use of these devices. Contrary to these beliefs, my results indicate that in-store mobile device use can have substantial repercussions, especially when used in a manner unrelated to the shopping trip. This includes purchasing more unplanned items and omitting planned items. I hope that this essay will update consumers' attitudes toward mobile technologies and persuade individuals to think more broadly about how these devices impact our lives, both positively and negatively. Despite the public's

reliance on and praise for new mobile technologies that support a hyper-connected lifestyle, it appears that there are some deleterious outcomes associated with in-store technological distraction.

However, the results also offer positive implications for consumers. Consumers using mobile devices in a shopping-related manner sometimes exhibited little difference from consumers not using mobile technologies. Furthermore, when investigating variables such as number of unplanned purchases, related mobile device use such as using a retailer's mobile app, accessing a digital list, or using a calculator may help consumers attenuate unplanned purchases as they purchase more items. Additionally, my results suggest that shopping-related device use, such as accessing a calculator, may help shoppers track spending and bypass expensive items. Finally, in relation to in-store stimuli recall, mobile devices can potentially help protect consumers from unplanned purchases stimulated by in-store promotions and advertisements. Granted, this might also become a negative result if the consumer relies on in-store stimuli to stimulate forgotten needs items that may have been left off the final shopping list (Inman and Winer 1998). Table 7 provides an outline of my major results and the positive and negative implications for managers and consumers.

3.8 CONCLUSION

Cell phones and smartphones have profoundly changed the way we interact with the world and often make our lives easier and more efficient. While these devices provide many benefits, a baseline understanding of the advantages and limitations these devices impose is

critical. In this research, I have demonstrated that these technologies influence purchase behavior, contingent upon how they are used. I show that mobile devices can result in more unplanned items, failure to purchase planned items, and degradation of shopping accuracy and shoppers' ability to recall in-store stimuli. My findings indicate that both managers and consumers need to think more broadly about the positive and negative shopping outcomes associated with mobile devices before encouraging or using these technologies in retail settings.

Table 7. Managerial and Consumer Implications

Result	***Managerial Implication***	***Consumer Implication***
Unplanned Items		
Unrelated mobile use associated with more unplanned purchases.		
Engaging in Private Conversation Sending and Receiving Personal Text Messages	(+) Shopper buying more	(-) Shopper buying more
As basket size increases, related mobile use attenuates unplanned purchases.		
Accessing a retailer's mobile shopping app Accessing a digital shopping list Using a calculator	(-) Shopper buying less	(+) Shopper buying less
Omitted Planned Items		
Unrelated mobile use associated with more omitted planned items.		
Engaging in Private Conversation	(-) Forfeiting purchase (+) Additional shopping trip	(-) Missing items (-) Additional shopping trip
Related mobile use associated with more omitted planned items		
Using device as calculator.	(-) Forfeiting purchase (-) Purchasing products from competitors	(+) Staying within budget (+) Purchase at cheaper price (-) Forfeiting purchase
Recall of In-store Stimuli		
High intensity mobile use leads to lower recall of in-store stimuli.	(-) No additional purchases stimulated by displays	(+) No additional purchases stimulated by displays
Low intensity mobile use leads to lower recall of in-store stimuli.	(-) No additional purchases stimulated by displays	(+) No additional purchases stimulated by displays
Shopping Accuracy		
When mobile devices are used at high intensity for a long duration, shoppers become less accurate in shopping. However, when device used at high intensity for a short duration there is no impact on accuracy.	(-) Forfeiting purchase	(-) Missing items

4.0 CONCLUSIONS AND FUTURE DIRECTIONS

As a cohesive whole, the two essays in my dissertation contribute to the literature on marketing communications by examining consumers' response to persuasive communications (Essay 1) and use of mobile communication devices in store environments (Essay 2). Given the continued evolution in digital and mobile environments, it is crucial for marketers to understand how consumers communicate and interact via these new mediums. In particular, this work contributes to our understanding of online and digital communication outcomes. For example, in Essay 1, I examine consumers' response to normative and non-normative information accompanying communications. The seamless ability to track, update, and present information on the aggregate behavior of individuals afforded by changing technology has enhanced the likelihood of consumers viewing normative or non-normative cues online. Indeed, multiple studies within Essay 1 present normative and non-normative information via familiar online settings, including merchant product pages (such as Amazon) and online travel sites (such as Expedia). Similarly, in Essay 2, I examine the role mobile technologies play in influencing consumers' in-store shopping behaviors. Understanding how consumers utilize mobile technologies is a critical undertaking for marketers, especially considering Nielsen estimates that over two-thirds (approximately 71%) of individuals in the United States own a smartphone (Nielsen Company 2014). Moreover, on a global scale, smartphone ownership is expected to reach 33% of the total

world population by 2017 (eMarketer 2014). Provided the rapidly increasing penetration rate of these mobile technologies, it is critical for marketers to understand the intricacies of these devices; however, many marketers are finding the mobile environment difficult to navigate (Bergen 2014). The second essay in my dissertation sheds light on consumers' use of mobile technologies within retail environments and contributes to our understanding of outcomes associated with mobile use.

Additionally, my dissertation examines the role of attention and distraction in shaping consumers' responses. In Essay 1, I identify SII as a critical individual difference measure capable of influencing attention to normative and non-normative information accompanying a communication. In particular, I show that consumers high in SII fail to adequately attend to normative or non-normative cues within a message, but instead focus the recommendations of others. Essentially, as long as some subset of consumers have engaged in a recommended behavior, those high in SII are willing to overlook additional qualifying information concerning whether a majority or a minority of other consumers have also acted in a similar manner. This is a critical finding for marketers given the implications for the promotion of non-majority or unpopular behaviors and the marketing of new products to consumers. In Essay 2, I investigate some of the in-store outcomes associated with mobile technology distraction. For example, I find that utilizing mobile technologies in a manner that is unrelated to the shopping task is associated with an increase in consumers' unplanned purchases and omitted planned items. Similarly, I find that using a mobile device in store settings may limit consumers' ability to accurately manage the shopping trip and hinder recall of important in-store stimuli. The results of my second essay provide important insight into consumers' use of mobile technologies and can shape managers' in-store technology strategies.

While this dissertation extends our understanding of consumer response to communications and use of mobile communication devices, there are important limitations and avenues of future research that must be considered. Addressing Essay 1, future research can assess the interplay between normative cues, consumer SII, and the identity of the relevant other providing the persuasive message. My studies demonstrated that high SII individuals fail to differentiate between normative and non-normative information. However, I did not manipulate the identity of the relevant other providing the message, a variable that past research has shown can significantly influence compliance (Naylor et al. 2011). High SII individuals might be more likely to scrutinize messages provided by dissimilar others as opposed to similar others. Therefore, this might create situations in which high SII individuals effectively differentiate between normative and non-normative information if the identity of the message source leads to greater message elaboration.

Second, additional research is needed to assess different ways to highlight normative cues for high SII consumers. While I have shown that high SII consumers can discriminate between normative and non-normative information when their attention is prompted, some of my manipulations of attention were emphatic. Consumers may find it odd or intrusive for marketers to highlight normative information using our approach. Therefore, marketers wishing to get the most out of normative cues would likely be interested in additional ways to highlight normative information for high SII individuals. Hence, additional work is needed to identify effective methods capable of achieving this goal, potentially including visual cues such as color and font size.

