Exploring the relationship between cognitive effort exertion and regret in online vs. offline shopping

J. April Park, W. Trey Hill & Jennifer M. Bonds-Raacke
Computers in Human Behavior, 49, 444-450
2015

This is an author’s copy of the manuscript published in Computers in Human Behavior. The full-text publisher’s version can be found using the following citation:

Exploring the relationship between cognitive effort exertion and regret in online vs. offline shopping

J. April Park
W. Trey Hill
Jennifer M. Bonds-Raacke
Fort Hays State University

Abstract. Decision making is a fundamental building block of people’s lives. Each decision requires expenditure of cognitive effort, though to a varying degree, which is considered a valuable yet limited resource in the decision making literature. Though the importance of a cognitive effort minimization goal is well-established in the marketing literature, this paper examined how cognitive effort exertion can be useful to minimize negative emotions such as regret in the consumer decision making context. Study 1 explored the impact of cognitive effort on the experience of regret by conducting a 2 (Cognitive effort: High vs. Low) × 2 (Store type: Offline vs. Online) experiment and found higher cognitive effort exertion led to less regret after missing out on a lower price. This effect was most prominent in an offline purchase situation. Study 2 further examined the elements of online shopping that led to a higher regret by conducting a 2 (Cognitive effort: High vs. Low) × 2 (Type of Information: Touch vs. Visual) experiment. Study 2 confirmed the benefits of touch information in reducing experienced regret; but cognitive effort moderated this effect. Overall, the current studies contribute to the progression of knowledge between cognitive effort and experienced regret when shopping online and offline.

With the fast growth of the World Wide Web, and increased ownership of personal computers (Brown, 2008), online shopping has quickly become a part of the human lifestyle. This change in shopping behavior has continued to grow, as evidenced by $172 billion in total online shopping sales in 2005; current projections for 2017 suggest this number may rise to $440 billion (Jones, 2013).

This trend in online shopping may serve as a catalyst for new research in consumer behavior (e.g., Flavián-Blanco, Gurrea-Saras, & Orús-Sanclemente, 2011; Wang, & Benbasat, 2009). Although there are clear similarities between traditional offline shopping and online shopping, there may be stark differences as well (e.g., Browne, Durrett, & Wetherbe, 2004). For example, by definition online consumers are removed from the physical location of the store. This results in inherent constraints on the shopping experience such as holding a product and closely examining its features. However, what is lacked in the online shopping experience in terms of tactile information is made up for in clearly displayed product specifications; products online are clearly marked with sometimes overwhelming amounts of information which influences consumers’ overall shopping experience (e.g., Kim & Lennon, 2000).

1 This article may not exactly replicate the final version published in Computers in Human Behavior. It is not the copy of record. This is only the author’s version of that paper. The official citation for this paper is: Park, J. A., Hill, W. T., & Bonds-Raacke, J. M. (2015). Exploring the relationship between cognitive effort exertion and regret in online vs. offline shopping. Computers in Human Behavior, 49, 444-450. doi: 10.1016/j.chb.2015.03.034. This publisher’s full-text version is available at: http://www.sciencedirect.com/science/article/pii/S0747563215002241
The current study aims to address the dynamic between people’s cognitive effort exertion and experience of regret in either a web-based (online) or a traditional shopping environment (offline). As people interact with computers and technology, information search has never been more convenient and the employment of new technology may have changed the nature of information search during shopping. The focal point of the current study is on the psychological impacts of online shopping in relation to cognitive effort expenditure. As people interact with technology, psychological impacts from varying degrees of cognitive effort deserve further investigation. This is particularly true since studies on consumers’ information search and emotions remain scarce (Flavián-Blanco et al., 2011). Specifically, we were interested in investigating tangential psychological differences, such as regret, occurring post-purchase. Before discussing the literature on regret and cognitive effort, it is helpful to illustrate the purpose of current study with a plausible shopping scenario. Imagine that Emily, a college student looking for her first laptop, and Rachel, a seasoned computer programmer, are both planning to purchase a new personal computer. Although both may have a similar decision process for purchasing a new laptop, the information search strategy, and therefore the information used in the decision, may be quite different; Rachel might look for different product attributes than Emily. Although both may be satisfied with their purchases immediately following the shopping experience, it is possible later emotions may differ based on how much information was gathered during the search process. This paper empirically tests the impacts of information search, and information type, on post-purchase regret.

