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# FIELD DEPENDENCY AND BRAND COGNITIVE STRUCTURES

Sharon Ng

Michael J. Houston

Authors' Note:

Sharon Ng is assistant professor of marketing, Nanyang Technological University, Singapore 639798 (Tel: 65-6790-4898, Fax: 65-6791-3697, Email: **angsl@ntu.edu.sg**). Michael J. Houston is Ecolab-Pierson M. Grieve Chair in International Marketing, University of Minnesota, Minneapolis, MN 55455 (Tel: 612-625-2075, Fax: 612-624-6374, Email: **mhouston@umn.edu**). Correspondence: Sharon Ng. This research is part of the dissertation by the first author. The authors would like to express their appreciation to Mark Snyder, Akshay Rao and Loraine Lau for their invaluable comments.

# FIELD DEPENDENCY AND BRAND COGNITIVE STRUCTURES

The research reported here examines the impact of field dependency on the way people structure brand information in memory. The authors propose that an individual's level of field dependency is an important determinant of the way information is stored in one's mind. Specifically, the authors argue that field independents are more likely to extract and integrate episodic information to form overall brand beliefs. On the other hand, field dependents tend to store more detailed, episodic information in memory and are less likely to generalize information across product categories. The authors further propose that this effect is moderated by level of expertise and such differences have important implications for how individuals evaluate marketing communications. Results from five studies support their propositions.

Keywords: Cognitive Structures, Branding, Field Dependency, Advertising, Culture

Understanding how consumers represent and organize brand information in memory has been a topic of enduring interest in the marketing literature. The way information is structured in one's mind affects what information is retrieved, used, perceived and stored (Cowley and Mitchell 2003; Wyer and Srull 1989). As new brand information is acquired and integrated with existing knowledge in memory, individuals form brand cognitive structures in memory (Christensen and Olson 2002). These cognitive structures represent the interpreted meanings of brands and have important implications for many consumer behavior issues such as brand equity, brand extension evaluation, and brand personality (Keller 2003; Lawson 2002). Thus, it is important to gain a good understanding of how information is stored and used.

Traditionally, it is assumed that people structure information in memory hierarchically (Cowley and Mitchell 2003). However, recent studies found that many factors (e.g., goals and expertise) may affect the way one structures information in memory. For instance, Huffman and Houston (1993) show that consumers tend to organize information learned around the goal(s) that drives the experiences. Luna and Peracchio (2002) found that language affects the linkages among concepts in memory. Cowley and Mitchell (2003) further show that provision of usage occasion information at encoding affects how information is structured subsequently. Other research also shows that environmental variables (e.g., socialization process) and cognitive abilities (John and Whitney 1986; Wyer and Srull 1989) are important variables to consider. Collectively, the above-cited research suggests that the way information is stored in memory is influenced by a number of individual and situational factors.

However, despite extensive research on this topic, there has been minimal research on how processing styles may affect cognitive structures for brands. Since cognitive structures are a result of prior processing (Wyer and Srull 1989), we would logically expect cognitive structures

to be affected by the type of information to which one attends and the way the information is encoded. The current research adds to this body of work by examining the impact of processing style on the way information is stored in memory. Specifically, we focus on whether variations in attention to contextual information will affect the way information is structured in one's mind. We argue that people who ignore contextual information (i.e., field independents) are more likely to generalize summary evaluations from personal experiences of one product to another. They focus more on brand level beliefs, connecting numerous products by a single brand to the same set of beliefs (e.g., connecting a number of different Sony products to the same "good quality" belief). On the other hand, people who pay greater attention to contextual information (i.e., field dependents) are more likely to focus on specific, episodic information derived from their experiences with the brand. They focus more on product level beliefs and store different sets of beliefs for different products (e.g., storing separate "quality" beliefs for different Sony products). We further propose that this relationship is moderated by level of expertise and has important implications on how consumers react to advertisements.

Findings from this research contribute to the literature theoretically and managerially. Field dependency is a potentially useful factor that explains variations in consumers' brand cognitive structures. By identifying another possible antecedent variable to brand cognitive structures, a greater understanding of the formation of brand cognitive structures may be realized. Managerially, the findings may help to provide some insight on appropriate branding and marketing communication strategies for different consumer groups, such as consumers in different cultures. Our studies show that the way information is stored in memory do affect consumers' responses to marketing communications (e.g., those aimed at building overall brand equity versus communicating specific product benefits).

The remainder of the presentation is organized as follows. First, we briefly review relevant literature from which we generate a set of predictions regarding differences in the way consumers structure brand information. We then report on five studies designed to test the resulting hypotheses and conclude with a discussion of the implications of our research.

## *THEORETICAL FOUNDATIONS*

### *Brand Cognitive Structures*

Brand cognitive structures refer to the mental representations of brands in the minds of consumers (Christensen and Olson 2002; Keller 2003). They pertain to the manner in which brand knowledge (e.g., usage situations and attitude) is represented and organized in memory (Ratneswhar and Shocker 1991). They result from prior processing of information and also determine the way one processes information in the future (Wyer and Srull 1989). Information can only be processed if the perceiver has some type of internal knowledge structure to receive and organize it (Lawson 2002; Markus and Zajonc 1985). Subsequent retrieval reflects the way information is organized in memory (Christensen and Olson 2002; Mandler 1985). Thus, gaining a greater understanding of the factors that affect the nature of cognitive structures is important.

So how may information be structured in one's mind? Generally, there are two main ways individuals may structure information in memory – globally or locally (Solomon and Barsalou 2001). The global form approach posits that information is abstracted from individual experiences and integrated to form an overall set of knowledge about an issue. For example, based on prior experiences, individuals may possess an *overall* evaluation of how good Sony's products are (e.g., quality). This evaluation is connected to the brand and may be ascribed to

other Sony products. Thus, a single representation of "quality" is attached to the brand, Sony, as well as to numerous Sony products (e.g., Sony Walkman, Sony PDA and Sony digital camera (see Figure 1)). In this case, *for each brand,* consumers would possess *a common set of beliefs* for a number of the brand's products. Since the same belief is ascribed to a varied list of products despite their differences, this approach implicitly assumes that concepts and representations are context independent and situational factors play no role in affecting the representations retrieved (Solomon 1997; Solomon and Barsalou 2001).

The global form approach is consistent with findings in the brand literature which generally assumes that people construct and store abstract knowledge (e.g., affect, belief and attitude) from exemplars or episodic memories, which are then transferred to new, extended products (Broniarcyzk and Alba 1994; Keller 1993, 2003). Many models in the categorization literature (e.g., prototype models and rule based models) are also supportive of the global form approach (Barsalou 1992; Cohen and Basu 1987). Thus, the global form approach is consistent with many theories in the branding and categorization literature. However, research shows that abstraction does not always occur. People do store specific situational information from experiences, which leads to the local form approach.

The local form approach argues that people do not necessarily abstract information from experiences to form overall evaluation. Instead, product specific information may be stored and used for future references (Solomon and Barsalou 2001). According to this approach, the same property may take on different forms in different concepts. For example, this approach assumes that consumers will notice the differences among various Sony products and store *different* representations of "quality" for each product (i.e., they will store a separate quality node for Sony Walkman, Sony PDA and Sony digital camera) (see Figure 1). This approach assumes that

representations are context dependent (Solomon and Barsalou 2001) and posits that people store individuating information (e.g., usage occasion) of each product (Ratneswhar and Shocker 1991). Thus, in the local form approach, *separate sets of beliefs* would be stored for each product of a brand. Some findings in the brand literature are supportive of this approach. For instance, Loken, Joiner and Peck (2002) show that people do store specific information of exemplars and this exerts an influence on their brand attitude. The local form approach is also consistent with the exemplar model in the categorization literature, which argues that people do not always abstract information from objects or experiences to form abstract category knowledge (Barsalou 1992; Cohen and Basu 1987).

Thus, theoretically, there are two ways information may be structured in memory. However, in reality, it is more likely that people will adopt some degree of both structural forms - they may connect a group of products to same sets of beliefs and store separate beliefs for another group of products. For instance, products that are developed to be highly similar may be connected to the same sets of beliefs while those that are developed to be very different from the rest may be connected to their own sets of beliefs. However, in most cases, companies do not develop products that are extremely similar or extremely dissimilar. Typically, multiple products sold by a company are moderately similar to one another, leaving a certain degree of ambiguity in how one may choose to view them. It is within this latitude that we argue one's attention to contextual information would affect how information for these products would be stored.

Thus, the research question at hand considers whether some types of consumers are chronically more inclined towards one structural form than others. Though clearly many factors may affect which form of cognitive structure is more dominant, one key variable is the way

people process information - more specifically, the extent to which one is chronically inclined to take into account contextual information, i.e., one's level of field dependency.