I also note that my studies in Essay 1 only assessed the influence of normative cues in situations where individuals evaluated and made decisions by themselves. The focus theory of normative conduct acknowledges that situational factors can draw attention to norms at work within the environment (Kallgren et al. 2000; Reno et al. 1993). Therefore, interacting with other individuals during the decision process may be enough to make normative information top of mind for high SII individuals. Future research can therefore investigate situational factors, such as deciding with others, that may moderate our demonstrated effect.

As with Essay 1, my second essay offers considerable opportunity for future research into consumers' use of mobile devices in retail settings. First, to help illuminate the process driving the influence of mobile device use on in-store shopping outcomes, future research should analyze consumers' behaviors using eye-tracking technology. Eye-tracking technology will help shed light on where and how long consumers focus on their mobile devices in stores. Furthermore, eye-tracking technology will be especially useful in explaining how mobile device use impacts consumers' attention and recollection of in-store advertisements, displays, and promotions.

Second, future research is needed on the design of retailers' mobile shopping applications and how they relate to consumers' in-store experiences. For example, the design of retailer mobile applications may be able to mitigate some of the negative implications related to in-store device use such as missed in-store stimuli. This might include on-screen promotions based upon the shopper's location within the store or real-time prompts for shoppers to attend to certain in-store stimuli (e.g., via strategically deploying iBeacons throughout the store).

Third, additional research is needed into the in-store implications of both related *and* unrelated mobile device use. Given the prevalence of shoppers in our both mobile use category, it appears that it is relatively common for shoppers to use their mobile devices in both a

shopping-related *and* unrelated manner in certain retail environments. It is imperative that we further understand how these multiple uses impact consumer shopping behaviors and goals. For example, shopping-related use may be able to mitigate or "undo" some of the negative implications related to unrelated use which may leave consumers better off than if they only used their mobile device in an unrelated manner.

Finally, additional research is needed to further assess how the specific types of mobile device use alter consumers' purchasing. While this essay initiates the investigation, additional research is needed to understand the intricacies of each type of shopping-related and shopping-unrelated use. For example, while I predict and find evidence that shopping-related mobile device use attenuates the positive relationship between basket size and number of unplanned items, the specific type of shopping-related device use appears to play a critical role. While uses such as accessing a digital shopping list, utilizing the calculator function on the device, or accessing a retailer's shopping app mitigate unplanned purchases, I also find that shopping-related uses such as accessing websites linked to the shopping trip can bolster unplanned purchases. Therefore, additional research is warranted.

APPENDIX A

HEADPHONE ONLINE PRODUCT STIMULI (ESSAY 1, STUDY 1)

A.1 PRODUCT REVIEW WITH NORMATIVE INFORMATION

IE2 Audio Headphones

In Stock.

Product Features

- A new standard of audio quality for greater musical detail
- Advanced design, durable materials for lasting quality
- StayHear tips for greater stability during exercise and other activities
- Hours of comfortable on-the-go listening

Customer Reviews

(1)
4.0 out of 5 stars

5 star	0
4 star	1
3 star	0
2 star	0
1 star	0

Most Helpful Customer Reviews

IE2 Audio Headphones
By B. Adams – See all my reviews

The IE2 earphones are wonderful. These earphones provide crisp, clear sound at all volume levels. The IE2 headphones really shine because of the special tips that go into your outer ear, keeping them secure even during vigorous movement. I recommend you purchase these earphones.

82 out of 104 people viewing this item purchased this product.

A.2 PRODUCT REVIEW WITH NON-NORMATIVE INFORMATION

IE2 Audio Headphones

In Stock.

Product Features

- A new standard of audio quality for greater musical detail
- Advanced design, durable materials for lasting quality
- StayHear tips for greater stability during exercise and other activities
- Hours of comfortable on-the-go listening

Customer Reviews

★★★★☆ (1)
4.0 out of 5 stars

5 star	0
4 star	1
3 star	0
2 star	0
1 star	0

Most Helpful Customer Reviews

★★★★☆ **IE2 Audio Headphones**
By B. Adams – See all my reviews

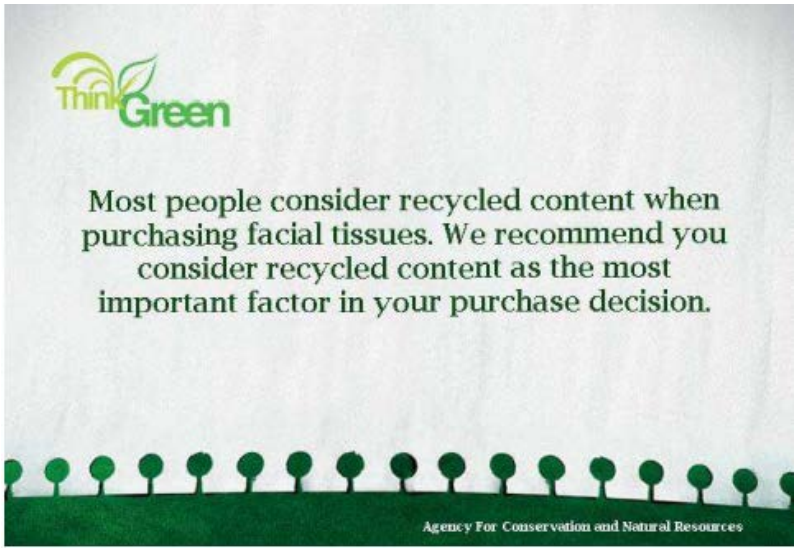
The IE2 earphones are wonderful. These earphones provide crisp, clear sound at all volume levels. The IE2 headphones really shine because of the special tips that go into your outer ear, keeping them secure even during vigorous movement. I recommend you purchase these earphones.

4 out of 104 people viewing this item purchased this product.

APPENDIX B

PUBLIC SERVICE ANNOUNCEMENT AND PRODUCT INFORMATION STIMULI (ESSAY 1, STUDY 3)

