TYPE OF PRIOR PROCESSING INFLUENCES SUBSEQUENT FORCED CHOICE PURCHASING BEHAVIOR

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TABLE OF CONTENTS

ABSTRACT

Type of Prior Processing Influences Subsequent Forced Choice Purchasing Behavior.
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Product purchasing behavior includes an initial exposure to a brand name product and a cognitive process that leads to the ultimate purchase of the brand name product. This study looks at the cognitive processes that occur between initial exposure to a brand name product and the final purchasing behavior. To represent initial exposure to the brand name products, participants read a short story in which 24 brand name products were placed. Next, participants were either given a semantic comparison task or an elaboration task. The semantic comparison task asked participants to focus on individual attributes of the brand name products and the elaboration task asked participants to think about the relationship between the brand name products and the context of their own life. After participants completed either the semantic comparison task or the elaboration task, they were presented with a two-alternative forced choice task in which they were forced to "purchase" one of the two brand name products that were presented. Participants were more likely to purchase the product if that product had been seen in the story and then cued in the semantic comparison task as compared to when that product was seen in the story and then studied in a self referential way. Forced choice purchasing behavior was also influenced by participants' attitudes towards the notion of products being placed in the story. Participants with a negative attitude actually avoided the products that were placed in the story. It was concluded

that the manner in which brand name products are cognitively processed can potentially influence a buyer's purchasing behavior. In particular, processing individual attributes of brand name products is an important precursor to final purchasing behavior.

CHAPTER I

INTRODUCTION

The study of product purchasing behavior can reveal the underlying cognitive processes that occur in the human mind between the initial exposure to the brand name product and the final decision about which brand name product to purchase. Initial exposure could occur in many different ways, including exposure in everyday life, exposure in advertisements, or through placement of brand name products in different types of media. Once this initial exposure has occurred, there are many different cognitive processes that could occur between the initial exposure and the final purchasing behavior. Knowledge of these cognitive processes could greatly affect the strategies used by advertising agencies. For instance, when a person is shopping for a specific item at the store (i.e., bar soap), that person engages in some type of cognitive process that affects the ultimate purchasing behavior. If this cognitive process can be specified through research and then shared with advertisement agencies, these agencies could potentially use this knowledge to improve their advertising strategies. Of course, in order to experimentally measure whether exposure to brand name products indeed influences buyers to purchase that product, a laboratory analogue of purchasing behavior is needed. For this purpose, the present experiment used a two-alternative forced choice task, in which participants were presented with two alternatives, one which was the brand name product (e.g., Irish Spring Bar Soap) that they had been exposed to previously and another brand name product from the same product category (e.g., Dove Bar Soap).

The type of initial exposure that was the focus of this experiment was product placement. Product placement is a strategy used by companies in which a company pays for their brand name product to be exposed in media. Typically, companies expose their products through commercials and advertisement with the purpose of persuading people to buy their products. Product placement is a different kind of strategy where the product is exposed to an audience in a media in which the media's expressed purpose is to entertain. Product placement can be seen in many different media, such as television, video games, movies, and print fiction. Numerous studies have looked at the different types of product placement and its effect on subsequent tasks. For example, one study showed that product placement in video games has an effect on participants' response times to rate the brand name product as "good" or "bad" (Glass, 2007). Participants labeled the brand name products that were placed in the game as "good" significantly faster than they labeled them as "bad". This reveals the potential significance that product placement has on succeeding judgment tasks.

The product placement research presented in the current paper is based on Manzano's (2010) dissertation research. Manzano's experiment revealed that product placement in fiction has an effect on implicit memory. Manzano's research looked at three different experiments that evaluated the effects of product placement in fiction. In Experiment 1, a word stem completion task and a category exemplar generation task were used. In this experiment, participants displayed implicit memory for the products that were placed in the story. In Experiment 2, a forced choice task was used and participants did not show any priming for the products that were placed in the story. In Experiment 3, a shopping list scenario task was used in which participants showed a greater preference for the products that were placed in the story. Manzano's research

shows that product placement in fiction does in fact lead to priming on implicit memory tasks. However, the forced choice task used in Manzano's experiment did not show any priming. This could be attributable to the fact that response time was not measured. Instead, accuracy was measured by recording how many participants chose the brand name product that was previously placed in the story. Another possible reason why there was no priming in the forced choice task could be that products were initially presented in a verbal format in the story and then later presented in a pictorial format in the forced choice task (Roediger, 1990). In the present experiment, response time was measured and participants were exposed to pictures before the forced choice task. Studies have shown that the combination of product placement in a fiction short story followed by a semantic comparison task produced a priming effect on a forced choice purchasing task (Brito, 2013).

In between the initial exposure to a brand name product and the final purchasing behavior, many different cognitive processes could occur that influence the buyer's decision. The different cognitive processes could involve methods such as dimension selection, elaboration, or emotion. The buyer could go through an emotion-based process that involves the brand name product that they were exposed to. For instance, a consumer can have a positive, negative, or neutral emotional response to the product placement and therefore create an emotional connection to the brand name product (Saladino, 2008). An emotional response to a brand name product could therefore influence later purchasing behavior.

In this experiment, yet two other types of cognitive processes that may intervene between exposure and purchasing behavior were compared: dimension selection and elaboration. First, it

seems quite possible that the buyer may think about various individual dimensions of the particular brand name product before purchasing it. For example, the buyer may consider dimensions such as the taste of the product, the price of the product, or how the product functions compared to the competing brand name product. This dimension selection process could have an impact on the buyer's opinion of the quality of the product, which in turn would give the buyer more motivation and reason to purchase that particular brand name product. Alternatively, this dimension selection process may simply make that particular brand name product more salient, which in turn may push a buyer to eventually purchase that product. Overall, the dimension selection process involves a thought process regarding at least some of the various dimensions of the competing brand name products and whichever brand name product comes out on top will ultimately be purchased.