*Field Dependency*

Field dependency is defined as "a general dimension involving individual differences in ease or difficulty in separating an item from an organized field or overcoming an embedding context" (Witkin and Goodenough 1981). Relative to field dependents, field independents are better able to break up an organized field, zoom in on relevant material within its context, and distinguish signal from noise (Berry 1991). They have an independent sense of self and rely on an internal frame of reference when processing information. Relative to field dependents, field independents make less use of information from others in arriving at their own views; they function more autonomously and have an impersonal orientation (Witkin and Goodenough 1981). In addition, field independents are more capable of cognitive restructuring. They are better at "providing structure for an ambiguous stimulus complex, ….and providing a different organization to a field than that which is suggested by the inherent structure of the stimulus complex," (Riding and Cheema 1991, pg 198). Coupled with the tendency to ignore contextual information, this results in field independents being more likely to focus on the attributes of objects (Berry 1991; Kühnen et al. 2001). Concepts are abstracted out of situations, and seemingly 'irrelevant' situation information is ignored. In essence, they have a more context independent conceptualization of categories.

On the other hand, field dependents pay great attention to contextual information. They are sensitive to relationships between objects and the field (Berry 1991; Kühnen et al. 2001; Nisbett et al. 2001). Relative to field independents, field dependents are more likely to rely on

contextual cues in their behavior and cognition (Witkin, Goodenough and Oltman 1979). They feel less differentiated from the environment. Their self views are related to how others view them and they tend to possess good interpersonal communication skills. Baaren et al. (2004) show that field dependents are more affected by the environment and are likely to mimic other people's behavior. This sensitivity to contextual information also leads to a more context dependent conceptualization of categories.

Drawing from this literature, we argue that differential attention to contextual information on the part of field dependents and field independents should lead to differences in the abstractness of one's cognitive structures. A field independent's tendency to ignore situational information and corresponding preference for abstraction should result in a greater tendency to generalize summary evaluations to other products of the brand and discard individuating information. They are more likely to use global evaluations or beliefs to describe a brand. Thus, we propose that field independents are likely to structure information consistent with the global form approach. On the other hand, since field dependents pay greater attention to contextual information, they possess a more situated view of concepts. In evaluating a category, attention to contextual information should lead them to focus on individuating information of each product (e.g., usage occasion) and store separate beliefs[1] for each product. Therefore, field dependents are more likely to encode situational specific information about products and structure information more in line with the local form approach.

It is important to emphasize that we are not arguing that field independents would always abstract information and field dependents would not abstract any information at all. At issue is how much abstraction takes place.[2] It is a question of tendency – that is, which is more likely to

be adopted by different groups of individuals. Here, we propose that field dependents engage in lesser abstraction relative to field independents.

H1**:** Field independents are more likely to ascribe the same sets of beliefs to products of a brand, while field dependents are more likely to possess different sets of beliefs for each product.

Hypothesis 1 argues that field independents focus more on similarities among products while field dependents focus more on the differences. However, even if one is inclined to search for similarities or differences among products, it needs to be accompanied by the ability to do so. Prior research shows that expertise affects cognitive structures (Alba and Hutchinson 1987; Mitchell and Dacin 1996). As expertise grows, one is also better able to organize information from that domain (Barsalou 1992). Relative to novices, experts are able to use unique attributes to differentiate between objects. However, at the same time, they are also able to discern similarities among products (Mitchell and Dacin 1996; Scott, Osgood and Peterson 1979). Drawing from this stream of literature, we argue that expertise may exacerbate the differences observed among field dependents and field independents. Specifically, since experts have the ability to detect similarities and differences among objects, field dependency affects which aspect they focus on. Specifically, we argue that field independent novices who are unable to discern similarities among objects are less likely to abstract information from varied product experiences and ascribe the same beliefs to them. On the other hand, field independent experts possess both the motivation and ability to do so. Thus, greater expertise should magnify field independents' likelihood of ascribing the same sets of beliefs to products. On the other hand, expertise should exacerbate field dependents' tendency to structure information locally as it

allows one to differentiate products more finely. Thus, we propose that expertise will magnify the impact of field dependency on cognitive structures.

H2**:** Expertise will magnify the impact of field dependency on cognitive structures.

*Marketing Implications*

The above-referenced literature lead to hypotheses suggesting that the way an individual attends to information in the environment can result in different organizations of knowledge. We further propose that this difference in the manner people store information would filter down to influence their preference for the structure of information that is presented to them and affect how they evaluate various types of information. Specifically, we argue that individuals should prefer advertisements that present information consistent with the manner in which they organize it. Since field independents are more likely to store brand level information, marketing communications should be done more at the brand level to appeal to field independents. Advertisements focusing on influencing overall brand beliefs (e.g., Nike ads stressing the idea of women taking control of their own lives) should be viewed favorably by field independents. On the other hand, field dependents, given their greater likelihood of storing product level information, should prefer ads that focus on product level beliefs. Using attitude toward the advertisement as an indication of affect towards a message, the following hypotheses result.

H3a: Field independents will exhibit more favorable attitudes towards advertisements presenting information at the brand level versus product level, while field dependents will exhibit more favorable attitudes towards ads presenting information at the product level versus brand level.

H3b: Field independents will exhibit more favorable attitudes towards brand level ads than will field dependents, and field dependents will exhibit more favorable attitudes towards product level ads than will field independents.

In the following sections, two sets of studies conducted to test the above hypotheses are presented. The first set of studies, comprising studies 1, 2 and 3, focus on the theoretical issues proposed in H1 and H2. Specifically, using a between-subjects design, study 1 tests the basic premise that field dependency affects one's tendency to generalize brand beliefs across product categories (H1). Study 2 aims to replicate the findings from study 1 using a within-subjects design. Unlike study 1 whereby a separate group of participants was used as the control group, in study 2, each participant serves as his or her own control. Building on studies 1 and 2, study 3 examines if the impact of field dependency on one's structural tendency is moderated by expertise level (H2). With support for the structural difference between field dependents and field independents, the second set of studies (studies 4 and 5) investigate the implications of such differences on consumer responses to marketing communications (H3).

## *TESTING THE THEORETICAL ISSUES*

### *Study 1: Between Subjects Approach*

*Purpose and Methodology.* Hypothesis 1 proposes that, relative to field dependents, field independents are more likely to connect same sets of beliefs to a varied list of products by a brand. Using an adaptation of the property verification task commonly used in the literature, we examine if responding to a belief about a context product facilitates participants' responses to the

same belief for a target product (Solomon and Barsalou 2001). This methodology is in line with the associative network theory typically used in the brand literature. The literature has generally conceptualized brand as an associative network in which brand associations are represented by nodes in memory and pathways, in turn, link these nodes (Keller 1993). When a node is activated by either internal or external cues, excitatory forces generated at this node spread along the pathways to other nodes. If excitation at these other nodes rises above a threshold, they become more accessible too (Barsalou 1992; Keller 1993; Wyer and Srull 1989).

Based on this theory, if people link two products to the same belief (e.g., good quality), activating the belief for one of the products should spread the activation to the other product, thereby facilitating its response. On the other hand, minimal facilitation should be observed if the products are not linked to the same belief. Procedurally, in the experiment, participants were asked to indicate whether a descriptive word (e.g., good quality) accurately described a context product shown (e.g., Sony Walkman). After responding to the context product trial, they completed some filler trials before responding to a target product trial (e.g., Sony PDA – good quality). If the context product (e.g., Sony Walkman) is connected to the same belief (e.g., good quality) as that of the target product (e.g., Sony PDA) (see Figure 1 - global structural form), responding to the context product "Sony Walkman – good quality" should raise the activation level for Sony PDA. Thus, when "Sony PDA – good quality" is encountered later, it will take less activation to pass the threshold, thereby reducing one's reaction time. On the other hand, if individual beliefs are attached to the products (see Figure 1 - local structural form), responding to "Sony Walkman – good quality" would not raise the activation level for Sony PDA. In this case, when participants respond to "Sony PDA – good quality", we would not expect to observe any significant facilitation. To test if facilitation occurs, reaction times were compared to that of a

baseline condition. By examining the scope of facilitation in reaction time for the target products, we can assess if the same beliefs are attached to different products of a brand.

*Design and Participants.* To test hypothesis 1, this study adopted a 2 (Field dependency: Field independents vs. Field dependents) X 2 (Context product: Context product vs. No context product) between subjects design. Participants in the "no context product" condition served as the control group. To assess the degree of facilitation, participants' reaction times in the context product condition were compared to those in the no context product condition. Though a separate group of participants was used as the control, randomization should negate any systematic between subjects differences across the conditions. Sixty students from a large Midwestern university were recruited for this study. Participants were paid $10 for their participation.

*Pretest.* Before conducting the study, extensive pretests were conducted to identify brands that could be used in the experiment. Two criteria guided the selection of brands: 1) the chosen brands and products needed to be familiar to the respondents as it was important that prior beliefs about the brands existed; 2) the brands used should have products in multiple product categories. This was necessary as two products for each brand were needed in the reaction time task: one as the target product and one as the context product. To identify brands with which people were generally familiar, a list of 40 brands and their products (henceforth termed as brand sets) was generated. Using seven-point rating scales, 20 pretest participants rated their familiarity with the brand (e.g., how familiar they were with the brand, how knowledgeable they were of the brand, and how often they encounter the brands in their daily lives); and the perceived similarity of the products (e.g., how similar the product pairs were, and the extent they felt the product pairs belonged to the same product category). Based on the ratings, only brand sets with familiarity ratings significantly above four were short-listed.[3] This

yielded about 25 brand sets. Among these short-listed brand sets, only those with two products perceived to be moderately similar to each other were chosen.[4] Using this criterion, another 10 brand sets were deemed inappropriate, leaving us with a final list of 15 brand sets.