B.1 PUBLIC SERVICE ANNOUNCEMENT WITH NORMATIVE INFORMATION

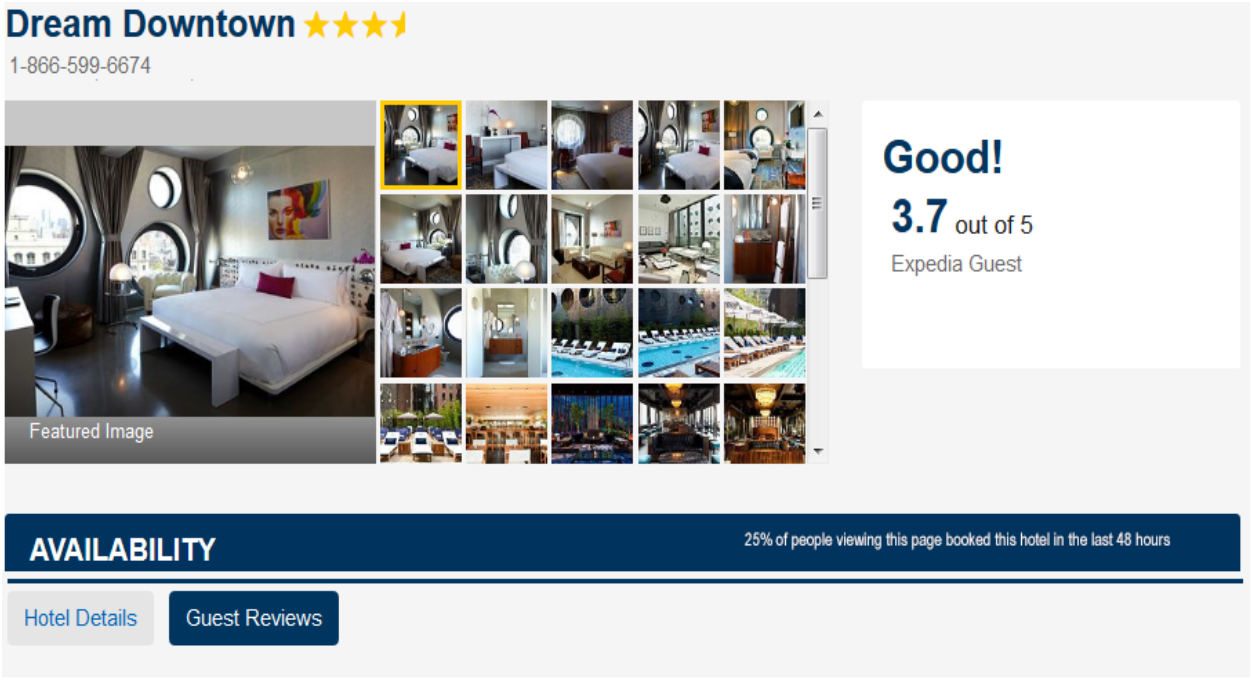


B.2 PUBLIC SERVICE ANNOUNCEMENT WITH NON-NORMATIVE INFORMATION

APPENDIX C

ONLINE HOTEL INFORMATION (ESSAY 1, STUDY 4)

C.1 HOTEL INFORMATION WITH ATTENTIONAL CUE ABSENT



Dream Hotel

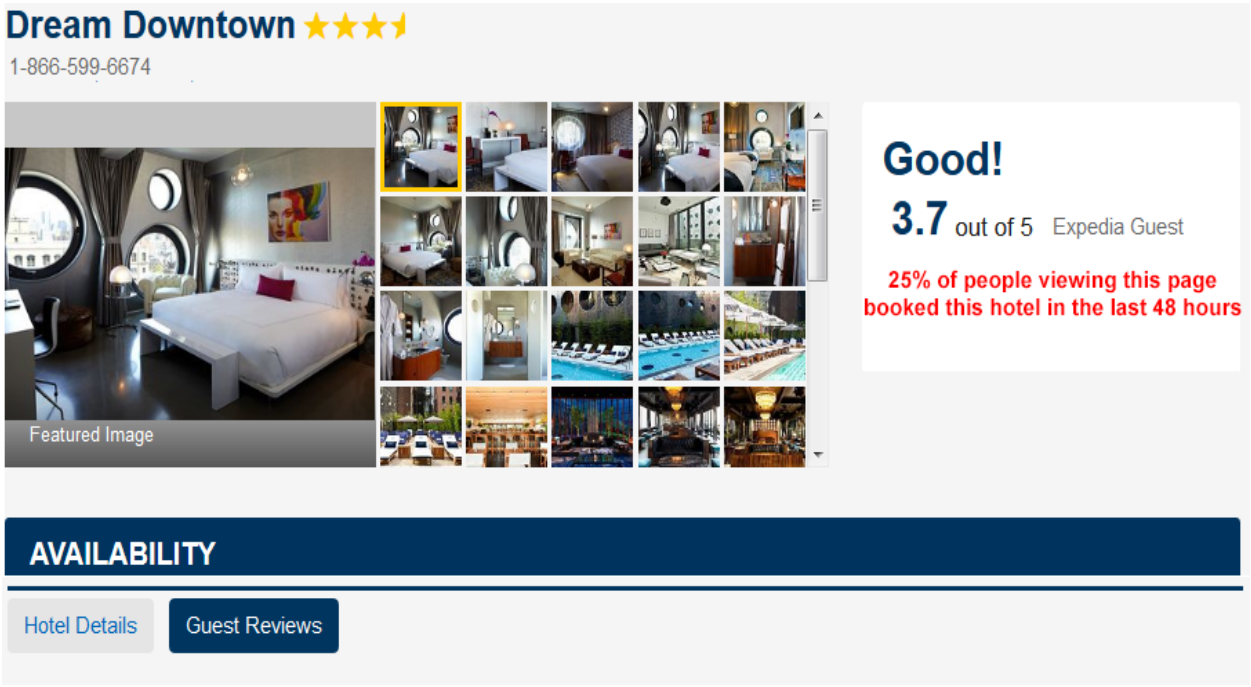
Posted Dec 04, 2013

✔ Recommended for Everyone

by A verified traveler

Just stayed 6 nights in the Dream Hotel. On arrival we were made to feel very welcome by the desk staff. The room was comfotable and clean, although it was a bit small. We used the bar in the evenings which had a good selection and an attentive staff, but the prices were definiely steep. The hotel is ideally located for tourists and is within walking distance to public transportation as well as many of the city attractions. Overall, this was a good experience. I recommend you stay at this hotel.

C.2 HOTEL INFORMATION WITH ATTENTIONAL CUE PRESENT



Dream Hotel

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Posted Dec 04, 2013

Just stayed 6 nights in the Dream Hotel. On arrival we were made to feel very welcome by the desk staff. The room was comfotable and clean, although it was a bit small. We used the bar in the evenings which had a good selection and an attentive staff, but the prices were definiely steep. The hotel is ideally located for tourists and is within walking distance to public transportation as well as many of the city attractions. Overall, this was a good experience. I recommend you stay at this hotel.

APPENDIX D

MEASURES AND SCALES (ESSAY 1, STUDY 5)

	Number of Items	Sample Items and Source
Shopping Philosophy	4	• The best shopping trip is one where you get exactly what you set out for. • You should focus on getting the shopping done rather than looking around at whatever catches your fancy. Point of Purchase Advertising International (POPAI) Shopper Engagement Study (2012)
Store Loyalty	2	• I will go to another store if I can get a better price. • I tend to stick with the same store regardless of the prices they have. POPAI Shopper Engagement Study (2012)
Shopping Impulsiveness	6	• When I see something I want, I have a hard time not buying it. • I buy things I don't really need. POPAI Shopper Engagement Study (2012) and Edwards (1993)
Money Management	5	• I have a system set up for managing my money. • I have trouble keeping my finances organized. POPAI Shopper Engagement Study (2012)

Political Orientation and Nationalism	8	• Please indicate your political views for each category by checking one of the following scale options: 1 = very liberal, 2 = liberal, 3 = slightly liberal, 4 = middle of the road, 5 = slightly conservative, 6 = conservative, and 7 = very conservative. The three issue categories used were "foreign policy issues," "economic issues," and "social issues. • Generally, the more influence America has on other nations, the better off they are. Pratto, Sidanius, Stallworth, and Malle (1994)
Satisfaction with Life	5	• In most ways my life is close to my ideal. • The conditions of my life are excellent. Diener, Emmons, Larsen, and Griffin's (1985)
Responsible Consumerism and Resource Conservation	9	• I choose products that carry an environmental seal of approval. • I avoid products with a lot of unnecessary packaging. • I avoid using a car for environmental reasons. Olli, Grendstad, and Wollebaek (2001)
Big 5 Personality Traits	10	• I see myself as extraverted, enthusiastic. • I see myself as critical, quarrelsome. Gosling, Rentfrow, and Swann (2003)
Time Pressure	4	• I feel a lot of time pressure in my life. • I am always in a hurry.
Lifestyle, Religiosity, and Health	6	• How many days a week do you exercise? • How many days a week do you dine out? • How stressed do you feel during a normal week? • How religious or spiritual are you?
Media Habits	8	• How many hours per week do you watch TV? • How many hours per week do you use the Internet?
Demographics	6	• Gender, age, employment status, ethnic background, educational background, and household size.