The other cognitive process that may intervene between exposure and purchasing behavior is an elaboration process. The buyer may think about the brand name product in a way that simply focuses on external characteristics rather than specific attributes of the product. For example, the buyer may think about the last time that they used the product, how close the product is to their home, or how recently they have seen the product on TV. The buyer also might think loosely about the product by thinking about the amount of color on the product, how shiny the product is, or even the amount of words on the product packaging. This elaboration process includes aspects of the product that do not directly relate to the product itself, but could also potentially be a cognitive process that occurs before final purchasing behavior.

In this experiment, a semantic comparison task was used to investigate the dimension selection process. Previous studies (Thompson-Schill, D'Esposito, Aguirre, & Farah, 1997) have used a semantic comparison task in which participants were required to pick which one of two objects were more semantically related to a cue object. In the low selection condition, participants were simply required to pick which of the two objects (e.g., ice and prune) were most similar to the cue object (i.e., raisin). In the high selection condition, participants again had to compare the two objects to the cue object, but instead of simply being asked to make a similarity comparison, they had to pick which of the two objects (e.g., crow or dove) was similar along a particular dimension (e.g., color) to the cue object (e.g., seagull). The high selection condition is most similar to the semantic comparison task that is used in the present experiment, except that common brand name products were used instead of commonly known objects. For example, participants were required to pick which of the two brand name products (e.g., Irish Spring Bar Soap or Horizon Organic Milk) was similar to the cue product (e.g., Formula 409 All-Purpose Cleaner) based on a cue dimension (e.g., "purpose" or "state of matter"; see Appendices A and B). If a dimension selection process takes place between consumers' initial exposure and final purchasing behavior, and participants are explicitly engaged in that process by participating in a semantic comparison task, then there should be a relatively large effect of the semantic comparison task on later purchasing behavior.

In order to capture the cognitive process of elaboration that might occur between exposure and purchasing, an elaboration task was devised. The elaboration task involves a cognitive process that does not emphasize the core elements of the brand name product itself. For example, participants were required to select which of the three brand name products (e.g., Irish Spring

Bar Soap, Formula 409 All-Purpose Cleaner, and Horizon Organic Milk) best fit a specific criterion cue (e.g., "last to see in grocery store" or "most shiny"; see Appendices C and D). Even though consumers may well engage in this type of cognitive process prior to purchasing a product, this type of processing is not predicted to have as great an effect, if any, on the forced choice purchasing task as the dimension selection process in the semantic comparison task. Chiefly, this is because this type of elaborative processing does not provide any critical information as to which brand name product is better. Therefore, again, the elaboration task is not predicted to have as great an effect on the forced choice purchasing task as the semantic comparison task.

Due to the nature of the semantic comparison task, two different levels of processing were created; cued and uncued. In the semantic comparison task, the number of trials in which a product that was read in the story was cued by the dimension must be equal to the number of trials in which a product that was read in the story was not cued by the dimension. If the proportion of cued and uncued products is not equal, then a bias may be introduced. In order to make the semantic comparison task and the elaboration task as parallel as possible, a shallow condition was created for the elaboration task. The deep elaboration task asked the participant to think about the brand name products in a more conceptual way (i.e., first/last to see in grocery store) and the shallow elaboration task asked the participant to think about the brand name products based on surface characteristics of the images (i.e., most/least shiny).

When the product placement task, the study task (i.e., semantic comparison or elaboration), and the forced choice test task are all presented in sequence, all of the hypothesized steps in

purchasing behavior are represented. The short story in which brand name products were placed represents the consumers' initial exposure to the products. Then, the current experiment, in the form of the semantic comparison task, asks participants to engage in a process that is hypothesized to be critical for purchasing behavior. Specifically, the hypothesis in the present experiment is that the combination of the product placement task, semantic comparison task, and the forced choice purchasing task better captures the critical aspects of cognitive processing during product purchasing behavior in natural settings and will therefore show a greater priming effect in purchasing behavior than when the elaboration task is used. Specifically, forced choice priming after the cued semantic comparison condition is predicted to be greater than forced choice priming after the deep elaboration condition. A small amount of forced choice priming, if any, is predicted to be seen in both the uncued semantic comparison condition and the shallow elaboration condition. This pattern of results in the forced choice task would reveal that when consumers make comparisons between products, they are specifically focusing on product-oriented dimensions.

CHAPTER II

METHODS

Participants

Sixty-four undergraduate students from Texas A&M University participated in this study. All participants completed the study in exchange for partial course credit. Participants signed up for the experiment using an online experiment sign-up system (SONA).

Design

For the purpose of analyzing the forced choice results, the experiment's main goal, the experimental design consisted of a 2X2 mixed design. The between-subjects variable was processing task (Semantic Comparison vs. Elaboration). Thirty-two of the 64 participants participated in the semantic comparison task and the other 32 participated in the elaboration task. Level of processing (cued vs. uncued; deep vs. shallow) was the within-subjects variable. The level of processing variable manipulates the amount of attention that is paid to the target product (i.e., previously read in the story) in the semantic comparison task and it manipulates the depth of processing of the target product in the elaboration task. Accuracy priming and response time (RT) priming in the forced choice task were the dependent variables. For each subject, accuracy priming was calculated by subtracting non-studied product accuracy performance from the studied product accuracy performance, while response time priming was calculated by subtracting studied product response time from non-studied product response time.

In addition to these variables, there are nuisance variables that were used to counterbalance the materials. Story type (Story A vs. Story B) and Version (Version 1 vs. Version 2) were between-subjects variables. Whether the target product (i.e., previously read in the story) was presented on the left or right was counterbalanced across subjects. Whether the target product was on the left or right in both the semantic comparison task/elaboration task and the forced choice task was also counterbalanced across subjects. These variables were ignored for the purposes of analyzing the data.