Since the study aimed to test whether people connect the same sets of beliefs to different products of the same brand, it was also necessary to identify beliefs associated with each brand set. To do so, another 20 participants were given the chosen brand sets and asked to write down five words (e.g., beliefs or evaluations) they would use to describe each brand set. They were told to write only beliefs applicable to both products of each brand. The beliefs were coded and ranked from the most frequently mentioned to the least frequently mentioned. For each brand set, the most frequently mentioned belief was chosen. In the scenario where the same belief was listed for more than one brand set, the next most frequently used belief was used for one of the brand sets. This was necessary to ensure that each brand set had a unique belief.

*Stimulus Materials***.** The stimulus materials reflected two critical conditions - context product shown and no context product shown. During the experiment, related pairs of verification trials were shown – a context product trial followed by a target product trial, separated by 10 filler trials. For instance, in the context product trial, subjects verified a belief (e.g., good quality) for a context product (e.g., HP Calculator). After 10 filler trials, subjects verified the same belief for a target product (e.g., HP Desktop). In the 'no context product' condition, unrelated filler products were used in place of context products. This served as a baseline condition to check for facilitation. From the pretest, 15 brands were used in this study, each containing two products and one belief (refer to web appendix). Participants were randomly assigned to each condition (i.e., context product or no context product). The order in which the brand pairs were presented was counterbalanced. Throughout the experiment, filler trials were

included to mask the critical trials. Half of the filler trials were true trials and half were false trials. The false trials were necessary to ensure that participants did not get into the habit of choosing true for every word pair. No brand, product or descriptive term used in the critical trials was duplicated in the filler trials.

*Procedure.* The cover story told participants that the purpose of the study was to assess their opinions of some brands currently in the marketplace. Next, detailed instructions about the task were given. Participants were informed that a product (e.g., Hyundai Elantra) would be shown on the top part of the screen briefly, after which a descriptive word (e.g., stylish) would be shown on the bottom part of the screen. Using their index fingers to press two pre-assigned keys (z and /), the task was to indicate whether the descriptive word accurately described the product shown. They were instructed to respond as quickly as possible, but to avoid making errors. Participants' dominant hand was used to make true responses. Each trial began with fixation crosses at the center of the screen. After 500 ms, a product replaced the crosses. The product was shown at the top of the screen for 500 ms, followed by a blank 500 ms interstimulus interval, after which a descriptive word appeared at the bottom of the screen. The product was presented in capital letters, while the descriptive word was presented in lowercase letters. Thirty practice trials were done before the start of the critical trials to ensure that participants were sufficiently familiar with the tasks and their reaction times were stable before they proceeded to do the critical trials (Fazio 1990; Solomon and Barsalou 2001). Participants also received five one minute breaks in between trials to ensure that fatigue did not set in. In total, participants completed 350 trials. At the end of the experiment, participants' familiarity with the brands and the extent they associated each belief to the products were assessed (e.g., I think Sony Walkman is stylish – strongly agree/strongly disagree). The belief assessment would be used to assess

participants' error rates in the analysis (Fazio 1990).

Lastly, participants were asked to complete the Embedded Figures Test (EFT). The Embedded Figures Test is a perceptual task that has been widely used in the last few decades to assess field dependency (Goodenough et al. 1991; Witkin and Goodenough 1981). To complete the EFT, participants were required to locate simple figures embedded within larger, more complex patterns. The EFT assumes that for field dependents, perception is strongly dominated by the overall organization of surrounding field, making it more difficult for them to identify the embedded figures. On the other hand, since field independents view the field as being discrete from the organized ground, it should be easier for them to identify the embedded figures. Thus, the more figures one can identify, the better one is at separating the object from the field; and therefore, the more field independent one is (Berry 1991; Witkin and Goodenough 1981).

*Outliers.* Before analyzing the data, outliers were purged. Outliers represent spurious processes generated by influences or interferences (e.g., inattention) other than those of theoretical interest (Fazio 1990). Including the outliers would distort the results obtained. Consistent with previous studies, points greater than three standard deviations away from the mean were deleted (Miller 1991; Solomon and Barsalou 2001). Following this method, about 5% of data points across all conditions were deleted.

Next, error rates were assessed. Since for attitude measures, there are no objectively defined answers, Fazio (1990) proposed that the responses subjects make during reaction time experiments be compared to judgments made when time is not an issue. Here, an error "was defined as having responded 'like' during the latency task, but having rated the product more negatively than the neutral point on the questionnaire scale" (Fazio 1990). He proposed that data points with an error rate above 10% be deleted. Following this method, we deleted data from two

participants (about 3% of the entire data set). Data from another participant who clearly did not follow the given instructions were also deleted.[5]

*Confounding check.* Reaction times on the filler trials were analyzed to check if participants' positions on the speed-accuracy curve were consistent across conditions, and if the tasks affected their decision criteria (Fazio 1990). Results showed no significant difference in reaction times across conditions ($F(1, 50) = 0.17$, $p > .1$). Analysis also showed no significant difference in error rates across conditions ($F(1, 50) = 0.04$, $p > .1$). Lastly, participants' familiarity with the brand sets was examined. Analyses of the data showed no significant difference in brand familiarity across conditions ($F(1, 50) = 0.25$, $p > .1$).

*Facilitation.* To assess if facilitation differed for field dependents and field independents, first, regression analysis with field dependency as a continuous variable and context product as a dummy variable[6] was conducted. Results showed a significant simple effect of context product ($\beta = 383.94$, se = 219.22; $F(1, 49) = 3.07$, $p < .05$) and a significant two way interaction between field dependency and context product ($\beta = -24.95$, se = 10.30; $F(1, 49) = 5.86$, $p < .05$). Consistent with the recommendation of Aiken and West (1991), to probe further into the significant interaction, we examined the simple regression of field dependency on participants' reaction time in each of the context product condition. Results showed that the slope of the regression line was not significant in the no context product condition (i.e., control condition) ($\beta = -3.41$, se = 4.77; $t(49) = -.72$, $p > .1$), but was highly significant in the context product condition ($\beta = -28.33$, se = 9.61; $t(49) = -2.97$, $p < .01$). Thus, field dependency did not have a significant impact on reaction time when no context product was shown. However, when related context products were shown, field independent participants exhibited significantly faster reaction time relative to field dependent participants. This finding supported hypothesis 1.

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Insert figure 2 about here

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*Study 1a--Follow-Up Study*

*Procedure and Results.* Although study 1's results were consistent with hypothesis 1, there was a potential alternative explanation for the results. Recall that, in the experiment, participants were shown pairs of brand sets (e.g., Nike shoe – stylish and Nike apparel - stylish). We argued that if both Nike shoe and Nike apparel are connected to the same "stylish" node, then facilitation in reaction times should be observed. However, facilitation could also be obtained if Nike shoe is connected to Nike apparel, independent of their connection to "stylish". In this case, the connection occurs at the product level, and not at the belief level. If this argument is valid, then it should not matter if the same belief is given for each brand set in the experiment. That is, it should not matter if people are shown "Nike shoe – stylish and Nike apparel - stylish," or "Nike shoe – good quality and Nike apparel - stylish"; the same facilitation should be observed. To rule out this alternative explanation, a follow-up study was conducted, whereby beliefs given for the context products were different from that given for the target products (e.g., "Nike shoe-good quality" and "Nike apparel –stylish".

Another group of 20 students was recruited. The students were short listed from a group of around 40 students based on their scores on the EFT. Only field independent participants were chosen for this follow up study since the earlier results showed significant facilitation only for field independents. Thus, out of the 40 participants, only those who scored high on the EFT (i.e., those who identified more figures based on a median split) were told to proceed to the reaction

time task. In this experiment, the same sets of product pairs as that in Study 1 were used. However, in this study, we changed the beliefs given for the context products such that they were different from those given for the target products (e.g., if the target trial showed "Nike shoe – good quality", the context trial showed "Nike apparel – stylish"). Reaction times obtained were then compared to those obtained in the context product condition earlier. Analysis showed that participants reacted significantly faster when the beliefs showed in the context product trials were similar to that in the target trials ($\beta$ = -218.46, se = 41.60; $t(34) = -5.25$, $p < .01$). When the reaction times were compared to those obtained in the control condition earlier, no significant differences in the reaction times were observed. ($\beta$ = -14.69, se = 38.89; $t(32) = -.38$, $p > .1$). Thus, findings from this follow up study showed that connections at the product level could not have explained the earlier results.

*Discussion.* Results from study 1 provide preliminary evidence that field independents and field dependents structure brand information differently in memory. Consistent with the argument that field independents are more likely to link same sets of beliefs to products of a brand (H1), we find that priming field independents with another product by the same brand leads to greater degrees of facilitation for field independents compared to field dependents.