Internal Information Search Cost (Cognitive Effort Exertion)

The first step in consumer behavior is information search (Bettman, 1979). In general, information search benefits consumers by reducing uncertainty about a product. However, this benefit does not come without a price tag; adequate information search requires significant time and cognitive effort. Cognitive effort is the aggregate use of mental resources and, in the decision making literature, it is often described in a similar context to terms such as mental effort, mental cost, decision cost, and decision effort (Einhorn, 1980; Johnson, 2008; Johnson & Payne, 1985; Navo & Gopher, 1979; Tversky & Kahneman, 1973).

Numerous studies refer to cognitive effort as a valuable yet limited internal resource that needs to be conserved (e.g., Fiske & Taylor, 1984). When consumers waste this finite mental resource, the overall perceived decision quality (a combination of the products features, and how the consumer feels about the product) could suffer. The more dominant view in the consumer decision making literature is that consumers actively aim to minimize cognitive effort for a decision by avoiding the use of high cognitive effort-laden decision strategies (e.g., Bettman, Luce, & Payne, 1998; Johnson, Bellman, & Lohse, 2003). For example, if consumers are faced with too many items in one choice set, their satisfaction level will decrease due to a high decision cost (Iyengar & Lepper, 2000; Sagi & Friedland, 2007; Swait & Adamowicz, 2001). Dijksterhuis and van Olden (2006) observed a dwindled satisfaction rate after a prolonged and consciously deliberated decision process. Similarly, deliberating alternatives and inspecting the reasons for the choice decreased the perceived quality of the final option (Wilson & Schooler, 1991). In a more recent study, extended search time while shopping online caused consumers to hesitate making the final transaction and increased perceived risks associated with a product (Cho, Kang, & Cheon, 2006).

Evidence suggests there is a clear price for expending cognitive effort during information search. Although this may reduce uncertainty about a product online (e.g., Kim &
Lennon, 2008), too much information search—and therefore too little remaining cognitive effort—may result in less than desirable feelings about the final product choice. So, one might argue a judicious consumer should do her best to reduce the cognitive effort exertion. Furthermore, with the advancement and employment of web-based decision aids and web-based tools, consumers’ cognitive effort reduction has become convenient (Wang & Benbasat, 2009; Zettelmeyer, Morton, & Silva-Risso, 2006). Despite its usefulness in reducing decision costs, an overemphasis of a cognitive effort minimization goal will often sacrifice decision accuracy. This reduction in decision accuracy may then lead to an increase in negative valuations of a decision, such as an increase in regret. There is a clear trade-off between the value of reduced uncertainty gained from information search, and the value of retaining enough cognitive effort to have positive feelings about the product post purchase.

More recent studies have even shifted the focus from a decision maker’s trade-offs between cognitive effort and accuracy to improvement in the decision quality while preserving more cognitive effort (Häußl & Trifts, 2000). Kool and Botvinick (2013) argued in favor of motivation-based cognitive exertion theory rather than a finite mental resource based theory (e.g., limited cognitive effort). The idea behind motivation based theory is that cognitive exertion is context sensitive and people will be motivated to expend cognitive effort until they find a balance with cognitive disengagement, rather than being hesitant to expend cognitive effort for the fear of its depletion. This is a relatively new theoretical approach which provides a novel way to interpret consumers’ behaviors online. For example, a student looking for a laptop online may be motivated to spend cognitive effort in searching several websites and stores to find the best deal. In this instance they are conserving something, but that something is their total amount of money. In this case, consumers may exert cognitive effort, thereby sacrificing the effort minimization goal, but they may achieve other equally important goals in return. In particular, this study is interested in examining the benefits of cognitive effort exertion in terms of reduction of negative emotions such as regret.