APPENDIX E

GENERAL LAYOUT FOR SIMULATED SHOPPING TASK (ESSAY 2, STUDY 1)

Shopping List

☐ Cheerios	☐ Rice	☐ String Cheese	☐ Carrots	☐ Mountain Dew
☐ Ravioli	☐ Toilet Paper	☐ Bread	☐ Apples	☐ Lettuce
☐ Shampoo	☐ Milk	☐ Butter	☐ Fiber Bars	☐ Ranch Dressing

APPENDIX F

ADDITIONAL MEASURES AND CONTROLS (ESSAY 2, STUDIES 2 AND 3)

Variable	Measure
Impulsiveness	Impulsiveness was measured using a six-item 5 point Likert scale adapted from Puri (1996). Respondents were provided with six adjectives and asked to indicate their level of agreement with how well each attribute described them: impulsive, easily tempted, enjoy spending, a planner, self-controlled, and restrained, on a scale where 1 = strongly disagree and 5 = strongly agree. The last three attributes were reversed coded for analysis.
Trip Time	Trip time was calculated as the difference between respondents shopping start times and shopping finish times and was measured in minutes.
Shopping List	This variable captures whether or not the shopper had a hand written shopping list with them while shopping and was contrast coded 1 if the shopper had a written list and -1 if the shopper did not have a written list.
Basket Size	Basket size was measured as the total number of products the shopper purchased during the trip.
Aisles Shopped (ALLAISLES, MOSTAISLES)	Respondents were asked to indicate whether they shopped every aisle in the store, most aisles in the store, or only the aisles they needed. Two contrast-coded variables were used to capture this effect. AllAisles has a value of 1 if the shopper indicated they shopped every aisle and a value of -1 if they had not. MostAisles has a value of 1 if the shopper indicated they shopped most aisles and a value of -1 if they had not.
Others Accompanying the Shopper	This variable captures whether or not another individual accompanied the shopper during the shopping trip and was contrast coded to take on a value of 1 if the shopper was with another individual or -1 if the shopper was alone.
Gender	This is a contrast coded variable and is equal to 1 if the shopper is a male and is equal to -1 if the shopper is a female.
Age	Respondents' age was measured in years using eight distinct categories corresponding to a specific age category: (18-24), (25-34), (35-44), (45-54), (55-64), (65-74), and (75+). Consistent with prior research (Stilley et al. 2010a), we generated a continuous age variable by setting respondents age to the midpoint for each of the age categories.
Income	Similar to age, respondents' income was measured using eight distinct categories representing a specific income range: (Under $25,000), ($25,000 - $34,999), ($35,000 - $44,999), ($45,000 – $54,999), ($55,000 – $64,999), ($65,000 - $74,999), ($75,000 - $99,999), and ($100,000+). Consistent with prior research we created a continuous variable by taking the midpoint for each of the income categories (Stilley et al. 2010a).
Household Size	Respondents were asked to indicate the number of people, including themselves, living in the household.

APPENDIX G

ANCILLARY ANALYSES (ESSAY 2, STUDY 3)

G.1 NUMBER OF UNPLANNED PURCHASES

	Parameter Estimate	Wald χ^2
Intercept	0.969	663.42
Talk	0.117 **	3.94
Email	-0.060	0.59
Web	-0.043	0.10
Text	0.166 ***	9.77
Music	-0.197	2.50
Games	-0.174	1.52
Prices	0.076	0.73
Compare Retailers	-0.095	0.60
Manufacturer Website	-0.042	0.09
Retailer Website	-0.065	0.30
Retailer App	0.095	0.86
Digital List	0.132 *	2.91
QR Code	0.161	0.61
Calculator	-0.033	0.20
Call for Help	-0.001	0.00
Both	-0.094	1.17
Basket Size	0.119 ***	2252.42
Talk × Basket Size	0.007	0.61
Email × Basket Size	0.023 *	3.81
Web × Basket Size	0.044 *	3.27
Text × Basket Size	0.000	0.00
Music × Basket Size	-0.051 ***	8.78
Games × Basket Size	0.027	1.90
Prices × Basket Size	0.038 **	4.07
Compare Retailers × Basket Size	0.002	0.01
Manufacturer Website × Basket Size	0.027	2.22

Retailer Website × Basket Size	0.057 ***	8.71
Retailer App × Basket Size	-0.045 ***	25.21
Digital List × Basket Size	-0.042 ***	33.58
QR Code × Basket Size	0.077	1.60
Calculator × Basket Size	-0.026 **	5.04
Call for Help × Basket Size	0.007	0.58
Both × Basket Size	-0.006	0.22
Dispersion	0.227	

G.2 NUMBER OF OMITTED PLANNED ITEMS

	Parameter Estimate	Wald χ^2
Intercept	-0.002	0.00
Talk	0.183 *	3.09
Email	0.176	1.64
Web	0.211	0.81
Text	0.045	0.20
Music	-0.247	1.11
Games	0.229	1.05
Prices	0.263	2.38
Compare Retailers	0.175	0.58
Manufacturer Website	0.072	0.09
Retailer Website	-0.141	0.40
Retailer App	-0.501 **	4.93
Digital List	0.143	1.04
QR Code	-0.583	1.57
Calculator	0.324 ***	6.70
Call for Help	0.021	0.01
Both	-0.441 ***	7.62
Basket Size	0.013 ***	8.51
Talk × Basket Size	0.028 *	3.39
Email × Basket Size	0.004	0.04
Web × Basket Size	-0.015	0.09
Text × Basket Size	-0.019	1.63
Music × Basket Size	-0.046	1.28
Games × Basket Size	0.019	0.30
Prices × Basket Size	0.037	0.98
Compare Retailers × Basket Size	0.020	0.16
Manufacturer Website × Basket Size	0.010	0.10
Retailer Website × Basket Size	-0.041	0.88
Retailer App × Basket Size	0.024 *	3.36
Digital List × Basket Size	-0.005	0.13
QR Code × Basket Size	-0.124	1.33
Calculator × Basket Size	-0.013	0.43
Call for Help × Basket Size	0.021	1.39
Both × Basket Size	-0.031	1.64
Dispersion	0.592	

BIBLIOGRAPHY

Aarts, Henk and Ap Dijksterhuis (2003), "The Silence of the Library: Environment, Situational Norm and Social Behaviour," *Journal of Personality and Social Psychology*, 84 (1), 18–28.

ACNielsen, John Karolefski, and Al Heller (2006), Consumer-Centric Category Management: How to Increase Profits by Managing Categories Based on Consumer Needs. Hoboken, NJ: Wiley.

Agarwal, Ashish, Kartik Hosanagar, and Michael D. Smith (2011), "Location, Location, Location: An Analysis of Profitability of Position in Online Advertising Markets," *Journal of Marketing Research*, 48 (6), 1057-73.

Ansari, Asim and Carl F. Mela. (2003), "E-customization," *Journal of Marketing Research*, 40 (2), 131-45.