*Study 2: Within-Subject Control*

*Purpose.* Study 2 aims to replicate the findings from study 1, with two changes to the experimental procedures. First, in this study, we use a different baseline to ascertain the degree of facilitation. In study 1, participants' reaction times for the focal product trials were compared to that of an independent group of participants who were not exposed to the context product

trials. One possible issue with the use of a different group of participants for the baseline condition is that it does not control for between subject differences. Though randomization should control for systematic between subject differences and such comparisons have been used in previous research (Solomon 1997; Solomon and Barsalou 2001), in Study 2 the interest lies in whether we can replicate the findings using individual subjects as their own control. Thus, in this study, participants came to the lab twice – once to get their baseline reaction time and a second time to obtain their reaction times when they were primed with the context products.

Second, previous studies have shown that when a judgment has been made, it facilitates the speed with which the judgment could be made a second time (e.g., having responded to "good quality" may make responding to the second "good quality" faster, independent of what product was shown; Stewart et al. 1998). Though this effect could not have accounted for the results as participants in both the context product and no context product conditions saw the same belief twice,[7] to minimize the possibility that the facilitations observed might be attributed to a match in the cognitive processes engaged during context trials and critical trials, Study 2 reduced the time between the onset of the product and the belief. In Study 1, products were shown on the screen for 500 ms, followed by a 500 ms inter-stimulus interval. The 1000 ms between the onset of the product and the belief might have allowed participants to engage in some processing. In Study 2, the time for which the product was shown on the screen was reduced to 350 ms, followed by a 150 ms inter-stimulus interval. The reduction in time (from 1000 ms to 500 ms) reduced the possibility that participants were engaging in extensive processing during the trials.

*Design and Participants.* This study adopted a 2 (Field dependency: Field dependent vs. Field independent) X 2 (Context product: Context Product and No Context Product) mixed

design. Field dependency was a between subjects variable while context product was a within subjects variable. Sixty students from a large Singapore university were recruited for this study and paid $15 for their participation.

*Pretest.* To test if the stimuli used in Study 1 could be used in Singapore, a pretest was conducted. A group of 20 participants were shown the brand sets used in Study 1 and asked to rate how familiar they were with the brand sets and how strongly they associate the beliefs to the brand sets. Participants' ratings for each brand set were analyzed. Analysis showed that most people were familiar with the brands shown and associated each brand set fairly strongly with the respective belief used in the stimuli. Thus, the stimuli were found to be suitable for use in Singapore.

*Procedure and Stimuli.* Procedures for Study 2 were similar to Study1, except for the two changes discussed above: the reduction in the times in which the stimuli were shown on the screen and the inter-stimulus intervals, and the use of participants as their own control. First, participants came to the lab to complete the control condition trials. For this condition, no context products were shown. Participants responded to a list of filler trials and the target product trials (as in study 1, there were a total of 15 target product trials). Their reaction times for the target product trials were recorded. This would be used as the baseline to check for facilitation later. A week later, the same group of participants returned to the lab to do the same experiment. However, this time, before the target product trial, they were shown the context product trial, separated by 10 filler trials. After completing the trials, they were asked to complete the EFT and answer questions on their familiarity with the brand. In each session, participants completed a total of 350 trials.

*Outliers and Confounding Check.* Data points greater than three standard deviations from

the mean were deleted as well as data from participants with error rates in excess of 10% and those who did not follow the instructions, all of which led to the deletion of six participants from the data. Analysis of the reaction times on filler trials showed no significant difference in reaction times across conditions ($F(1, 51) = 0.32$, $p > .1$). There were also no significant differences in the error rates ($F(1, 51) = 1.01$, $p > .1$) and familiarity across conditions ($F(1, 51) = 1.11$, $p > .1$).

*Facilitation.* Since this study adopted a within-subjects design, a repeated-measures analysis was run. Participants' reaction times in the control condition and context product condition were included as a within subjects factor and field dependency was included as a continuous variable. Analysis revealed a significant interaction between field dependency and context product condition ($F(1, 52) = 4.93$, $p < .05$). Specifically, analysis showed that field dependency did not have a significant effect on participants' reaction time in the control condition ($\beta = 21.91$, se = 19.65; $t(52) = 1.12$, $p > .1$). However, when primed with a context product by the same brand, field independents responded significantly faster than field dependents ($\beta = -23.59$, se = 4.34; $t(52) = -5.44$, $p < .01$). These results replicated the findings in Study 1.

*Discussion.* Study 2 shows again that field independents exhibit significantly greater degrees of facilitation when primed with a context product by the same brand, relative to field dependents. The convergence of results using two different baselines in the studies provides evidence to support our contention that field independents are more likely to connect the same belief to multiple products of a brand, as compared to field dependents and also suggests that both baseline measures are valid in the assessment of facilitation. Building on these findings, Study 3 examines if these differences are be affected by level of expertise (H2).

*Study 3: Moderating Role Of Expertise*

*Design and Participants.* H2 proposes that expertise magnifies the impact of field dependency on cognitive structures. To test this hypothesis, 160 students from a large Midwestern university participated in this study. A 2 (Field dependency: Field Dependent vs. Field Independent) X 2 (Expertise: Expert vs. Novice) X 2 (Context Product: Context product and no context product) between subjects design was adopted. The first two factors were measured.

*Pretest and Stimuli.* To examine the impact of expertise, the automobile category was chosen. It is a product category with broad familiarity but there are substantial differences in how much people know about cars. At one end, there are people who think that all cars are the same. At the other end, there are people who delve into specific details (e.g., transmission efficiency) of cars. Moreover, there are multiple brands of automobiles in the market with which people are familiar, thereby providing the brands necessary for multiple trials in the experiment.

To choose the brands and models for the experiment, pretest procedures similar to those in the earlier studies were adopted. First, a list of all car brands in the market was generated. Next, 20 students rated the extent to which they were familiar with the brands (e.g., Ford) and a specific make (e.g., Ford Focus) on a scale of 1-7, with 7 = very familiar. Using the same scale, they also rated the extent to which they felt that various types of cars (e.g., sedan, sport utilities vehicle, truck) were similar to one another. Based on the familiarity ratings, 12 brand sets and two models within each brand perceived to be moderately dissimilar to each other were identified. [8] Pretests showed that generally sedans were rated to be moderately dissimilar to sport utilities vehicles and trucks ($M$ = 3.6 and 3.2 respectively). For this reason, one sedan and one

sport utilities vehicle (or truck) from the 12 brand sets short-listed earlier were chosen. Sedans were used as context products, and sports utilities vehicles or trucks were used as target products. As in earlier experiments, a second group of participants was asked to write down five words they would use to describe both cars from each brand. Beliefs most frequently mentioned were used in the experiment. In the event of duplication of beliefs, the next most frequently mentioned term was used for one of the brands (refer to web appendix for stimuli).

*Procedure.* Procedures for this study were similar to that in the previous studies. There were 12 critical trials for this study. Across the two conditions (context product and no context product), brand sets occurred in the same absolute position as in the trials. The brands were divided into three groups and the order in which they were presented was randomized and counterbalanced. Non-car-related filler trials were also included in the experiment to mask the critical trials. Again, ten filler trials separated the context trial and the target trial. In total, each participant responded to 284 trials. At the end of the study, participants were asked to indicate their car-related expertise on a five-item, seven-point scale (items include familiarity with cars, knowledge about cars, attention to detailed specifications of cars etc.) adapted from Mitchell and Dacin (1996).

*Outliers and Confounding Check.* Eliminating data points greater than three standard deviations from the mean removed 3% of the data points. Respondents with error rates in excess of 10% and those obviously not following the instructions were also identified, leading to data from another six participants being deleted. Analysis of the reaction times in filler trials showed no significant differences across conditions ($F(1, 141) = 1.03$, $p > .1$).

*Facilitation.* Regression was run with field dependency and expertise as continuous variables and context product as a dummy variable. The two-way interaction between expertise

and context product was significant ($\beta$ = 133.90, se = 76.34; $F(1, 140) = 3.08$, $p < .05$). More importantly, the 3-way interaction between field dependency, expertise and context product was also significant ($\beta$ = -6.72, se = 3.54; $F(1, 140) = 3.60$, $p < .05$). All other effects were not significant. To further analyze the interaction, simple regressions of field dependency on participants' reaction times at different levels of expertise and across the two context product conditions were conducted. Since expertise was a continuous variable, the simple regressions were run at expertise levels one standard deviation above and below the mean (Aiken and West 1991), resulting in regressions at each of the four combinations of expertise level and context product conditions.

Analysis showed that for novices, increasing levels of field dependency did not have a significant effect on their reaction time in the control condition ($\beta$ = .36, se = 3.92; $t(140) = .01$, $p > .1$). In the context product condition, increasing levels of field dependency only had a marginally significant effect on their reaction time ($\beta$ = -4.85, se = 3.79; $t(140) = 1.28$, $p < .1$). On the other hand, for experts, though increasing levels of field dependency did not have a significant effect on participants' reaction times in the control condition ($\beta$ = -2.72, se = 5.96; $t(140) = .62$, $p > .1$), it led to significantly greater levels of facilitation in the context product condition ($\beta$ = -24.78, se = 3.22; $t(140) = 7.70$, $p < .01$). This pattern of results supports H2.