Regret

Consumer decisions are often emotion-laden, and emotions can make powerful predictions about consumers’ future behaviors (Flavián-Blanco et al., 2011). Furthermore, consumers are generally known to have a negative emotion minimization goal (Bettman et al., 1998). Among a range of diverse negative emotions, regret is known to bring one of the most intense emotional responses (Saffrey, Summerville, & Roses, 2008) and consequently, people are regret-averse and try to regulate their regret levels (Zeelenberg & Pieters, 2006).

One possible explanations of the intensity of regret is that it lies in the center of a decision maker. Regret is a negative emotion experienced when comparing or imagining future or forgone options (Bell, 1982; Zeelenberg, 1999), and realizing that one could have been in a more favorable situation had they chosen a different option. Studies about regret have repeatedly shown that a person needs to have a sense of responsibility for his/her negative outcome to feel regret. For example, Zeelenberg, van Dijk, Manstead, and der Plight (1998) argued that regret is a subcategory of disappointment and a decision maker will feel regret only when the disappointing result is attributed to him/her. Due to a strong relation between personal responsibility and regret (Zeelenberg, van Dijk, & Manstead, 1998; Zeelenberg et al., 1998), regret often leads to self-blame (Zeelenberg & Pieters, 2007) and can be aversive to one’s wellbeing (Jokisaar, 2003). Unfortunately, regret is unavoidable for many consumers and it can have a lingering negative consequences (e.g., Lecci, Okun, & Karoly, 1994).
To overcome this unpleasant emotion, studies have found unique coping strategies to mitigate regret’s unpleasantness. For example, the regret literature suggests that the degree of regret is attenuated when a decision is perceived as justified (Inman & Zeelenberg, 2002). This also explains why consumers engage in justification and rationalization of their decisions as a coping mechanism after experiencing regret. Furthermore, consumers tend to engage in more elaborative information search or rationalization to cope with this severe feeling (Yi & Baumgartner, 2004; Zeelenberg, van Dijk, & Manstead, et al., 1998). These coping behaviors show that the intensity of regret depends on how the decision maker processes the information, and that the intensity of experienced regret may shift depending on the amount of information being processed. The relationship between exertion of cognitive effort and the experience of regret is still being explored in the literature.

**Cognitive Effort and Regret in Online Shopping**

One of apparent benefits of cognitive effort exertion is the increased decision accuracy (Bettman et al., 1998). With more extensive information search, it is reasonable to gain more knowledge about a product. This in turn is likely to reduce the uncertainty in a decision and results in less post-purchase regret. For example, van Dijk, van der Plight, and Zeelenberg (1999) argued that “regret is the reflection on how one could have prevented one’s failure” (p. 206). In a non-consumer-related decision making context, van Dijk et al. showed that higher effort, such as studying for an exam, led to a decrease in regret even when the end result was undesirable (i.e., failing the exam). The cognitive effort exerted while studying may have seemed necessary to prevent one’s possible failure, and could have been rationalized as an investment. Interestingly, despite a decrease in regret, the same manipulation increased levels of disappointment when the goal was not attained. Also, contrary to the findings of van Dijk et al., Carmon, Wertenbroch, and Zeelenberg (2003) showed that thinking too much about important decision tasks or considering multiple options (increasing cognitive effort) generated attachment to the decision and resulted in a greater post-decisional regret. These contradicting results may be resolved by comparing how cognitive effort is defined and utilized in each context.