Asch, Solomon E. (1951), "Efffects of Group Pressure Upon the Modificaton and Distortion of Judgments," in *Groups, Leadership, and Men*, Harold Guetzkow, ed. Pittsburgh, PA: Carnegie Press.

Barron, David (1992), "The Analysis of Count Data: Overdispersion and Autocorrelation," *Sociological Methodology*, 22 (1), 179-220.

Bartels, Larry M. (1988), Presidential Primaries and the Dynamics of Public Choice. Princeton, NJ: Princeton University Press.

Batra, Rajeev, Pamela M. Homer, and Lynn R. Kahle (2001), "Values, Susceptibility to Normative Influence, and Attribute Importance Weights: A Nomological Analysis," *Journal of Consumer Psychology*, 11 (2), 115–28.

Baumeister, Roy E, Ellen Bratslavsky, Mark Muraven, and Dianne M. Tice (1998), "Ego Depletion: Is the Active Self a Limited Resource?," *Journal of Personality and Social Psychology*, 74 (5), 1252 - 65.

Bearden, William O., Richard G. Netemeyer, and Jesse E. Teel (1989), "Measurement of Consumer Susceptibility to Interpersonal Influence," *Journal of Consumer Research*, 15 (4), 473-81.

Beatty, Sharon E. and M. Elizabeth Ferrell (1998), "Impulse Buying: Modeling Its Precursors," *Journal of Retailing*, 74 (2), 169-91.

Bergen, Mark (2014), "Why Marketers Just Can't Crack Mobile," (accessed November 14th, 2014), [available at http://adage.com/article/news/marketers-crack-mobile/293249/%5D.

Berger, Jonah and Eric Schwartz (2011), "What Drives Immediate and Ongoing Word-of-Mouth?," *Journal of Marketing Research*, 48, 869-80.

Block, Lauren G. and Vicki G. Morwitz (1999), "Shopping Lists as an External Memory Aid for Grocery Shopping: Influences on List Writing and List Fulfillment," *Journal of Consumer Psychology*, 8 (4), 343-75.

Boksem, Maarten A.S., Theo F. Meijman, and Monicque M. Lorist (2005), "Effects of Mental Fatigue on Attention: An ERP Study," *Cognitive Brain Research*, 25 (1), 107-16.

Boulding, William, Ajay Kalra, Richard Staelin, and Valarie A. Zeithaml (1993), "A Dynamic Process mMdel of Service Quality: From Expectations to Behavioral Intentions," *Journal of Marketing Research*, 30 (1), 7-27.

Briem, Valdimar and Leif R. Hedman (1995), "Behavioural Effects of Mobile Telephone Use During Simulated Driving," *Ergonomics* 38 (12), 2536–62.

Brinker, Mike, Kasey Lobaugh, Alison Paul, Jaspreet Singh, and Danny Martucci (2012), "Discovering the Value of Mobile in Retail: The Dawn of Mobile Influence," (accessed July 6, 2012), [available at http://www.deloitte.com/assets/Dcom-UnitedStates/Local Assets/Documents/RetailDistribution/us_retail_Mobile-Influence-Factor_062712.pdf%5D.

Broadbent, D.E. (1958), Perception and Communication. London, UK: Perfamon Press.

Brookhuis, Karel A., Gerbrand de Vries, and Dick de Waard (1991), "The Effects of Mobile Telephoning on Driving Performance," *Accident Analysis and Prevention*, 23 (4), 309–16.

Chen, Yubo and Jinhong Xie (2008), "Online Consumer Review: Word-of-Mouth as a New Element of Marketing Communication Mix," *Management Science*, 54 (3), 477–91.

Cialdini, Robert B. (2009), Influence: Science and Practice (5th ed.). Boston, MA: Pearson.

Cialdini, Robert B., Carl A. Kallgren, and Raymond R. Reno (1991), "A Focus Theory of Normative Conduct: A Theoretical Refinement and Reevaluation of the Role of Norms in Human Behavior," in *Advances in Experimental Social Psychology*, Mark P. Zanna, ed. Vol. 24.

---- (1990), "A Focus Theory of Normative Conduct: Recycling the Concept of Norms to Reduce Littering in Public Places," *Journal of Personality and Social Psychology*, 58 (6), 1015-26.

Craik, Fergus I. M., Richard Govoni, Moshe Naveh-Benjamin, and Nicole D. Anderson (1996), "The Effects of Divided Attention on Encoding and Retrieval Processes in Human Memory," *Journal of Experimental Psychology: General*, 125 (2), 159-80.

Daschmann, Gregor (2000), "Vox Pop & Polls: The Impact of Poll Results and Voter Statements in the Media on the Perception of a Climate of Oinion," *International Journal of Public Opinion Research*, 12 (2), 160-81.

Davenport, Thomas H. and John C. Beck. (2002), "The Strategy and Structure of Firms in the Attention Economy," *Ivey Business Journal*, 66 (4), 48-54.

Deutsch, Morton and Harold B. Gerard (1955), "A Study of Normative and Informational Social Influences Upon Individual Judgment," *Journal of Abnormal and Social Psychology*, 51 (3), 629-36.

Dizney, Henry F. and Ronald W. Roskens (1962), "An Investigation of the "Bandwagon Effect" in a College Straw Election," *Journal of Educational Sociology*, 36 (3), 108-14.

Dowdeswell, Vicky (2013), "How 'Social Proof' Awareness Can Increase Conversion," (accessed August 1, 2013), [available at http://www.siftmedia.co.uk/blog/how-social-proof-awareness-can-increase-conversion%5D.

Drews, Frank A., M. Pasupathi, and David L. Strayer (2008), "Passenger and Cell Phone Conversations in Simulated Driving," *Journal of Experimental Psychology: Applied*, 14 (4), 392-400.

Dula, Chris S., Benjamin A. Martin, Russell T. Fox, and Robin L. Leonard (2011), "Differing Types of Cellular Phone Conversations and Dangerous Driving," *Accident Analysis and Prevention*, 43 (1), 187-93.

Dunn, Lea and Darren W. Dahl (2012), "Self-Threat and Product Failure: How Internal Attributions of Blame Affect Consumer Complaining Behavior," *Journal of Marketing Research*, 49 (5), 670-81.

Elder, Ryan S. and Aradhna Krishna (2010), "The Effects of Advertising Copy on Sensory Thoughts and Perceived Taste," *Journal of Consumer Research*, 36 (5), 748-56.

eMarketer (2014), "Smartphone Users Worldwide Will Total 1.75 Billion in 2014 " (accessed November 14th, 2014), [available at http://www.emarketer.com/Article/Smartphone-Users-Worldwide-Will-Total-175-Billion-2014/1010536%5D.

Fagot, Clark and Harold Pashler (1992), "Making Two Responses to a Single Object: Implications for the Central Attentional Bottleneck," *Journal of Experimental Psychology: Human Perception and Performance*, 18 (4), 1058-79.

Flanagan, John C. (1954), "The Critical Incident Technique," *Psychological Bulletin*, 51 (4), 327 - 57.

Gabrielsen, Paul (2013), "A Mixed Bag: Are California's Bans on Plastic Bags Working?," (accessed August 5th, 2013), [available at http://www.santacruzsentinel.com/ci_23474167/mixed-bag-are-californias-bans-plastic-bags-working%5D.

Gardiner, John M. and Alan J. Parkin (1990), "Attention and Recollective Experience in Recognition Memory," *Memory & Cognition*, 18 (6), 579 - 83.