Additional analyses focused on performance in the semantic comparison and elaboration tasks. There were brand name products in the semantic comparison task that were initially read in the story and there were also brand name products in the semantic comparison task that were not read in the story. In addition, the elaboration task had products that were both studied and not studied. Therefore, performance in both the semantic comparison task and the elaboration task can be examined to see whether accuracy and RT priming were observed in these tasks. The experimental design of these analyses was also a 2X2 mixed design. Finally, forced choice priming, semantic comparison priming, and elaboration priming were all examined with regard to test awareness.

Materials

A pair of target products (e.g., Irish Spring Bar Soap, Zest Bar Soap) was selected from each of forty-eight product categories (e.g., Bar soap), yielding 96 target products. These pairs of target products served as the two alternatives in the forced choice purchasing task and were counterbalanced between study and baseline across subjects. There were also 24 filler product

categories, yielding 48 more brand name products. In addition, each semantic comparison trial required an alternative product (e.g., Horizon Milk) and a cue product (Formula 409 All-Purpose Cleaner), yielding another 144 brand name products, each from an additional product category. There were also six additional semantic comparison trials, three practice trials and three trials that served as initial fillers in the test block. This yielded an additional 18 brand name products, each one from an additional product category. Finally, there were also six additional forced choice trials, three practice trials and three trials that served as initial fillers in the test block. This yielded an additional 12 brand name products, each two from an additional six product categories.

Two cue dimensions were developed for each triplet in the semantic comparison task. One dimension cued the target product (i.e., previously seen in the story) and the other dimension cued the alternative product (See Appendices A and B). There were a total of 42 cue dimensions used in the semantic comparison task. For example, "purpose" was used 26 times and "state of matter" was used 13 times. The cue dimension "size" was used 21 times, which was one of the dimensions used the most often, and the cue dimension "texture" was used one time, which was one of the dimensions used the least often.

The print media in which the products were placed was the short story *Vulnerable Hours*, by David Levitham from the book *Up All Night: A Short Story Collection*. The short story was previously used in Brito's (2013) and Manzano's (2010) experiments. The short story is about two young adults, Sara and Phil, who are trying to explore the idea of loneliness and what it means to be lonely in the vulnerable hours of the night. The story was altered by inserting 24

brand name products throughout the text. Each product placement consisted of the brand name product along with a relatively positive 5-10 word description of that particular brand name product (e.g., Sarah put on her cover-up, her blush, and her Clinique "Pure Posh" lipstick that gave her lips a lush color"). In addition, a 12 paragraph section was omitted from the story mostly because it was not crucial for the plot of the story and it decreased the amount of reading time required to finish the story. Reading the short story with all 24 brand name products took participants approximately 25 minutes. The story contained approximately 5,825- 5,838 words and was 16 single-spaced pages long.

Twenty-four of the 48 target product categories were placed in Version A of the story. All 24 of those target products were presented in both the processing task (semantic comparison or elaboration) and in the forced choice task. The other 24 target product category items were split across the processing task and the forced choice task. These served as baseline items in both the processing tasks and the forced choice task. The 24 filler product category items were also split across the processing task and the forced choice task. Thus, both the processing tasks and the forced choice tasks consisted of 24 studied items and 24 non-studied items. There were two versions of story A. In one version, one brand name product (e.g., Irish Spring Bar Soap) from the forced choice task was placed in the story and in the other version the other brand name product (e.g., Zest Bar Soap) from the forced choice task was placed in the story. Thus, which of the brand name products from the critical forced choice trials was also in the story was counterbalanced across subjects. One of the brand name products from the target product categories (e.g. product category- Bar Soap; target product- Irish Spring Bar Soap), is presented

in Version 1 of story A. The other brand name product from the target product categories (e.g. product category- Bar Soap; target product- Zest Bar Soap) is presented in Version 2 of story A.

In story B, the 24 target product categories that had been split across the processing task and the forced choice task when story A was employed, now served as the target products. Of course, for these participants, the 24 target product category items from story A were split across the processing task and the forced choice task, serving as baseline items in both the processing tasks and the forced choice task. Of course, all of this is just another way of saying that target products from story A and target products from story B were counterbalanced across subjects. Again, a second version of story B was created in which the alternative product in the forced choice test was presented in the story (e.g. Version 1 of story B- Crest Mouthwash; Version 2 of story B- Listerine Mouthwash).

In the end, a total of 336 brand name product images were used in the experiment. An attempt was made to ensure that all product categories (e.g., Soap) were unique whether they were used to generate one of the 48 target products, the 24 filler products, the 72 cue products in the semantic comparison task, or the 72 alternative products in the semantic comparison task.

Procedures

Participants were tested in pairs with two computers. Each of the two participants was assigned the same condition to ensure that both participants received either the semantic comparison task first or the elaboration task first. First, participants were given the short story that was followed by a comprehension questionnaire (described below). After completing the comprehension

questionnaire, participants began the second part of the experiment on the computer. The experiment construction software, E-Prime 2.0, was used to create the computerized section of the experiment. After receiving the task instructions, participants were presented with three untimed practice trials before each of the timed tasks began. The "real" tasks consisted of 48 trials. The participants were either presented with the semantic comparison task or the elaboration task which was then followed by the forced choice task. Lastly, participants were given an awareness questionnaire that was presented on the computer.

Participants were given 25 minutes to complete the short story. To ensure that all participants finished in the allotted time, a timer was placed in front of them that started at 25:00 and counted down to 0:00. Also, a time (e.g., 13 minutes on page 6) was inserted at the bottom of each page in the story that informed the participants how much time they "should" have left to complete the story. If the time on the timer was less than the amount of time on the bottom of the page, the participants knew that they should speed up their reading in order to finish the story when the timer hit zero. If the subject still did not finish the story in time, five additional minutes were given to them in order to finish the story. After both participants completed the story, they were given the comprehension questionnaire that included questions about the story plot, the setting, and the characters. The questionnaire was two-sided and participants were given 5 minutes to complete it. Once the participants were finished with the comprehension questionnaire, the computerized section of the experiment began.