Previous decision making literature defined cognitive effort as an internal information search effort, such as the use of working memory or performing mental calculation without any external aid. For example, one common way to manipulate cognitive effort is to vary the size of the choice set in a decision task (e.g., Iyengar & Lepper, 2000; Sagi & Friedland, 2007; Swait & Adamowicz, 2001). Predominantly, this type of manipulation resulted in a negative impact of cognitive effort exertion on overall shopping experience. The current study proposes to use a broader definition of cognitive effort as the total cognitive resources used in the decision process (e.g., Russo & Dosher, 1983), which may be derived from both internal and external information search and overall time spent (e.g., Garbarino & Edell, 1997). Based on the effectiveness of information gathering for regret reduction (Yi & Baumgartner, 2004), and the convincing evidence for positive effort investment, we posit that consumers’ cognitive effort exertion will be effective in reducing post-purchase regret (H1).

Considering the influx of knowledge and information at fingertips via Internet and smartphones, consumers may respond differently to the amount of information they have to process for a decision. When the same amount of cognitive effort is invested, one should expect to see a similar result regarding the level of regret, regardless of the place of purchase. However, there are other risks associated with online shopping that might shift this balance. For example, the lack of physical or tactile information during online shopping is often perceived as a risk
(Alba, Lynch, Weitz, & Janiszewski, 1997), and this may be why online shoppers show a higher expectation for their return on dollars, effort, and time compared to traditional shopping (Mathwick, Malhorta, & Rigdon, 2001). We propose that current scenario based studies of consumers’ decisions, both online and offline, add value to understanding the dynamics of people’s cognitive effort exertion and post-decisional behavior in the shopping context.

If a consumer’s perception of invested cognitive effort varies with the place of purchase (offline or online), and if exerted cognitive effort impacts the feeling of regret (as speculated in H1), it is plausible that the place of purchase (whether online or offline) may contribute to the feeling of post-purchase regret. Specifically, if online shoppers tend to anticipate more for their effort (Mathwick et al., 2001), it is expected that online shopping will generate more regret than offline shopping when similar cognitive effort is invested in the decision (H2). The comparison between online and offline information search is a relatively new aspect in consumer research (e.g., Grant, Clarke, & Kyriazis, 2007) and to our knowledge not many studies to date have examined the difference in the amount of regret experienced as a result of shopping online or offline. The focus of Study 1 was to examine the relative impacts of place of purchase (online or offline) and cognitive effort (low or high) on experienced regret. For Study 1, participants were asked to read vignettes and imagine purchasing products online or offline, rather than actually purchasing those products.

Study 1

Method

Participants and design. One hundred forty seven college students (90 males and 57 females, \( M_{age} = 18.98, SD_{age} = 1.69 \)) at a Midwestern U.S. university participated in Study 1. Participants were students enrolled in an introductory psychology course, and were given credit for their participation as part of the course’s requirements. To minimize the possibility of coercion, participants were given equitable alternative options to obtain the same amount of course credit without participating in the research.

All IRB regulations were followed during data collection. A 2 (Cognitive effort: High vs. Low) × 2 (Store type: Offline vs. Online) mixed-subjects design was used, where the level of cognitive effort was a between-subject factor. The purchasing situations were manipulated via vignettes read by each participant.

Procedure and materials. After giving their consent, participants were randomly assigned to one of the two cognitive effort conditions (high vs. low) and each participant read two vignettes on an individual computer screen. We manipulated offline and online shopping by describing the shopping environment. In the offline shopping condition, it was stated participants were walking around the store whereas the online shopping condition stated participants were viewing products online. The presentation order of vignettes was randomized using Medialab v2008 (Jarvis, 2008).

The vignettes were used to manipulate the levels of cognitive effort expended on a purchase decision. For instance, a vignette for the high effort condition described how the participant spent a good amount of time researching the specifications of products, comparing options, and asking a product expert for his/ her advice. In the high cognitive effort condition, participants also read the specifications of a laptop (e.g., hard drive size, memory size, etc.) to
process more information (Participants had to read 204 words in this condition). Vignettes for the low cognitive effort condition specifically described the participant was stringent with time looking for a product, did not compare many attributes, deliberately chose not to compare options, and did not talk to a product expert (Participants had to read 88 words in this condition). As the described cognitive effort amount increased from low to high, we expected the proposed impact of cognitive effort on regret would be augmented.