Gerard, Harold B., Roland A. Wilhelmy, and Edward S. Conolley (1968), "Conformity and Group Size," *Journal of Personality and Social Psychology*, 8 (1), 79.

Gerber, Alan S. and Todd Rogers. (2009), "Descriptive Social Norms and Motivation to Vote: Everybody's Voting and so Should You," *The Journal of Politics* 71 (1), 178-91.

Gilbert, Daniel T. (1995), "Attribution and Interpersonal Perception," in *Advanced Social Psychology*, A. Tesser, ed. New York, NY: McGraw-Hill.

Godes, David and Dina Mayzlin (2004), "Using Online Conversations to Study Word-of-Mouth Communication," *Marketing Science*, 23 (4), 545-60

Goessl, L. (2012), "Phone-stack game goes viral, promotes cell-free zone at table," (accessed January 25, 2012), [available at http://www.digitaljournal.com/article/317756%5D.

Goethals, George R and John M. Darley (1977), "Social Comparison Theory: An Attributional Approach," in *Social Comparison Processes: Theoretical and Empirical Perspectives*, Jerry M Suls and Richard L Miller, eds. Washington, DC: Hemisphere/Halsted.

Goldstein, Noah J., Robert B. Cialdini, and Vladas Griskevicius (2008), "A Room with a Viewpoint: Using Social Norms to Motivate Environmental Conservation in Hotels," *Journal of Consumer Research*, 35 (3), 472-82.

Gopher, Daniel, Lilach Armony, and Yaakov Greenshpan (2000), "Switching Tasks and Attention Policies," *Journal of Experimental Psychology: General*, 129 (3), 308-39.

Granovetter, Mark and Roland Soong (1986), "Threshold Models of Interpersonal Effects in Consumer Demand," *Journal of Economic Behavior and Organization*, 7 (1), 83-99.

Gremler, Dwayne D. (2004), "The Critical Incident Technique in Service Research," *Journal of Service Research*, 7 (1), 65 - 89.

Haines, Michael and Sherilynn F. Spear (1996), "Changing the Perception of the Norm: A Strategy to Decrease Binge Drinking Among College Students," *Journal of American College Health*, 45 (3), 134-40.

Hayes, Andrew F. and Jörg Matthes (2009), "Computational Procedures for Probing Interactions in OLS and Logistic Regression: SPSS and SAS implementations," *Behavior Research Methods*, 41 (3), 924-36.

Henshel, Richard L. and William Johnston (1987), "The Emergence of Bandwagon Effects: A Theory," *The Sociological Quarterly*, 28 (4), 493-511.

Herman, C. Peter and Janet Polivy (2003), "Dieting as an Exercise in Behavioral Economics," in *Time and Decision: Economic and Psychological Perspectives on Intertemporal Choice*, George Loewenstein and Daniel Read and Roy F. Baumeister, eds. New York, NY: Russell Sage Foundation.

Hildebrand, Diogo, Yoshiko DeMotta, Sankar Sen, and Kritika Kongsompong (2013), "In-Group and Out-Group Influences on the Consumption Behavior of Minority Groups: The Case of Gay Men," *Journal of Public Policy & Marketing*, 32 (Special Issue), 70-78.

Hogg, Michael A. and Deborah I. Terry (2001), "Attitudes, Behavior, and Social Context: The Role of Norms and Group Membership in Social Influence Processes," in *Social Influence: Direct and Indirect Processes*, Joseph P. Forgas and Kipling D. Williams, eds. Philadelphia, PA: Psychology Press.

Hui, Sam K., J. Jeffrey Inman, Yanliu Huang, and Jacob Suher (2013), "The Effect of In-Store Travel Distance on Unplanned Spending: Applications to Mobile Promotion Strategies," *Journal of Marketing*, 77 (2), 1-16.

Hyman, Ira E., S. Matthew Boss, Breanne M. Wise, Kira E. McKenzie, and Jenna M. Caggiano (2010), "Did you See the Unicycling Clown? Inattentional Blindness While Walking and Talking on a Cell Phone," *Applied Cognitive Psychology*, 34 (5), 598-607.

Inman, J. Jeffrey and Russell S. Winer (1998), "Where the Rubber Meets the Road: A Model of In-Store Consumer Decision Making," *Marketing Science Institute Report No. 98-122*.

Inman, J. Jeffrey, Russell S. Winer, and Rosellina Ferraro (2009), "The Interplay between Category Characteristics, Customer Characteristics, and Customer Activities on In-Store Decision Making," *Journal of Marketing*, 73 (5), 19-29.

Irwin, Julie R. and Rebecca Walker Naylor (2009), "Ethical Decisions and Response Mode Compatibility: Weighting of Ethical Attributes in Consideration Sets Formed by

Excluding Versus Including Product Alternatives," *Journal of Marketing Research*, 46 (2), 234–46.

Kahneman, Daniel (1973), Attention and Effort. Englewood Cliffs, NJ: Prentice Hall.

Kallgren, Carl A., Raymond R. Reno, and Robert B. Cialdini (2000), "A Focus Theory of Normative Conduct: When Norms Do and Do not Affect Behavior," *Personality and Social Psychology Bulletin*, 26 (8), 1002-12.

Keaveney, Susan M. (1995), "Customer Switching Behavior in Service Industries: An Exploratory Study," *Journal of Marketing*, 59 (2), 71 - 82.

Kerr, Norbert L. (1995), "Norms in Social Dilemmas," in *Social Dilemmas: Perspectives on Individuals and Groups*, David A Schroeder, ed. Westport, CT: Praeger.

Kinsbourne, Marcel (1981), "Single Channel Theory," in *Human Skills*, D. Holding, ed. Chichester, UK: Wiley.

Kollat, David T. and Ronald P. Willett (1967), "Customer Impulse Purchasing Behavior," *Journal of Marketing Research*, 4 (1), 21-31.

Konrad, Alex (2013), "The Surprising Retail Winner In Mobile Apps," (accessed February 15th, 2014), [available at http://www.forbes.com/sites/alexkonrad/2013/02/28/retailers-mobile-apps-drugstores/%5D.

Latané, Bibb (1981), "The Psychology of Social Impact," *American Psychologist*, 36 (4), 343-56.

Latané, Bibb and Sharon Wolf (1981), "The Social Impact of Minorities and Majorities," *Psychological Review*, 88 (5), 438-53.

Lavie, Nilli (2005), "Distracted and Confused?: Selective Attention Under Load," *Trends in Cognitive Sciences*,, 9 (2), 75-82.

Lavie, Nilli, Aleksandra Hirst, Jan W. de Fockert, and Essi Viding (2004), "Load Theory of Selective Attention and Cognitive Control," *Journal of Experimental Psychology: Applied*, 133 (3), 339–54.

Lewis, Melissa A. and Clayton Neighbors (2006), "Social Norms Approaches Using Descriptive Drinking Norms Education: A Review of the Research on Personalized Normative Feedback," *Journal of American College Health*, 54 (4), 213-18.

Lun, Janetta, Stacey Sinclair, Erin R. Whitchurch, and Catherine Glenn. (2007), "(Why) Do I Think What You Think? Epistemic Social Tuning and Implicit Prejudice," *Journal of Personality and Social Psychology*, 93 (6), 957-72.

Maass, Anne and Russell D. Clark (1984), "Hidden Impact of Minorities: Fifteen Years of Minority Influence Research," *Psychological Bulletin*, 95 (3), 428-50.