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Insert figure 3 about here

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*Discussion.* Results from this study are consistent with the argument that field dependency and expertise interact to affect the way one structures information. Findings show

that greater expertise exacerbates the impact of field dependency on the way people structure information. Specifically, field independent experts demonstrated significantly greater facilitation relative to field dependent experts. However, such differences were not observed for novices.

Thus, overall, findings from studies 1-3 provide evidence that field dependents and field independents store information differently in memory. Our interest now lies in the effects of such differences on consumer attitudes towards marketing communications (H3). Studies 4 and 5 address this question by examining whether the manner in which field dependents and field independents store information affects how they respond to various types of advertisements.

## *CONSEQUENCES FOR MARKETING COMMUNICATIONS*

### *Study 4: Attitude Towards Ad*

*Objective.* Study 4 examines whether differences in the way people store information affects how they evaluate various types of advertisements (H3a and 3b). Specifically, since field independents are more likely to store brand level information, marketing communications should be done more at the brand level to appeal to field independents. On the other hand, since field dependents are more likely to store product level information, they would prefer advertisements that focus on product level beliefs.

*Design and Participants.* To test the above proposition, we designed a 2 (Field dependency: Field Independent vs. Field Dependent) X 2 (Type of ad: Brand Level vs. Product Level) between subjects experiment. As in the earlier studies, field dependency was measured

using EFT. Type of advertisement was manipulated. Eighty students from a large Singapore University were recruited for this study and paid $5 for their participation.

*Stimuli and Procedure.* The cover story told participants that the purpose of the study was to assess opinions of certain brands currently in the marketplace. Participants were then shown an advertisement about Nike, a brand with which most people are familiar. Recently, there had been a shift in Nike's advertising strategy, with greater emphasis on building overall brand beliefs (e.g., woman power) and less focus on specific products. Thus, at the time of the study, it was very appropriate.

Two versions of the advertisement were developed with each focusing on the technology going into producing Nike products. However, the brand level advertisement focused on Nike representing good technology, while the product level advertisement focused on the good technology that went into producing Nike running shoes. The brand level advertisement showed a picture of a couple jogging. The text on the advertisement read "Empower yourself with good technology. Just do it". The product level advertisement also showed a picture of a couple jogging. In addition, the picture included a zoom-in image of the Nike running shoe one of the runners was wearing. The text read "Running shoes with good technology. Just do it" (see stimuli in the appendix). After seeing the advertisement, participants completed questions on their attitude towards the advertisement and some demographic questions. Lastly, participants were asked to complete the EFT, before being debriefed.

*Attitude towards the Ad.* Attitude towards the ad was measured using a three-item scale (favorable /unfavorable, like/do not like, positive/negative) that demonstrated good reliability ($\alpha$ = 0.90). Analysis was done on the mean of the three items. Regression with field dependency as a continuous variable and type of advertisement as a dummy variable showed significant simple

effects for field dependency ($\beta 1$ = .13, se = .03; $F(1, 76) = 17.87$, $p < .01$) and type of advertisement ($\beta 2$ = 4.29, se = .77; $F(1, 76) = 31.27$, $p < .01$). More importantly, it also showed a significant two-way interaction ($\beta 3$ = -.22, se = .04; $F(1, 76) = 28.44$, $p < .01$). To probe further into the two-way interaction, attitude towards the ad was regressed on field dependency for each of the two types of ad (i.e., brand level ad and product level ad). T-tests on the two slopes showed that both slopes were significant, but the slopes were in different directions (Product level ad: $\beta$ = -.09, se = .03; $t(76) = -3.27$, $p < .01$; Brand level ad: $\beta$ = .13, se = .03; $t(76) = 4.43$, $p < .01$). Consistent with expectations, the more field independent one is, the more one prefers the brand level ad, relative to the product level ad. On the other hand, the more field dependent one is, the more one prefers the product level ad, relative to the brand level ad.

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Insert figure 4 about here

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*Study 5: Attitude towards Umbrella Branding Communications*

*Objective*. Study 5 changes the advertising context and examines if field dependents and field independents respond differently to brand level versus product level advertisements. In many instances, companies that produce varied products inform consumers that they are the parent brand for their different sub-brands or products. One way they do so is to put all of the products in a single advertisement, with the parent brand printed boldly across the advertisement to inform people that they own these products. Such advertisements are frequently used by Procter and Gamble and Johnson and Johnson. An intended effect of such advertisements is to

build overall brand equity for the parent brand. Our interest lies in how field dependents and field independents react to such advertisements. Since these advertisements are typically non product-specific and focused on building overall brand beliefs, field independents should view such advertisements more favorably than field dependents.

*Design and Participants.* This study adopted a 2 (Field dependency: Field Independent vs. Field dependent) X 2 (Type of ad: Brand level versus Product level) between subjects design. As in Study 4, field dependency was measured while type of advertisement was manipulated. Eighty students from a large Singapore university were paid $5 to participate in this study.

*Stimuli and Procedure.* The cover story indicated that the purpose of the study was to examine people's attitudes towards an advertisement. Johnson and Johnson was chosen as the focal brand in this study as it has a number of products under its brand with many of them familiar to the consumer. For the brand level advertisement, a varied list of products under Johnson and Johnson were featured in the same advertisement. These products covered many different product categories (e.g., Baby shampoo, Band-aid, Acuvue contact lens, Carefree pantiliners, Tylenol and Neutrogena Deep Clean). All the products were placed together in a cluster and the text on the advertisement reads "Johnson and Johnson: You can always trust us". The product level advertisement featured only the baby products (Baby soap, Baby shampoo, Baby powder, Baby oil, Baby wash and Baby wash cloth) with the same text (see the web appendix). Pretests showed that there was no difference in people's attitude towards the list of products shown in the advertisement ($p > .1$). After seeing the advertisement, participants completed questions on their attitudes towards the advertisement, attitude towards the products featured in the advertisement, and some demographic questions. Lastly, they were asked to complete the EFT.

*Attitude towards the Ad.* As in study 4, attitude towards the ad was measured using a three-item, seven-point scale ($\alpha = 0.85$). Regression on the mean of this scale with field dependency as a continuous variable and type of advertisement as a dummy variable revealed significant simple effects for field dependency ($\beta 1 = .10$; se = .03; $F(1, 77) = 12.50$, $p < .01$) and type of advertisement ($\beta 2 = 3.53$; se = .69; $F(1, 76) = 26.11$, $p < .01$). The two way interaction between field dependency and ad type was also significant ($\beta 3 = -.20$; se = .04; $F(1, 76) = 28.35$, $p < .01$). Simple regressions of attitude on field dependency in the two ad conditions showed that both slopes were significant (Brand level ad: $\beta = 0.10$, se = .03; $t(76) = 3.51$, $p < .01$; Product level ad: $\beta = -.10$, se = .02; $t(76) = -4.02$, $p < .01$). Mirroring the findings in Study 4, results showed that the more field independent one is, the more positive one feels about the brand level ad. Conversely, the more field dependent one is, the more positive one feels about the product level ad. .

*Discussion*. These findings are consistent with those observed in Study 4 showing that field independents respond more positively to advertisements that focus on building overall brand beliefs. Such advertisements are congruent with their tendency to abstract and generalize information across products and are generally preferred.

## *GENERAL DISCUSSION*

### *Summary*

Results from five studies document systematic differences in the way field dependents and field independents structure brand information in memory and in the types of advertisements they prefer. By showing differential degrees of facilitation when field dependents and field

independents were primed by products of the same brand, the findings provide evidence that field independents are more likely to abstract information from episodic experiences and connect the same brand level beliefs to varied products by the brand. On the other hand, field dependents focus more on individuating information of each experience and are more likely to store product specific beliefs. Expertise level exacerbates the impact of field dependency on cognitive structures and such differences have important implications on the way field dependents and field independents respond to marketing communications.

*Implications*

Contributions from this research can be assessed on a few fronts. First, our findings shed light on the important role field dependency plays in affecting which structural form dominates in consumers' minds. Though this research focuses primarily on the way people store brand information, broader implications exist for cognitive structures of categories in general, as the underlying theory is applicable to most categories. The results also highlight field dependency as an important antecedent variable of cognitive structures, complementing existing variables such as environmental variables (e.g., socialization process) and cognitive abilities (John and Whitney 1986; Wyer and Srull 1989).

Conceptually, this research also helps to reconcile the global and local structural frameworks proposed in the literature. Researchers have traditionally assumed that people abstract information from experiences to form knowledge. However, recent research argues that this is not necessarily true (Solomon and Barsalou 2001). This research helps to reconcile the two conflicting perspectives by showing that both views could be valid. For field independents,

the global structural form is more dominant while the local structural form is more dominant in the minds of field independents.