Finally, post-purchase regret was induced for all the participants by creating differences in prices for the same product. Specifically the regret-present vignette described that, “Two weeks later, you visited the website of the store (the local store in the other condition) and found out that the same kind of laptop you purchased was on sale with an extra 10% discount.” The 10% price difference was used to mimic the price difference between online and offline stores found in real life. After reading each vignette, participants rated the level of their experienced regret on a 7-point regret item (Considering the situation, I regret my decision to..., 1 = Disagree Very Strongly, 7 = Agree Very Strongly). The entire procedure, from informed consent through debriefing, took participants an average of thirty minutes. However, the actual experimental procedure of reading vignettes, and answering questions about regret, took fifteen minutes, on average.

Results

Results indicated a significant two-way interaction for Cognitive Effort × Store Type, $F(1, 145) = 5.74, p < .05$, partial $\eta^2 = .04$, which is depicted in Figure 1. A simple effect analysis showed that the difference in the regret level was only present in the high cognitive effort condition, $F(1, 145) = 17.85, p < .05$; in the low cognitive condition, a higher level of regret was reported in both online and offline shopping conditions (see Figure 1). On the other hand, in the high cognitive effort condition, regret in the offline shopping condition ($M_{\text{offline}} = 3.71$, $SD_{\text{offline}} = 1.32$) was significantly lower than that in the online shopping condition ($M_{\text{online}} = 4.23$, $SD_{\text{online}} = 1.17$).

The second part of the study tested the effects of cognitive effort and the place of purchase on regret. The results of a two-way mixed Analysis of Variance (ANOVA) indicated a significant main effect for cognitive effort, $F(1, 145) = 11.94, p < .05$, $\eta^2 = .08$. As $H_1$ expected, the regret level was higher for a low cognitive effort condition ($M_{\text{Lcog}} = 4.63$, $SD_{\text{Lcog}} = 0.13$) than a high cognitive condition ($M_{\text{Hcog}} = 3.97$, $SD_{\text{Hcog}} = 0.14$). The main effect of store type was also significant, $F(1, 145) = 4.32, p < .05$, $\eta^2 = .03$. The regret level was higher for an online shopping condition ($M_{\text{online}} = 4.40$, $SD_{\text{online}} = 0.10$) than an offline shopping condition ($M_{\text{offline}} = 4.20$, $SD_{\text{offline}} = 0.11$) thus confirming $H_2$. 

Figure 1. Regret level in relation to cognitive effort exertion and place of purchase.

Discussion

Results from Study 1 indicated a higher level of cognitive effort alleviated post-purchase regret. Findings also suggested consumers may feel higher regret shopping online than shopping offline after finding a cheaper option on the other venue after the fact. The level of cognitive effort, however, moderated this relationship. Though these results answer the relation between cognitive effort and regret, questions still remain. For example, it is not clear what is causing the differences in regret between online and offline shopping in the high cognitive effort condition. We presume the perceived uncertainty is still higher during online shopping partly due to lack of tangible aspect (Alba et al., 1997) and this may explain the different regret levels between the two purchase environments when the same amount of cognitive effort is spent. Thus, we conducted Study 2 to test this proposition.

Study 2

One of the pronounced limitations of online shopping is lack of touch information. Touch information is useful in product evaluation through its texture, hardness, and weight (Vieira, 2012) and this leads to better judgments for a consumer’s particular needs and subsequent purchase decisions (Citrin, Stem, Spangenberg, & Clark, 2003). Without touch information consumers often lose confidence in their decision (Peck & Childers, 2003a,b) and many hesitate in the final transaction when missing that key information. Lack of confidence in decision making often increases the perceived risk and heightens the uncertainty of the decision. This uncertainty, stemming from missing touch information, is expected to exacerbate online shoppers’ regret when a decision goes wrong compared to the traditional offline shopping.