Manchanda, Puneet, Jean-Pierre Dubé, Khim Yong Goh, and Pradeep K. Chintagunta (2006), "The Effect of Banner Advertising on Internet Purchasing " *Journal of Marketing Research*, 43 (1), 98-108.

Martin, Brett A. S., Daniel Wentzel, and Torsten Tomczak (2008), "Effects of Susceptibility to Normative Influence and Type of Testimonial on Attitudes Toward Print Advertising," *Journal of Advertising*, 37 (1), 29–43.

Mattila, Anna S. and Jochen Wirtz (2004), "Consumer Complaining to Firms: The Determinants of Channel Choice," *Journal of Services Marketing*, 18 (2), 147 - 55.

Maxham III, James G. and Richard G. Netemeyer (2002), "A Longitudinal Study of Complaining Customers' Evaluations of Multiple Service Failures and Eecovery Efforts," *Journal of Marketing*, 66 (4), 57-71.

McGuire, William J. (1968), "Personality and Susceptibility to Social Influence," in *Handbook of Personality Theory and Research*, Edgar F. Borgatta and William W. Lambert, eds. Chicago: Rand McNally.

McKnight, A. James and A. Scott McKnight (1993), "The Effect of Cellular Phone Use Upon Driver Attention," *Accident Analysis & Prevention*, 25 (3), 2S9-265.

Moore, Sarah G. (2012), "Some Things Are Better Left Unsaid: How Word of Mouth Influences the Storyteller," *Journal of Consumer Research*, 38 (6), 1140-51.

Moscovici, Serge (1985), "Social Influence and Conformity," in The Handbook of Social Psychology G. Lindsey and E. Aronson (Eds.). 3 ed. Vol. 2. New York, NY: Random House Publishing.

---- (1980), "Toward A Theory of Conversion Behavior," in *Advances in Experimental Social Psychology*, L. Berkowitz, ed. Vol. 13. New York, NY: Academic Press.

Mourali, Mehdi, Michel Laroche, and Frank Pons (2005), "Antecedents of Consumer Relative Preference for Interpersonal Information Sources in Pre-purchase Search," *Journal of Consumer Behavior*, 4 (5), 307-18.

Murray, Kyle B. and Gerald Häubl (2008), "Interactive Consumer Decision Aids," in *Handbook of Marketing Decision Models*, B. Wierenga, ed. New York, NY: Springer Science & Business Media, LLC.

Myers, David G., Sandra B. Wojcicki, and Bobette S. Aardema (1977), "Attitude Comparison: Is There Ever a Bandwagon Effect?," *Journal of Applied Social Psychology*, 7 (4), 341-34.

Nadeau, Richard, Edouard Cloutier, and J.H. Guay (1993), "New Evidence about the Existence of a Bandwagon Effect in the Opinion Formation Process," *International Political Science Review*, 14 (2), 203-13.

Naumann, Rebecca B. and Ann M. Dellinger (2013), "Mobile Device Use While Driving — United States and Seven European Countries, 2011," *Centers for Disease Control and Prevention: Morbidity and Mortality Weekly Report*, 62 (10), 177-82.

Navon, David and Daniel Gopher (1980), "Task Difficulty, Resources, and Dual-Task Performance," in *Attention and Performance*, R. S. Nickerson, ed. Vol. 8. Hillsdale, NJ.

Navon, David and Jeff Miller (1987), "Role of Outcome Conflict in Dual-Task Interference," *Journal of Experimental Psychology: Human Perception and Performance*, 13 (3), 435 - 48.

Naylor, Rebecca Walker, Cait Poynor Lamberton, and David A. Norton (2011), "Seeing Ourselves in Others: Reviewer Ambiguity, Egocentric Anchoring, and Persuasion," *Journal of Marketing Research*, 48 (3), 617-31.

Naylor, Rebecca Walker, Cait Poynor Lamberton, and Patricia M. West (2012), "Beyond the 'Like' Button: The Impact of Mere Virtual Presence on Brand Evaluations and Purchase Intentions in Social Media Settings," *Journal of Marketing*, 76 (6), 105-20.

Netemeyer, Richard G., William O. Bearden, and Jesse E. Teel (1992), "Consumer Susceptibility to Interpersonal Influence and Attributional Sensitivity," *Psychology & Marketing*, 9 (5), 379-94.

Nielsen Company (2014), "Mobile Millennials: Over 85% of Generation Y Owns Smartphones," (accessed November 14th, 2014), [available at http://www.nielsen.com/us/en/insights/news/2014/mobile-millennials-over-85-percent-of-generation-y-owns-smartphones.html%5D.

Nolan, Jessica M., P. Wesley Schultz, Robert B. Cialdini, Noah J. Goldstein, and Vladas Griskevicius (2008), "Normative Social Influence is Underdetected," *Personality and Social Psychology Bulletin*, 34 (7), 913-23.

Norman, Donald A. and Daniel G. Bobrow (1975), "On Data-limited and Resource-limited Processes," *Cognitive Psychology*, 7 (1), 44-64.

Nowak, Andrzej, Jacek Szamrej, and Bibb Latané (1990), "From Private Attitude to Public Opinion: A Dynamic Theory of Social Impact " *Psychological Review*, 97 (3), 362-76.

Oppenheimer, Daniel M., Tom Meyvis, and Nicolas Davidenko (2008), "Instructional Manipulation Checks: Detecting Satisficing to Increase Statistical Power," *Journal of Experimental Social Psychology*, 45 (4), 867–72.

Park, C. Whan, Easwar S. Iyer, and Daniel C. Smith (1989a), "The Effects of Situational Factors on In-Store Grocery Shopping Behavior: The Role of Store Environment and Time Available for Shopping," *Journal of Consumer Research*, 15 (4), 422-33.

Park, Denise C., Anderson D. Smith, William N. Dudley, and Vincent N. Lafronza (1989b), "Effects of Age and a Divided Attention Task Presented During Encoding and Retrieval on Memory," *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 15 (6), 1185-91.

Pashler, Harold and James C. Johnston (1998), "Attentional Limitations in Dual-Task Performance," in *Attention*, Harold Pashler, ed. East Sussex, UK: Psychological Press Ltd. .

Perkins, Ben (2014), "The Digital Acceleration – Changing Consumer Behaviour," [available at http://blogs.deloitte.co.uk/customer/2014/04/the-digital-acceleration-changing-consumer-behaviour-.html%5D.

Pratto, Felicia, Jim Sidanius, Lisa M. Stallworth, and Bertram F. Malle (1994), "Social Dominance Orientation: A Personality Variable Predicting Social and Political Attitudes," *Journal of Personality and Social Psychology*, 67 (4), 741-63.

Ramsey, Fred L. and Daniel W. Schafer (1997), The Statistical Sleuth: A Course in Methods of Data Analysis. New York, NY: Duxbury Press.

Reno, Raymond R., Robert B. Cialdini, and Carl A. Kallgren (1993), "The Transsituational Influence of Social Norms," *Journal of Personality and Social Psychology*, 64 (1), 104–12.

Rogers, Everett M. (1995), Diffusion of Innovations (4th ed.). New York, NY: The Free Press.

Rose, Randall L., William O. Bearden, and Kenneth C. Manning (1996), "Using Individual Differences to Segment the" Market" for an Attribution-Based Substance Abuse Intervention Program," *Journal of Public Policy & Marketing*, 15 (2), 252-62.