In the semantic comparison task, a three-product display was presented on the computer screen. The cue product image was located on the top of the screen while the other two images were

located on the bottom of the screen. Participants were told that one of the two bottom products (e.g. Irish Spring Bar Soap and Horizon Organic Milk) matched the cue product on the top of the screen (e.g. Formula 409 All-Purpose Cleaner) based on the cue dimension (e.g., "purpose", in which case the match would be Irish Spring Bar Soap, or "state of matter", in which case the match would be Horizon Organic Milk) that was displayed in the center of the three products (see Appendices A and B).

Each real trial in the semantic comparison task began with a 150 ms blank screen followed by the presentation of the cue dimension in the center of the screen for three seconds. After the three seconds expired, the cue dimension remained on the screen while the three product images appeared for an additional three seconds or until the subject made a response. The participants made their response by either pressing the "D" key if they believed the product on the left was the correct match or by pressing the "L" key if they believed the product on the right was the correct match. After the participants made a selection, a blank screen appeared for 250 ms followed automatically by the next trial. Participants saw a total of 48 real trials which included 24 studied brand name products from the story, 12 non-studied (i.e., not presented in the story) brand name products that were from the other story, and 12 filler brand name products.

In the elaboration task, the three brand name products were displayed in a row on the bottom of the screen. Participants were told to select which of the three brand name products (e.g., Irish Spring Bar Soap, Formula 409 All-Purpose Cleaner, and Horizon Organic Milk) best fit the criterion cue (e.g., "last to see in grocery store" or "most shiny") that was presented on the top of the screen (see Appendices C and D).

Each real trial in the elaboration task began with a 150 ms blank screen followed by the presentation of the criterion cue near the top of the screen for three seconds. After the three seconds expired, the criterion cue remained on the screen while the three product images appeared for an additional three seconds or until the subject made a response. The participants made their response by pressing the "D" key to select the product on the left, the "K" key to select the product in the middle, and the "L" key to select the product on the right. After the participants made a selection, a blank screen appeared for 250 ms followed automatically by the next trial. Again, participants saw a total of 48 brand name products which included 24 studied brand name products from the story, 12 non-studied brand name products, and 12 filler brand name products.

In the forced choice task, two brand name products from the same product category were presented on the computer screen (e.g., Irish Spring Bar Soap and Zest Bar Soap) and the product category (e.g., Brand of Soap) was presented on the top of the screen (see Appendix E). Participants were told that the task was looking at the choices that they make when they go shopping. The participants' response was considered to be correct if they selected the target product that was previously studied.

Each real trial in the forced choice task began with a 150ms blank screen followed by the product category label or store category label that appeared for two seconds. After the two seconds expired, the product category label remained on the screen while the two product images appeared for an additional three seconds or until the subject made a response. Participants made

their response by pressing the “D” key if they would purchase the product or go to the store on the left or by pressing the “L” key of they would purchase the product or go to the store on the right. After the participants made a selection, a blank screen appeared for 250 ms followed automatically by the next trial. Again, participants saw a total of 48 brand name products which included 24 studied brand name products that were in story and the test task (semantic comparison or elaboration), 12 non-studied brand name products that were not previously seen in any task, and 12 filler brand name products. The 24 non-studied brand name products were not seen in any previous task.

Finally, participants were given two awareness questionnaires after completing the forced choice task (See appendix F). After completing the forced choice task, participants were given an instruction screen explaining the test awareness questionnaire. The goal of this questionnaire was to determine how aware the participants were of the purpose of the two tasks and whether or not they recognized that brand name products were repeated across tasks. The test awareness questionnaire consisted of a series of seven questions that asked the participants to report what they were thinking at the same time they were doing the computer tasks rather than what they were thinking currently in looking back at those tasks. Participants were told to type their answers in the space provided using the keyboard to make their response. To advance to the next question, participants pressed the “F4” key. After participants completed the test awareness questionnaire, a set of instructions for the product placement attitude questionnaire was presented on the computer screen. The goal of this questionnaire was to determine how aware the participants were of the brand name products that were placed in the story and whether or not this affected their opinion of the story positively or negatively. The product placement attitude

questionnaire consisted of a series of three questions that asked the participants to report what they were thinking while they were reading the story, rather than what they were thinking after the experiment. Again, participants pressed the "F4" key to advance to the next question. Finally, after the participants completed the both questionnaires, they were given an oral debriefing.

In the test awareness questionnaire, the different questions targeted different aspects of test awareness. For questions one and two, the more aware the participants were, the higher the score they received. For questions six and seven, the more intentional their strategy was, the higher the score they received. For question four, the sooner they were aware, the higher the score they received. For question five, the more products they intended to retrieve, the higher the score they received. For example, for question one, if participants reported being more aware of the purpose of the tasks, they received either a three or four. If participants reported being unaware of the purpose, they received a one.

The product placement attitude questionnaire was scored similar to the test awareness questionnaire. For question one, the more aware the participants were, the higher the score they received. Questions two and three were more categorical in nature. If the participants were more positively aware, they received a higher score (e.g., didn't notice = 1; negatively aware = 2; neutral = 3; positively aware = 4).

CHAPTER III

RESULTS

In this paper, forced choice priming that followed cued semantic comparison (i.e., when the cued item was previously read in the story), will be referred to as cued forced choice priming. Furthermore, forced choice priming that followed uncued semantic comparison will be referred to as uncued forced choice priming. In addition, forced choice priming that followed deep elaboration will be referred to as deep forced choice priming and forced choice priming that followed shallow elaboration will be referred to as shallow forced choice priming. Forced choice priming was expected to be greater in the cued semantic comparison condition than in the deep elaboration condition. A small amount of forced choice priming, equivalent to that in the deep elaboration condition, was predicted to be seen in the forced choice task that followed the uncued semantic comparison and the shallow elaboration conditions.