Though touch information may be irreplaceable in shopping environments, Peck and Childers (2003a) argued that a simple description of a product (e.g., weight of a product) could trigger the information stored in a person’s memory and therefore used in place of touch.
information for some consumers. If descriptions of touch information ignite internal information search, thus requiring one to use more cognitive effort, a decrease in regret is predictable compared to when no such information is available. Therefore we hypothesized that a description of touch information would elicit a lower level of regret compared to a description of visual information for the same product (H₃). Consistent with Study 1, we postulated consumers’ cognitive effort exertion would regulate post-purchase regret in Study 2. We speculated using touch information as well as high cognitive effort exertion would decrease regret. Therefore, the lowest levels of regret should exist in participants demonstrating high cognitive effort and receiving touch information (H₄).

Method

Participants and design. One hundred twenty nine (47 Males, 81 Females, 1 NA; $M_{\text{age}} = 20.23$, $SD_{\text{age}} = 2.19$) students with relatively high levels of online shopping experience (79.9% had purchased at least 1-5 times online during the last three months) from a Midwestern U.S. university participated in this study. Participants were students enrolled in an introductory psychology course, and were given credit for their participation as part of the course’s requirements. To minimize the possibility of coercion, participants were given equitable alternative options to obtain the same amount of course credit without participating in the research. Upon consent, participants were randomly assigned to a 2 (Type of Information: Touch information in the offline shopping situation vs. Visual information in the online shopping situation) $\times$ 2 (Cognitive effort: High vs. Low) between-subjects design where each participant read a vignette describing a shopping situation.

Procedure and materials. After giving their consent, participants were randomly assigned to each condition. In Study2, we moved away from simple vignettes in which participants were described as spending more or less cognitive effort, on to a richer context to manipulate the level of cognitive effort. Level of cognitive effort was manipulated in three ways in: a) presence or absence of the specific descriptions of a laptop in the vignette (e.g., hard drive size, memory system etc.), b) asking or not asking participants to list three additional specifications about the product under consideration, (e.g., Considering the situation, please list 3 additional laptop features you will consider before making your final decision), and c) presence or absence of the opportunity to compare several specifications of each product (e.g., hard drive size, memory size, etc.).

Touch and visual information were manipulated by the descriptions of a product provided in each vignette (e.g., ‘you move the cursor around using the touchpad on the laptop to determine how it feels on your index finger’ in the touch information condition vs. ‘you zoom in on the pictures of the keyboard to decide if you like the shape and look of the keypad’ in the visual information condition). For both touch and visual information conditions, equal numbers of descriptions were given about their experience with the product to control for the amount of information processed.

At the end of each vignette, regret was induced. This was done by informing participants that they failed to check the online store (offline store in the other condition) before making the final decision. Lastly, the regret level was measured on a 9-point Likert scale (1= Not at all, 9= Very much) with the question, “Considering the situation, how much regret would you feel if you purchased the laptop in the store (online) and later found a better option online (in a store)?”
Just as in Study 1, the entire procedure of Study 2 took participants an average of thirty minutes. However, the main experimental components of reading vignettes, and answering questions about regret, took an average of fifteen minutes.

**Results**

To improve on the limitations of Study 1 regarding the manipulation check of cognitive effort, in Study 2 we indirectly measured cognitive effort exertion for each condition on a 9-point Likert scale (1 = *Not likely at all*, 9 = *Very likely*) with the question, “Considering the situation, how likely are you to spend more time on this decision?” Participants in the low cognitive effort condition ($M_{Lcog} = 7.52$, $SD_{Lcog} = .22$) were significantly more willing to spend more time researching about a product than the high cognitive effort condition ($M_{Hcog} = 6.84$, $SD_{Hcog} = .23$), $t(128) = 44.64, p < .05$, indicating a successful manipulation of cognitive effort exertion by the definition used in our study.