It is important to reiterate that we are not arguing that field dependents would always store information consistent with the local form approach. Nor do field independents always store information consistent with the global form approach. Rather, it is a matter of tendency. Processing style affects the type of information focused on and the importance placed on different information, logically affecting the way information is stored and structured in memory. However, many situations exist where such tendencies would be violated (e.g., when products are very similar or very dissimilar). In this research, only moderately dissimilar products were examined as these are the ones whereby more ambiguities are present, allowing different processing styles to exert a greater influence.

In the area of expertise, existing literature is unclear on how the cognitive structures of experts differ from that of novices. Conflicting findings have been reported in the literature, with some suggesting that experts possess more abstract cognitive structures (Alba and Hutchinson 1987; Scott, Osgood and Peterson 1979) and others suggesting that experts possess more concrete cognitive structures (Mitchell and Dacin 1996). The findings here may help to reconcile this conflict by showing that whether experts possess more abstract or concrete cognitive structures is affected by their field dependency.

Managerially, the tendencies for field independents to store brand level beliefs and field dependents to store product level beliefs have important implications for how each would react to various branding strategies. Since brand equity is a function of the content and structure of brand knowledge that consumers possess (Christensen and Olson 2002), knowing how brand associations are connected can help companies make better branding decisions (Aaker and Keller

1990; Keller 2003). For instance, an implication of the structural differences discussed here is that different types of information may be differentially accessible to consumers. Ng and Houston (2006) show that in a free recall task those with an interdependent self are more likely to retrieve exemplars of a brand while those with an independent self are more likely to retrieve overall brand beliefs. The findings here suggest that one reason why independents and interdependents may retrieve different information is due to the way such information is structured in their mind. Such differences, in turn, point to interesting implications for how companies should communicate to consumers in different cultures. Research in the cross-cultural literature has shown that Easterners, whose chronic self tends to be interdependent, are generally more field dependent than Westerners, whose chronic self tends to be independent (Nisbett et al. 2001). Findings from our research would suggest that brand level advertising would be more appropriate for consumers in Western cultures, but this method may not be equally effective in Eastern cultures. Companies should consider adopting more product-specific advertisements when targeting Easterners. Recent advertisements seem to be moving towards a trend of developing abstract concepts about brands, without promoting specific products (e.g., Nike advertisements focus on the idea of women taking control of their own lives and the slogan "Just do it"). Findings from this research would suggest that such advertisements might not be suitable in Eastern cultures.

*Limitations and Future Research*

The findings reported here may have indirect implications on the complexity of cognitive structures. The two key components of cognitive structure complexity are the number of constructs one has in the domain and the degree of discrimination among the constructs (Durand

and Lambert 1983; Kanwar, Olson and Sims 1981; Zinkhan and Biswas 1988). The more constructs one has and the more differentiated the constructs are, the more complex the cognitive structure. Since field dependents tend to store individuating information for each product, it may be argued that they possess more complex and concrete cognitive structures relative to field independents. Further research may examine this proposition.

The stimuli used here only tested the degree of facilitation for pairs of products that are moderately dissimilar. However, many brands have products which vary in their similarity or differences. We cannot say definitively to how people structure information for all products of a particular brand. Further research might examine what happens if products are more similar or different from each other.

Finally, the studies only test the extent to which people connect cognitive representations (such as beliefs) to products. However, consumer brand knowledge comprises both cognitive and non-cognitive representations (Christenson and Olson 2002; Keller 2003). Future research might examine if the findings are also applicable to the way people structure non-cognitive representations. Moreover, this research only focuses on how associations of a brand are linked. It would be fruitful to examine how associations of different brands are linked. Future research should also examine how other variables (e.g., brand loyalty) affect cognitive structures. For instance, people who are very loyal to a brand might be more likely to possess a common set of beliefs connected to all products of the brand, relative to those who are less loyal.

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**FOOTNOTES**

1 Note we label these as beliefs and not attributes as we feel that a belief places a brand on a level of an attribute. Quality is an attribute, but "good quality" implies a favorable evaluation on that attribute. Although both field dependents and field independents would possess a quality attribute in memory, we argue that they would differ in their evaluation of this attribute for the products. Field independent would possess an overall belief about the brand on that attribute while field dependents would possess different beliefs on that attribute for each product.

2 Note that we are focusing only on products that are moderately similar or dissimilar. It is not necessarily the case that field dependents would never connect same sets of beliefs to products by a brand. It is also unrealistic to expect field dependents to possess separate beliefs for a large variety of product as it would be too taxing cognitively. As discussed earlier, for products that are very similar or dissimilar, there should be minimal differences in the way the information is treated across the two groups.

3 The mean familiarity ratings for the 25 brands ranged from 3.2 to 5.6.

4 As discussed, people will usually connect products that are very similar to the same beliefs and store different beliefs for very dissimilar products. The interesting structural differences are more likely to happen when products are only moderately similar. Thus, our focus here is on products that are moderately similar.

5 The participant was using just one hand to press the keys when he was specifically told to use both hands.

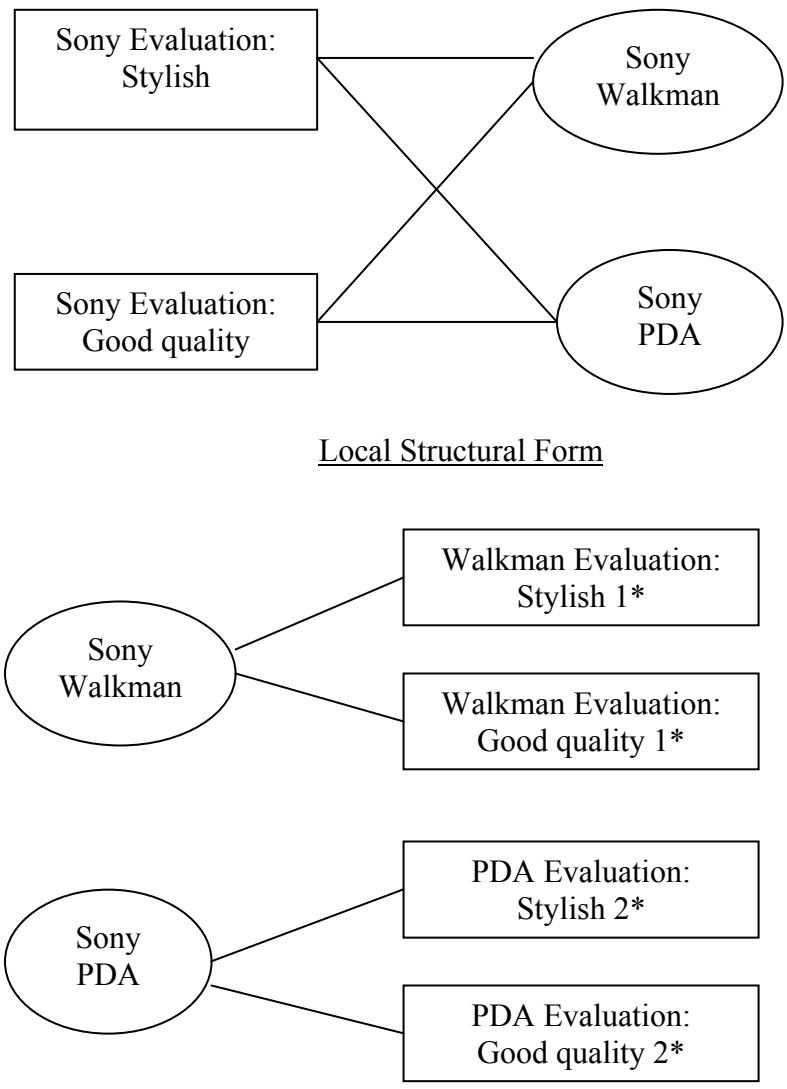
6 No context product condition was coded as 0 and context product condition was coded as 1.

7 Participants in both conditions saw the belief once in the context product trial (or baseline trial) and once in the target trial. Therefore, if the results obtained were due to people processing the

8 As in studies 1 and 2, we were more interested in the situation when products are moderately dissimilar. Moreover, research has also shown that the impact of expertise is greatest when things are moderately different (Spence and Brucks 1997).same information faster, we should observe facilitation in all conditions and not only in the context product trial condition.