Forced choice accuracy priming as a function of processing task is displayed in Figure 1. As expected, cued forced choice priming was greater than deep forced choice priming. In addition, as expected, uncued forced choice priming and shallow forced choice priming were equivalent. However, unexpectedly, both uncued forced choice priming and shallow forced choice priming were greater than deep forced choice priming. A 2X2 mixed ANOVA was used in which the task preceding the forced choice was the between-subjects variable (e.g., Elaboration vs. Semantic Comparison) and level of processing was the within-subjects variable (e.g., cued vs. uncued; deep vs. shallow). The interaction effect was significant, $F(1,62) = 7.05$, $MSE = .012$. An independent samples t-test showed that the difference for the cued forced choice condition (M =

.10) and the deep forced choice condition (M = -.01) was significant, $t(62) = 2.24$, SEM = .051. The difference for the uncued forced choice condition (M = .08) and the shallow forced choice condition (M = .06) was not significant, $p > .75$. Accuracy priming was significant in the uncued forced choice condition (M = .08), $t(31) = 2.18$, SEM = .035. Accuracy priming for the shallow forced choice condition approached significance (M = .06), $t(31) = 1.89$, SEM = .033, p = .07.

Response time priming was submitted to the same 2X2 mixed ANOVA analysis as accuracy priming. There were no interaction effects or main effects of the two variables (e.g., level of processing and processing task). Collapsing across both variables, the mean amount of response time priming was 26 ms. This facilitation approached significance, $F(1,62) = 3.13$, MSE = 28368.82, p = .08. Response time priming ranged from 42 ms in the deep forced choice to -1 ms in the uncued forced choice.

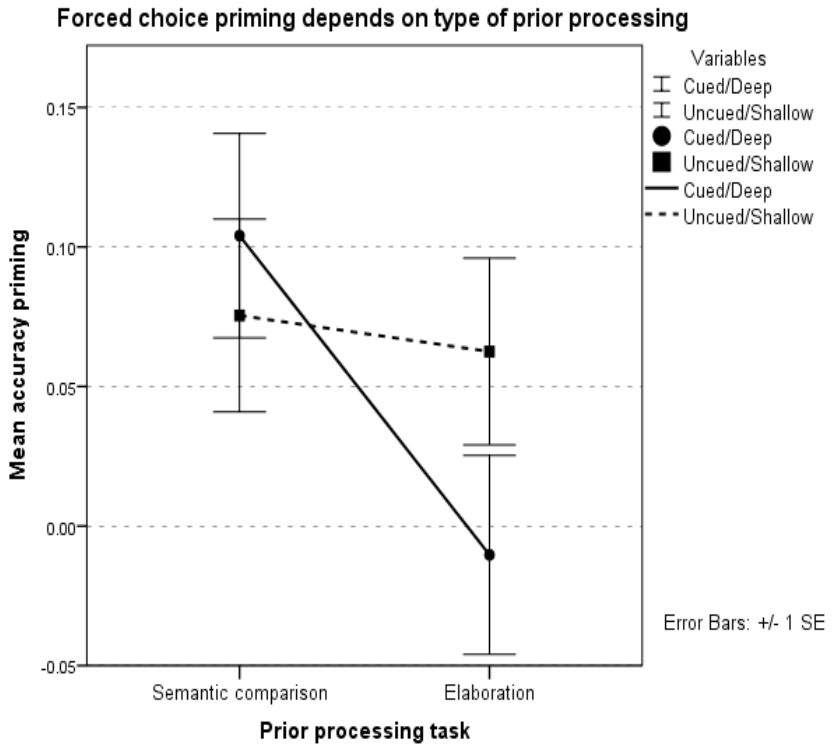

Figure 1: Interaction Effect of Processing Task and Level of Processing in Forced Choice

In addition to examining performance in the forced choice task as a function of prior processing in the semantic comparison and elaboration conditions, performance in those conditions was examined as a function of whether those products were presented in the story or not. It would not be surprising to see higher accuracy and/or faster response time for the products that had been placed in the story than the products that had not been placed in the story.

The results for the semantic comparison task can be seen in Table 1. There was not a significant amount of accuracy priming (M = -.04) in the condition in which products that were placed in the story were cued (see Appendix A) or in the condition in which products that were placed in the story were not cued (see Appendix B) (M = .03; both p's> .3). Regardless of whether the target

products were read in the story or not, accuracy was quite a bit higher when those products were cued (M = .84) than when they were not cued (M = .72), $F(1,31) = 31.55$, MSE = .014. This indicated that the cue dimensions for target products, whether they were studied or not, were slightly more effective than the cue dimensions for the non target products, whether they were studied or not. For the response time data, priming was not significant in the cued condition (M = -28 ms). However, priming approached significance in the uncued condition (M = 56 ms, p = .08). When response time was looked at in only correct trials, priming in the cued condition increased to 44 ms and priming in the uncued condition increased to 68 ms, with this latter effect being significantly different than zero, $t(47) = 2.29$, SEM = 29.499. In short summary, in the semantic comparison task, neither accuracy priming nor response time priming was significant in either the cued or uncued conditions.

Table 1

Semantic Comparison Accuracy and Response Time Results

	In Story				Not In Story			
	Accuracy		Response time		Accuracy		Response time	
	M	SD	M	SD	M	SD	M	SD
Cued	**.82**	.130	**1699**	298.317	**.85**	.157	**1671**	347.406
Uncued	**.73**	.102	**1690**	252.771	**.70**	.231	**1746**	263.724

The results for the elaboration task are presented in Table 2. There was not a significant amount of accuracy priming in the deep elaboration condition (M = .05, p = .11) or in the shallow elaboration condition (M = .03). Neither was there a significant amount of response time priming, either in the deep condition (M = 41 ms) or in the shallow condition (M = -3 ms). Overall, participants were slightly slower to respond in the deep condition than in the shallow

condition, $F(1,31) = 5.79$, $MSE = 38295.87$ (deep $M = 1690$ ms, shallow $M = 1601$ ms). In short summary, in the elaboration task, there was no significant priming for accuracy or response time.