Rosenberg, L.A. (1961), "Group Size, Prior Experience, and Conformity," *Journal of Abnormal and Social Psychology*, 63, 436–37.

Rosenthal, Elisabeth (2013), "Is It Time to Bag the Plastic?," (accessed August 8th, 2013), [available at http://www.nytimes.com/2013/05/19/sunday-review/should-america-bag-the-plastic-bag.html?ref=plasticbags%5D.

Rubinstein, Joshua S., David E. Meyer, and Jeffrey E. Evans (2001), "Executive Control of Cognitive Processes in Task Switching," *Journal of Experimental Psychology: Human Perception and Performance*, 27 (4), 763-97.

Sacharin, Ken (2004), Attention! How to Interrupt, Yell, Whisper, and Touch Consumers. New York, NY: John Wiley & Sons.

Schultz, P. Wesley, Jessica M. Nolan, Robert B. Cialdini, Noah J. Goldstein, and Vladas Griskevicius (2007), "The Constructive, Destructive, and Reconstructive Power of Social Norms," *Psychological Science*, 18 (5), 429-34.

Shankar, Venkatesh, J. Jeffrey Inman, Murali Mantrala, Eileen Kelley, and Ross Rizley (2011), "Innovations in Shopper Marketing: Current Insights and Future Research Issues," *Journal of Retailing*, 87 (1), S29-S42.

Shiv, Baba and Alexander Fedorikhin (1999), "Heart and Mind in Conflict: Interplay of Affect and Cognition in Consumer Decision Making," *Journal of Consumer Research*, 26 (3), 278-92.

Short, Kevin (2013), "States Combat Cell Phone Use On The Road But Deaths Persist," (accessed February 11, 2014), [available at http://www.huffingtonpost.com/2013/07/18/cell-phones-driving-deaths_n_3618767.html%5D.

Spencer, Steven J., Mark P. Zanna, and Geoffrey T. Fong (2005), "Establishing a Causal Chain: Why Experiments are Often More Effective than Mediational Analyses in Examining Psychological Processes " *Journal of Personality and Social Psychology*, 89 (6), 845–51.

Spiller, Stephen A., Gavan J. Fitzsimons, John G. Lynch Jr, and Gary H. McClelland. (2013), "Spotlights, Floodlights, and the Magic Number Zero: Simple Effects Tests in Moderated Regression.," *Journal of Marketing Research*, 50 (2), 277-88.

Stephen, Andrew T. and Jeff Galak (2012), "The Effects of Traditional and Social Earned Media on Sales: A Study of a Microlending Marketplace," *Journal of Marketing Research*, 49 (5), 624–39.

Stiff, James Brian and Paul A. Mongeau (2003), Persuasive Communication (2 ed.). New York, NY: Guilford Press.

Stilley, Karen M., J. Jeffrey Inman, and Kirk L. Wakefield (2010), "Planning to Make Unplanned Purchases? The Role of In-Store Slack in Budget Deviation," *Journal of Consumer Research*, 37 (2), 264-78.

---- (2010b), "Planning to Make Unplanned Purchases? The Role of In-Store Slack in Budget Deviation," *Journal of Consumer Research*, 37 (2), 264-78.

---- (2010a), "Spending on the Fly: Mental Budgets, Promotions, and Spending Behavior," *Journal of Marketing*, 74 (3), 34-47.

Story, Louise (2007), "New Bar Codes Can Talk With Your Cell Phone," (accessed July 6th, 2012), [available at http://www.nytimes.com/2007/04/01/business/01code.html%5D.

Strayer, David L., Frank A. Drews, and Dennis J. Crouch (2006), "A Comparison of the Cell-phone Driver and the Drunk Driver," *Human Factors*, 48 (2), 381 - 91.

Strayer, David L., Frank A. Drews, and William A. Johnston (2003), "Cell Phone Induced Failures of Visual Attention During Simulated Driving," *Journal of Experimental Psychology: Applied*, 9 (1), 23 - 32.

Strayer, David L. and William A. Johnston (2001), "Driven to Distraction: Dual-task Studies of Simulated Driving and Conversing on a Cellular Phone," *Psychological Science*, 12 (6), 462– 66.

Tanford, Sarah and Steven Penrod (1983), "Computer Modeling of Influence in the Jury: The Role of the Consistent Juror," *Social Psychology Quarterly*, 46 (3), 200-12.

---- (1984), "Social Influence Model: A Formal Integration of Research on Majority and Minority Influence Processes," *Psychological Bulletin*, 95 (2), 189-225.

Thibaut, John W. and Harold H. Kelley (1959), The Social Psychology of Groups. New York, NY: Wiley.

Thomas, Art and Ron Garland (1993), "Supermarket Shopping Lists: Their Effect on Consumer Expenditure," *International Journal of Retail & Distribution Management*, 21 (2), 8-14.

Thompson, Debora V. and Prashant Malaviya (2013), "Consumer-Generated Ads: Does Awareness of Advertising Co-Creation Help or Hurt Persuasion?," *Journal of Marketing*, 77 (3), 33-47.

Trusov, Michael, Randolph E. Bucklin, and Koen Pauwels (2009), "Effects of Word-of-Mouth versus Traditional Marketing: Findings from an Internet Social Networking Site," *Journal of Marketing* 73 (5), 90-102.

Vohs, Kathleen D. and Ronald J. Faber. (2007), "Spent Resources: Self-Regulatory Resource Availability Affects Impulse Buying," *Journal of Consumer Research*, 33 (4), 537-47.

Ward, Carson (2012), "Using Honest Social Proof to Go Viral," (accessed August 2, 2013), [available at http://www.distilled.net/blog/marketing/use-honest-social-proof-viral/%5D.

Welford, Alan Traviss (1952), "The Psychological Refractory Period and the Timing of High-Speed Performance - A Review and a Theory," *British Journal of Psychology*, 43 (1), 2 - 19.

Wood, Stacy (2012), "Prone to Progress: Using Personality to Identify Supporters of Innovative Social Entrepreneurship," *Journal of Public Policy & Marketing*, 31 (1), 129-41.

Wood, Wendy, Sharon Lundgren, Judith A. Ouellette, Shelly Busceme, and Tamela Blackstone. (1994), "Minority Influence: A Meta-Analytic Review of Social Influence Processes," *Psychological Bulletin*, 115 (3), 323-45.

Wooten, David B. and Americus Reed II (2004), "Playing It Safe: Susceptibility to Normative Influence and Protective Self-Presentation," *Journal of Consumer Research*, 31 (3), 551-56.

Xu, Alison Jing and Robert S. Wyer Jr. (2010), "Puffery in Advertisements: The Effects of Media Context, Communication Norms, and Consumer Knowledge," *Journal of Consumer Research*, 37 (2), 329-43.

Zeithaml, Valarie A. (1988), "Consumer Perceptions of Price, Quality, and Value: A Means-end Model and Synthesis of Evidence," *Journal of Marketing*, 52 (3), 2-22.

Zhu, Feng and Xiaoquan Zhang (2010), "Impact of Online Consumer Reviews on Sales: The Moderating Role of Product and Consumer Characteristics," *Journal of Marketing*, 74 (2), 133-48.

Zych, Jeff (2013), "Everyone's Reading This: Increase Conversions With Social Proof " (accessed August 1, 2013), [available at http://blog.optimizely.com/2013/05/02/how-social-proof-increases-conversions/%5D.