Results indicated a significant two-way interaction for Cognitive Effort × Information Type, $F(1, 125) = 4.10, p < .05$, partial $\eta^2 = .03$, shown in Figure 2. To probe this interaction, a simple effect analysis was conducted. The difference in regret between the touch and visual information condition was present in the low cognitive condition, $F(1, 125) = 8.41, p < .05$, but this effect disappeared in the high cognitive condition, showing a lack of support for $H_4$.

The second part of the study tested the effects of cognitive effort and type of information on regret. The results of a two-way Analysis of Variance (ANOVA) indicated a significant main effect for cognitive effort, $F(1, 125) = 5.69, p < .05$, partial $\eta^2 = .02$. Replicating the findings from Study 1, regret level was higher for the low cognitive effort condition ($M_{Lcog} = 7.03$, $SD_{Lcog} = 0.25$) than the high cognitive condition ($M_{Hcog} = 6.19$, $SD_{Hcog} = 0.25$). In addition, as expected from $H_3$, regret level was higher for the visual information condition ($M_{visual} = 6.98$, $SD_{visual} = 0.25$) than the touch information condition ($M_{touch} = 6.24$, $SD_{touch} = .24$), $F(1, 125) = 4.38, p < .05$, partial $\eta^2 = .03$.

![Figure 2](image)

*Figure 2.* Regret difference based on cognitive effort and type of information.
Discussion

The results confirmed our speculation that, overall, higher cognitive effort exertion is beneficial in reducing regret. In addition, results showed the presence of touch information alleviates overall regret. This regret reduction effect was most pronounced in the low cognitive effort condition (see Figure 2). We speculated using touch information, as well as high cognitive effort exertion, would strengthen the regulation of regret (H4). Inconsistent with H4, conversely, the benefit of touch information in regret reduction was not found in the high cognitive condition. We speculated high cognitive effort expenditure helped participants to decrease the uncertainty about their decisions, which resulted in lower regret. In result, participants even in the visual condition showed a relatively low regret level. In other words, this particular scenario could have presented maximum levels of regret reduction. Another explanation for this is the apparent dominant effect of touch information on reducing regret. Given there is no regret difference in the high and low cognitive condition when touch information is present, $F(1, 125) = .08, p = .78$, it appears touch information is sufficient for reducing regret, even in the absence of extensive cognitive effort. However, when touch information is absent, researching more about the product and thus acquiring more information about a product is beneficial in regret mitigation, implying the usefulness of cognitive effort exertion to compensate for lack of touch information pertaining to regret reduction.

General Discussion

The purpose of this paper was to empirically test the influence of cognitive effort during information search on post-purchase regret in both online and offline shopping situations. Studies 1 and 2 showed that in general higher cognitive effort minimized the regret level and this effect interacted with the place of purchase or type of information. These findings showed spending cognitive effort while gathering information and processing details about the product protect consumers from feeling more intense regret when the decision does not yield a desirable result. Traditional views suggest humans should minimize cognitive effort (e.g., Iyengar & Lepper, 2000; Sagi & Friedland, 2007; Swait, & Adamowicz, 2001). However, the current findings suggest consumers should devalue the cognitive effort minimization goal and spend more cognitive effort in some situations. For example, this is particularly true when the invested cognitive effort may contribute to reducing uncertainty about a product (e.g., gathering more information about a product), and hence protect them from experiencing pungent regret.

Results from Study 1 can be useful because consumers frequently experience regret when they find a recently purchased product for a lower cost. This situation, occurring more frequently in online markets, can result in search regret (Dutta, Biswas, & Grewal, 2011). Considering that a refund for the price difference after the purchase may not be the most effective strategy to decrease regret (2011), findings from the current study indicate cognitive effort expenditure may be a possible solution to this problem. Perhaps consumers are willing to save themselves from feeling wastefulness (e.g., Arkes, 1996) by justifying their use of cognitive effort. If the extra cognitive effort is viewed as having more information about a product, then this can provide more justification about the decision and will be successful at decreasing the regret level as supported by decision justification theory (Connolly & Zeelenberg, 2002).