Table 2

Elaboration Task Accuracy and Response Time Results

	In Story				Not In Story			
	Accuracy		Response time		Accuracy		Response time	
	M	SD	M	SD	M	SD	M	SD
Deep	**.42**	.120	**1669**	338.181	**.36**	.182	**1711**	374.836
Shallow	**.41**	.134	**1608**	376.155	**.39**	.205	**1605**	367.805

A test awareness questionnaire was given to participants after all the tasks were completed. A test awareness score was calculated for each participant by summing the scores of all the questions. For the test awareness questionnaire, the sum scores for all of the questions regarding awareness during the semantic comparison task ranged from 1 to 34 ($M = 9.09$). The sum scores for all of the questions regarding awareness during the forced choice task that followed the semantic comparison task ranged from 1 to 33 ($M = 14.53$). The difference between these means was significant, $t(31) = 4.80$, $SEM = 1.134$. The participants were more aware during the forced choice task than the semantic comparison task. The sum scores for all of the questions regarding awareness during the semantic comparison task and the forced choice task were strongly correlated, $r(30) = .72$. The sum scores for all of the questions regarding awareness during the elaboration task ranged from 1 to 26 ($M = 9.68$). The sum scores for all of the questions regarding awareness during the forced choice task that followed the elaboration task ranged from 1 to 28 ($M = 14.45$). The difference between these means were significant, $t(30) = 4.69$, $SEM = 1.02$. Participants were more aware during the forced choice task than the elaboration task. The

sum scores for all of the questions regarding awareness during the elaboration task and the forced choice task were strongly correlated, $r(29) = .78$. The reason for greater test awareness in the forced choice tasks could be because the forced choice task is the second task which gives the participants more exposure time to the products. On the other hand, test awareness could increase simply because the forced choice task causes more awareness in and of itself. In prior experiments, test awareness has been relatively equivalent across tasks whether or not forced choice was first or second.

One goal was to determine if there was a relationship between test awareness and amount of priming. Even though the post-test awareness questionnaire was thoroughly assessed and meticulously scored and many prior studies have shown a positive relationship between magnitude of priming and degree of awareness (Barnhardt & Geraci, 2008; Geraci & Barnhardt, 2010), no such relationship was observed between awareness and priming in any of the tasks or conditions in the present experiment.

To remind the reader, a product placement attitude questionnaire was also given to participants. Given that the second question asked about the attitude towards the story rather than the products and there was no relationship between this question and any priming results in any tasks, it was eliminated. The first and third questions were scored for whether the subjects' attitude towards product placement in the story was negative, neutral or positive. Three categories were created by combining the responses from questions one and three. The negative category consisted of the participants that gave a negative response to question one and a neutral or negative response to question three. The neutral category consisted of the participants that gave an aware or vaguely

aware response to question one and a neutral response to question three. The positive category consisted of the participants that gave an aware or very aware response to question one and a positive response to question three. The three categories used for analysis accounted for 56 of the 63 participants. The seven remaining participants did not fall neatly into any of the categories so they were not included.

Forced choice priming as a function of level of product placement attitude can be seen in Figure 2. A 2X3 mixed ANOVA was used to analyze forced choice accuracy priming in which level of processing (e.g., cued/deep vs. uncued/shallow) was the within-subjects variable and product placement attitude (e.g., negative, neutral and positive) was the between-subjects variable. The main effect of product placement attitude was significant, $F(2,54) = 3.97$, $MSE = .060$. The means of the different levels of the product placement attitude were compared using a Helmert contrast. Priming in the negative category ($M = -.04$) was significantly different from priming in the neutral category ($M = .10$) and priming in the positive category ($M = .12$). However, the neutral category and the positive category were not significantly different from each other. This result will be discussed below. No significant relationship was observed with regard to the awareness for semantic comparison performance or the elaboration performance.

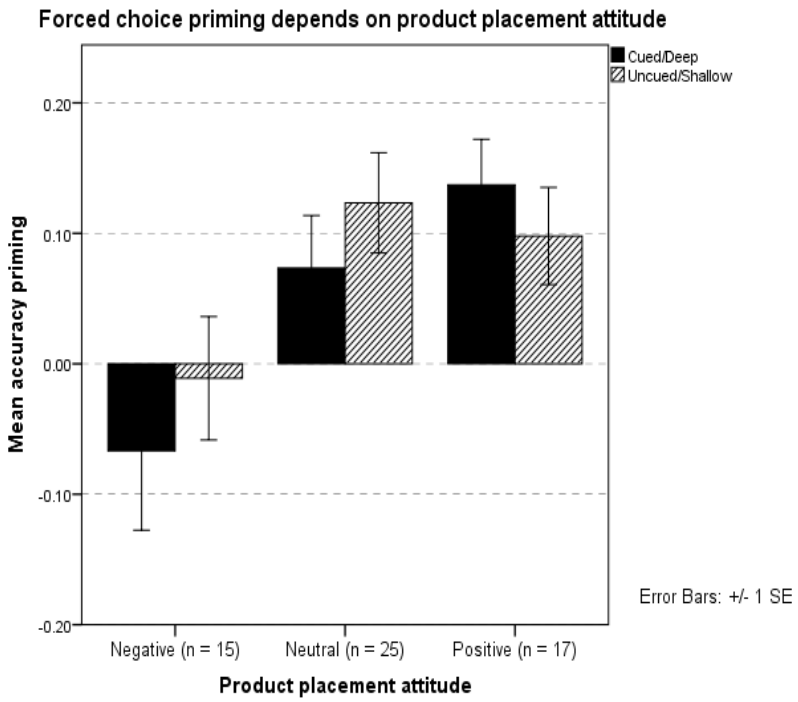

Figure 2: Forced Choice Priming as a Function of Level of Product Placement Attitude