Figure 1

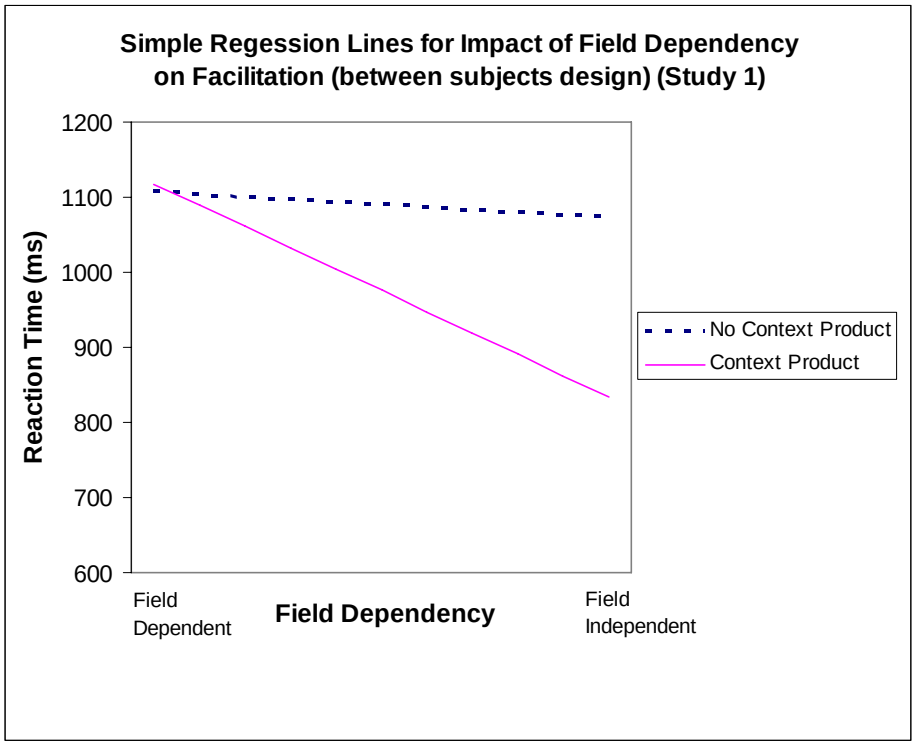
Illustration of Local versus Global Structural Form




**Note**:

1) It is not the purpose of this illustration to map out the entire cognitive map for Sony. A complete cognitive map for Sony will be more complex than what is shown. This illustration only meant to show, in pictorial form, the difference between global and local structural form (i.e., whether the same sets of beliefs are attached to the products, or are separate beliefs attached to each product).
2) Note "stylish 1" is assumed to be different from "stylish 2". Similarly, "good quality 1" is meant to be different from "good quality 2". The different notations are used to highlight different quality and style perceptions consumers may store for each product.

Figure 2


Simple Regession Lines for Impact of Field Dependency on Facilitation (between subjects design) (Study 1)
1200
1100
1000
900
800
700
600
Reaction Time (ms)
No Context Product
Context Product
Field Dependent
Field Dependency
Field Independent

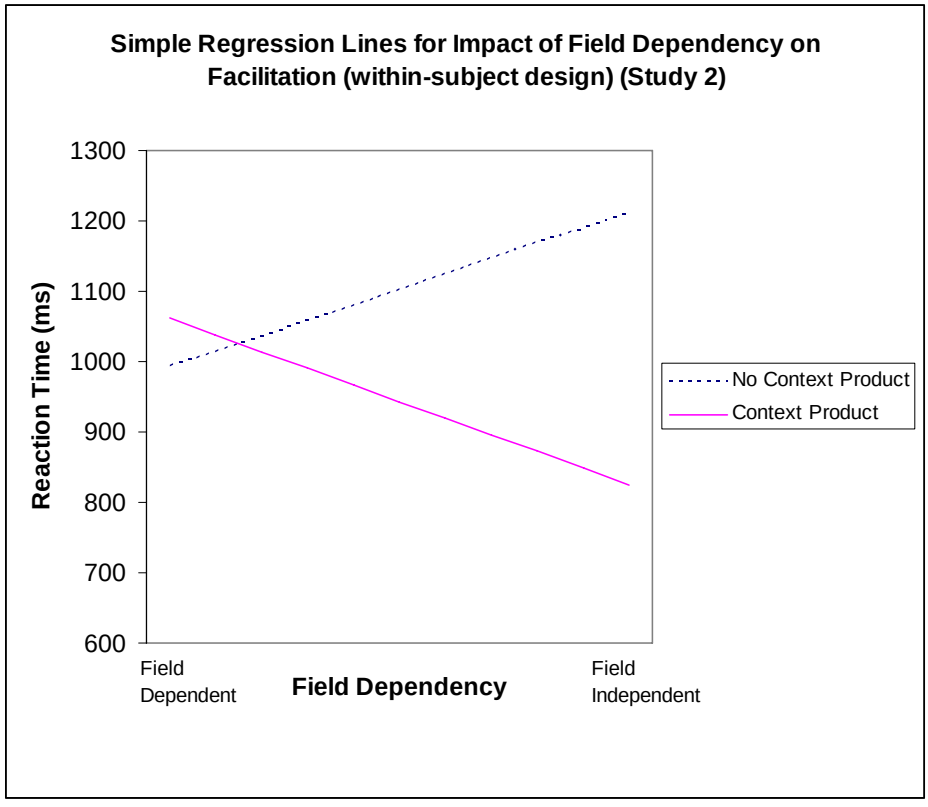
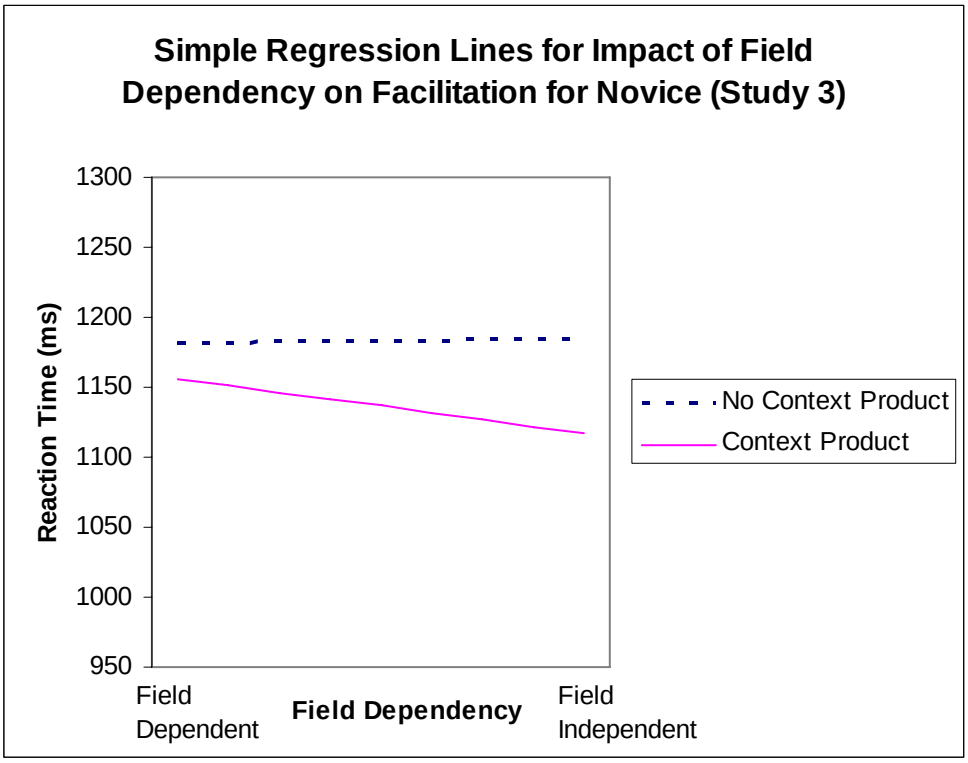

Simple Regression Lines for Impact of Field Dependency on Facilitation (within-subject design) (Study 2)
1300
1200
1100
1000
900
800
700
600
Reaction Time (ms)
No Context Product
Context Product
Field Dependent
Field Dependency
Field Independent

Figure 3


Simple Regression Lines for Impact of Field Dependency on Facilitation for Novice (Study 3)
Reaction Time (ms)
1300
1250
1200
1150
1100
1050
1000
950
Field Dependent
Field Dependency
Field Independent
No Context Product
Context Product

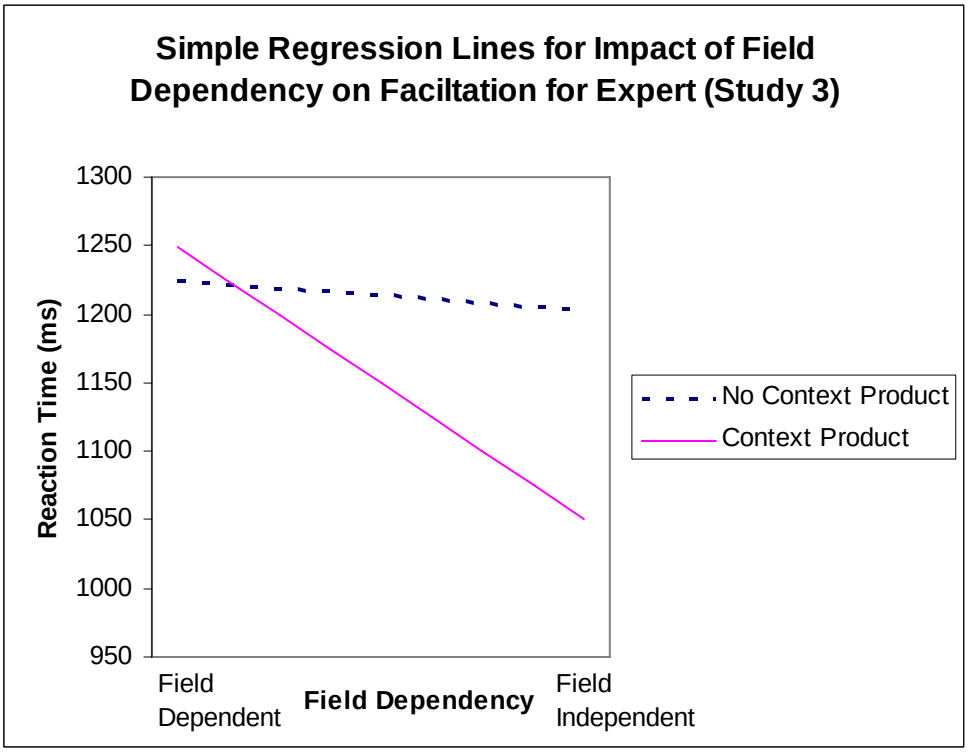

Simple Regression Lines for Impact of Field Dependency on Faciltation for Expert (Study 3)
Reaction Time (ms)
1300
1250
1200
1150
1100
1050
1000
950
Field Dependent
Field Dependency
Field Independent
No Context Product
Context Product