Results from Study 2 share an insight about how consumers interact with the information type and the amount of information. Specifically, Study 2 showed brief descriptions
of touch information successfully reduced regret. Though higher cognitive exertion is expected to have a similar effect, its unique contribution was minimum when touch information was also available. In general, this study showed that higher cognitive effort exertion prior to a decision can protect consumers from feeling intense regret when shopping online where consumers have to heavily rely on visual information. If consumers are not willing to spend cognitive effort during online shopping, the current study suggests consumers can benefit from reading descriptions of touch information to decrease regret. The current study can be useful for marketers who develop diverse ideas and technology to compensate for lacking touch information in online shopping. Marketers can provide more descriptions of touch information to consumers dealing with a product that requires a greater need for touch (e.g., clothing). This may be an extension of findings that provision of sufficient visual and verbal product-related information may influence consumer attitudes and enhance purchase intentions (Kim & Lennon, 2008).

Future Directions

The current studies used purchasing scenarios to test consumers’ regret levels. This could denigrate the external validity of the studies and prompt a need for testing the current paradigm by using an actual purchase situation. There may be some inaccurate predictions of the dependent variables between reading hypothetical scenarios and experiencing the actual process (e.g., Girotto, Ferrante, Pighin & Gonzalez, 2007). This study also acknowledges concerns with using a single regret item, containing the word “regret.” However, this single regret item has been used in multiple regret studies (e.g., Ordóñez & Connolly, 2000; van Dijk et al., 1999). Perhaps a better measurement of regret will refine the study design in the future. Aside from regret, positive emotions, such as satisfaction, after purchasing is another critical facet that influences consumers’ post decisions. Satisfaction, happiness, or content are important decision factors and need to be investigated in regard to how they affect consumers’ decisions online, and how they are interrelated with lack or presence of touch information.

One possible limitation of the studies presented here is that we did not assess any individual attitudes about online or offline shopping prior to the experimental tasks. Thus, it is possible participants’ reported levels of regret are as much a function of their attitudes about shopping online or offline as they are about the level of cognitive effort exerted toward researching a product. Future research could perform pre- and post-attitude assessments of online and offline shopping in order to gather data to justify a more fine-grained interpretation of factors leading to consumer regret.

In addition, future research can examine how involvement in the products influences regret and purchase intentions where touch information is central. In the current study, we used a laptop which shows higher utilitarian values than hedonic values. In addition, a product such as a laptop requires consumers to use more cognitive signals during the search process, and an extensive amount and product information will be in the center consumers’ satisfaction online (Lin, 2007). However, this might change with another product category which inherently requires higher need for haptic information, such as clothing.

The current study suggests that consumers may be better off shopping in a store that provides touch information, although the studies described in this paper asked participants to imagine touching and feeling the products. One potential explanation for this result is the relation between touch information and increased levels of self-confidence in decision making. It could be possible that another type of product can increase the frustration level by lack of touch
information, and lead to decreased self-confidence in their evaluation ability (Peck & Childers, 2003a). Different types of information or information processing styles among consumers, or the difference in need for touch, can change the directions of the findings and thus require further studies in this area.

This study contributes to our understanding of how post-purchase regret varies based on the amount of research consumers did before making the purchase and the place of purchases. The behavior of consumers in the 21st century, whether online or offline, is complicated and dynamic. With the growing prevalence of online shopping, there is a flood of information and purchasing opportunities online which inundate consumers with decisions. The post-purchase psychological effects of choosing to neglect or attend to all of the available information will be important to apprehend consumers’ behavior online. Much is left to study, but we hope this research shares an insight about the role of cognitive effort in the consumer domain and provides underpinnings for future studies on predicting people’s behavior as they interact with computers.
References