CHAPTER IV

DISCUSSION

The purpose of the present experiment was to investigate, after initial exposure to brand name products in a story, whether different forms of cognitive processing of products have differential influences on product purchasing behavior. The most effective type of cognitive processing was hypothesized to involve a dimension selection process in which buyers evaluate brand name products on individual dimensions before purchasing a particular product. The semantic comparison task was used to represent the dimension selection process and was predicted to have a relatively large influence on a subsequent purchasing task. It was thought that this would be especially true in the cued semantic comparison condition (i.e., product placed in the preceding story was also cued in the semantic comparison task) as compared to the uncued semantic comparison condition (i.e., product placed in the story was presented, but not cued, in the semantic comparison task). Priming in product purchasing after semantic comparison was contrasted with product purchasing priming after elaboration processing. It was predicted that neither deep elaboration processing (i.e., in which participants focused on the relationship between brand name products and the context of the buyer's own life) or shallow elaboration processing (i.e., in which participants focused on surface characteristics of the products) would produce as much priming in the product purchasing condition as the cued semantic comparison condition.

As predicted, more forced choice priming was observed for products that had been in the cued semantic comparison condition (an 11% priming effect) than for products that had been in the

deep elaboration condition (a -1% priming effect). These results imply that thinking about a product on a specific dimension may influence buyers to purchase that product more often than thinking about the product in a self referential way. It appears that relating a brand name product to oneself does not determine which product is superior. This information could be used by advertisement agencies in order to focus their advertising strategies more towards marketing specific attributes of their product.

When talking about priming in the forced choice task after the semantic comparison task, one might expect that you would see even greater priming in the semantic comparison task under more favorable circumstances. For example, if both tasks emphasized the brand name, more priming may be observed in the forced choice task. It is important to note that the buyer could merely think about the brand name itself and not think about the product (Schaefer & Rotte, 2010). Brand names and products can have separate effects on a buyer's final purchasing behavior. For example, studies have shown that cultural attitudes towards brand name products like Coca-Cola and Pepsi have an influence on taste preference, independent of the outcome of a blind taste preference test (McClure, Li, Tomlin, L. Montague, & P. Montague, 2004). In the present experiment, the emphasis on brand names in the story shifts to an emphasis on the products in the semantic comparison task which then shifts back to an emphasis on brand names in the forced choice task. Future research should make the emphasis of the product or the brand name more consistent across all three tasks in order to produce greater priming.

Surprisingly, and somewhat counter to our prediction, there was also a significant amount of forced choice priming (8%) for products that had been placed in the story and presented in the

semantic comparison task, but were not cued in that task (see Appendix B). Although forced choice priming after uncued processing was numerically less than after cued processing, this difference (3%) was not significant. The tendency to choose the brand name product that was previously seen in the story, even though it was not cued in the semantic comparison task, was also observed in prior experiments (Brito, 2013). This result implies that, even in uncued trials, participants were still required to think of all three products, including the product seen in the story, in order to make a decision. Therefore, because the participants still had to process the uncued product on a specific dimension, there was still an effect on later purchasing behavior. Another possible implication is that even though participants recognized that the brand name product was in the story, and it was not cued, that product still drew their attention and therefore caused priming in the forced choice task. However, at least 2/3 of all participants were unaware that products were placed in the story and were also presented in the semantic task, which makes the latter possibility unlikely.

In addition, and again counter to our prediction, there was a substantial amount of forced choice priming (6%) after shallow elaboration processing. Although this was not significantly different than zero (p = .071), it was significantly greater than the amount of forced choice priming after deep elaboration processing $t(31) = 1.87$, SEM = .029. The shallow elaboration task may cause more of a priming effect on the subsequent forced choice purchasing task than the deep elaboration task due to the fact that the forced choice task and the shallow elaboration task are both very visually oriented. To the extent that purchasing behavior in real life context is predominantly visual in nature, emphasis on processing of the visual characteristics of products

(e.g., product packaging and brand name logos) may be an important influence on purchasing behavior.

Yet another unexpected influence on forced choice priming was participants' attitude towards the notion of products being placed in the story. Surprisingly, the product placement attitude questionnaire had more of an effect on forced choice purchasing behavior than the test awareness questionnaire, even though many prior experiments have found that test awareness is often highly correlated with priming effects on implicit memory tests. The product placement attitude questionnaire looked at how the participants felt about the products placed in the story while they were reading. The participants were categorized into negative, neutral, or positive categories depending on their responses to the questions in the product placement attitude questionnaire. Results showed that the more negatively participant's felt about the products that were placed in the story, the less likely they were to pick those products in a purchasing task. The negative category ($\underline{M}$ = -.04) was significantly different from the average of the neutral category ($\underline{M}$ = .10) and the positive category ($\underline{M}$ = .12). This result suggests that there are potentially negative consequences of product placement in stories and could also imply negative consequences of product placement in other types of media as well.

In contrast to the effects of prior semantic comparison processing and shallow elaboration processing on forced choice performance, product placement in the story had little influence on performance in the semantic comparison or elaboration tasks themselves. The reason for the small amount of influence of product placement on the semantic comparison and elaboration tasks may be because there is a modality shift between tasks. For example, participants verbally

processed the brand name products in the story but were presented with pictures of those brand name products in the other two tasks. Prior studies have shown that greater priming occurs when materials are presented in the same modality during both test and study tasks (Roediger, 1990). However, future research should investigate this possibility by using verbal rather than pictorial materials in the semantic comparison, elaboration, and forced choice tasks as Manzano did in experiments one and three in her dissertation.