Figure 4

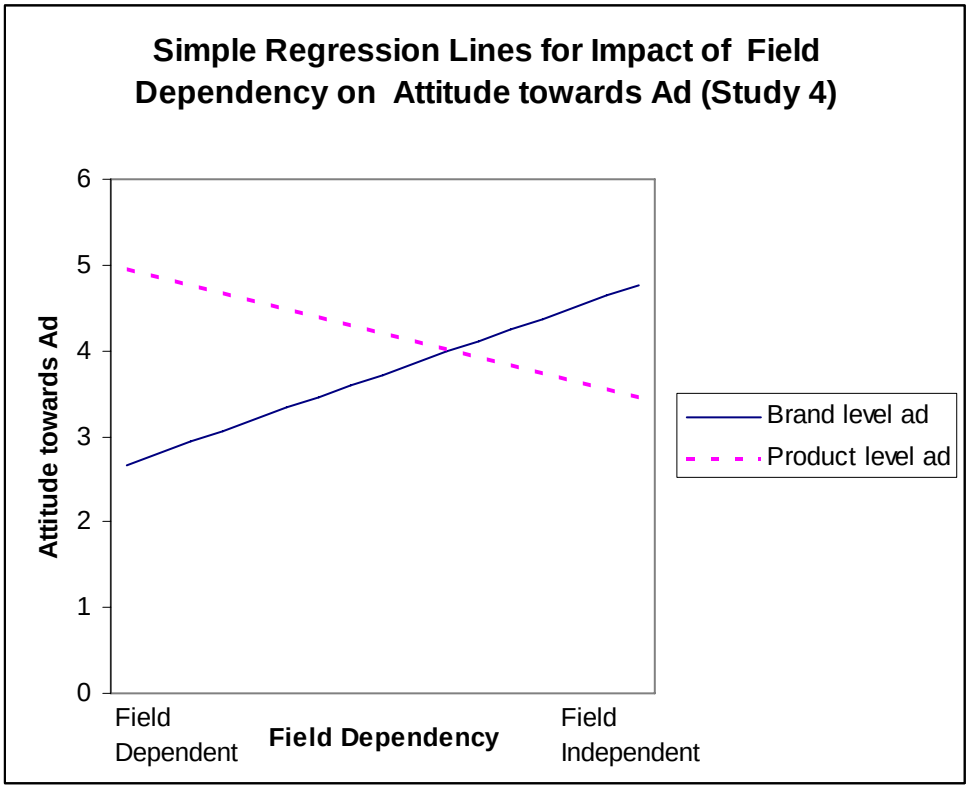
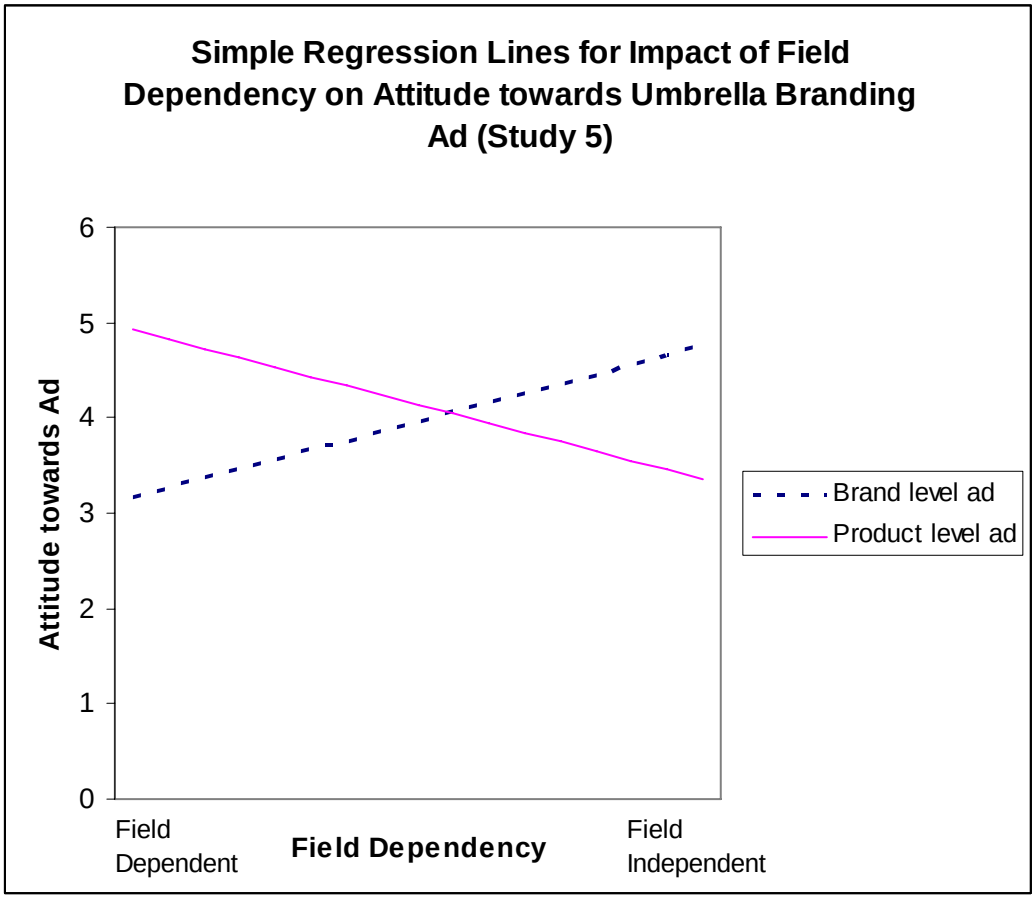

Simple Regression Lines for Impact of Field Dependency on Attitude towards Ad (Study 4)
Attitude towards Ad
6
5
4
3
2
1
0
Field Dependent
Field Dependency
Field Independent
Brand level ad
Product level ad

Figure 5


Simple Regression Lines for Impact of Field Dependency on Attitude towards Umbrella Branding Ad (Study 5)
Attitude towards Ad
6
5
4
3
2
1
0
Field Dependent
Field Dependency
Field Independent
Brand level ad
Product level ad

Appendix

Stimuli for Study 4

**Brand level ad**

Empower yourself with Good Technology. JUST DO IT

**Product level ad**

Running shoes with Good Technology. JUST DO IT

# WEB APPENDIX

*STIMULI FOR STUDY 1*

| **Brand** | **Target Product** | **Context Product** | **Belief** |
|---|---|---|---|
| Sony | Walkman | Pda | stylish |
| Hewlett Packard | Desktop | Calculator | good quality |
| Reebok | Cross-Trainer | Sweatshirt | comfortable |
| Nestle | Nestea | Kitkat | tasty |
| Kodak | Camcorder | Film | high resolution |
| J&J | Conditioner | Powder | gentle |
| Samsung | Refridgerator | Cellphone | dependable |
| Logitech | Mouse | Quickcam | user-friendly |
| Ralph Lauren | Oxford Shirt | Bed Sheet | trendy |
| Wilson | Tennis Racquet | Basketball | high performance |
| Kelloggs | Rice Krispies | Waffle | nutritious |
| Panasonic | Dvd Player | Iron | hardy |
| Ivory | Soap | Detergent | refreshing |
| Canon | Copier | Film Camera | reliable |
| Glad | Sandwich Bag | Wrap | durable |

*STIMULI FOR STUDY 3*

| **Brand** | **Target Trial** | **Context Trial** | **Belief** |
|---|---|---|---|
| Ford | Explorer | Focus | tough |
| Honda | CRV | Accord | high performance |
| Hyundai | Santa Fe | Sonata | good value |
| Toyota | Rav4 | Corolla | reliable |
| Chevrolet | Silverado | Cavalier | sturdy |
| Nissan | Pathfinder | Altima | trustworthy |
| Kia | Sportage | Rio | inexpensive |
| Mitsubishi | Eclipse | Galant | fuel efficient |
| Pontiac | GrandAm | Vibe | sporty |
| Dodge | Durango | Stratus | powerful |
| Buick | Rendezvou | Century | luxurious |
| Subaru | Outback | Impreza | rugged |

*STIMULI FOR STUDY 5*

**Brand level ad**


Johnson & Johnson

You can always trust us !

**Product level ad**


Johnson & Johnson

You can always trust us !