The reason why there was greater priming in the subsequent forced choice task than the preceding processing tasks may be because the forced choice task in and of itself causes more priming. It is possible that the forced choice task is easier for participants to make a decision because it is comparing two products from the same product category rather than three products from three different categories. Having two products from the same product category may make it easier for participants to compare the two products and come to a conclusion as to which product they would purchase. Another reason why the forced choice task showed greater priming could simply be because it is the second task and therefore gives participants additional exposure time to the product. Additional exposure time to the brand name products in the semantic comparison or elaboration task may make those products more salient and therefore cause them to pick that brand name product more often in the forced choice purchasing task. Clearly there was greater priming in the forced choice task after the processing tasks than there was in the processing task immediately following the story. The most likely reason for this is that the modality of the materials remained constant from the processing task to the forced choice task in which pictures were presented in both cases. However, there are other possibilities. One is that the forced choice task is just a more sensitive task to the influence of prior exposure to brand

name products. This would suggest that if the forced choice task had immediately followed the story, that you would see priming of the products placed in the story on purchasing behavior. This kind of experiment has already been conducted in our lab, and when the forced choice task immediately follows the story, no priming was observed (Brito, 2013). Yet another possibility is that, in the present experiment, priming was observed in the forced choice task, but not in the processing task, because subjects had been exposed to products two times before the forced choice task but only one time before the semantic comparison and elaboration tasks. If that's true, then a semantic comparison task should also show priming if product placement and another processing task preceded. This kind of experiment has also already been conducted in our lab and showed little priming. Again, the most likely explanation for priming in the forced choice task appears to be the fact that modality did not shift for the materials in the processing task and in the forced choice task.

Overall, there were four main findings observed in the present experiment. The first important finding was that focusing on individual attributes in a cued semantic comparison task produced significantly more priming in a forced choice task than focusing on self referential characteristics in a deep elaboration task. Second, focusing on surface characteristics in a shallow elaboration task produced significantly more priming in a forced choice task than focusing on self referential characteristics in a deep elaboration task. Third, processing brand name products on an individual dimension, whether it was cued or uncued in a semantic comparison task, had a strong influence on forced choice purchasing behavior. However, the dimension selection process does not appear to have a special status because focusing on the surface characteristics of products also had a strong influence on forced choice purchasing behavior. Fourth, having a negative

attitude about products being placed in a story produced less priming in a forced choice task. The attitude of product placement, whether it is positive or negative, can have a major influence on later purchasing behavior.

Clearly, some prior cognitive processes are better than others when it comes to influencing forced choice purchasing behavior. It is important to recognize that not all types of processing produce priming in a forced choice task. Recognizing that the type of cognitive process that occurs before purchasing a product makes a difference while choosing which product to buy is an important finding that should be further tested in the lab. Future research should investigate other types of cognitive processing that may occur in order to determine which types of cognitive processes have an influence on a later purchasing task. In addition, future research should use different types of test tasks, other than forced choice, in order to determine the specific nature of the different types of cognitive processes involved. Finally, future research should attempt to determine whether or not people's attitudes about product placement in print, as well as in other kinds of media, reliably influence purchasing.

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APPENDIX A

Sample of a semantic comparison trial when the cued item was placed in the story (Irish Spring Soap was placed in the story and is the correct answer; both 409 All-Purpose Cleaner and Irish Spring Soap are "cleaners")

Purpose

APPENDIX B

Sample of a semantic comparison trial when the cued item was not placed in the story (Horizon Milk was not in the story and is the correct answer; both 409 All-Purpose Cleaner and Horizon Milk are liquid):

State of Matter

APPENDIX C

Sample of a Deep Elaboration trial:

Last to See in Grocery Store

APPENDIX D

Sample of a Shallow Elaboration trial:

Least Green

APPENDIX E

Sample of a Forced Choice trial:

Bar Soap

APPENDIX F

Test awareness questionnaire:

(1) While you were doing the last two tasks, what did you think was the purpose of these tasks?
(2) While you were doing the last two tasks, did you notice any relation between the products in the story, the products in the comparison task, and the products in the purchasing task? If you noticed a relation, what relation did you notice and in which task did you notice it?
(3) While you were doing the last two tasks, did you notice that some of the products were repeated from the story, to the comparison task, and/or to the purchasing task? If you noticed, in which task did you notice?
(4) If you noticed that products had been repeated across the different tasks, please rate WHEN you noticed in the comparison task and WHEN you noticed in the purchasing task. For both of your ratings, use a scale of 1-10, where 1 is "noticed only after the entire task was complete" and 10 is "noticed right away". (Use zero if you didn't notice until it was mentioned in these questions that products had been repeated across tasks.)
(5) If you noticed that products had been repeated across the different tasks, please estimate HOW MANY repeated products you noticed in the comparison task and HOW MANY repeated products you noticed in the purchasing task. (Again, use zero if you didn't notice until it was mentioned in these questions that products had been repeated across tasks.)
(6) If you noticed that products had been repeated across the different tasks, did you INTENTIONALLY CHOOSE the repeated brand products or did you simply COMPLETE THE TASKS AS BEST YOU COULD? (If you didn't notice that products had been repeated until it was mentioned in these questions, just type in "Didn't notice.")
(7) If you INTENTIONALLY CHOSE repeated products, did you do this in the comparison task, the purchasing task, or both? In addition, please estimate how often you did this in the comparison task and how often you did this in the purchasing task. (If you did not intentionally choose repeated products, please type in something like "Just did the best I could.")

Product Placement Attitude Questionnaire:

(1) As you were reading the story, did you notice the brand-name products that had been placed there?
(2) If you noticed the products in the story, did that make you evaluate the story differently? Either more positively or more negatively?
(3) If you noticed the products in the story, did that make you evaluate the products differently? Either more positively or more negatively?