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Context is Everything: Facilitating Fit When New Products are Ambiguous

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A thesis submitted in partial fulfillment of the requirements for the degree in Doctor of Philosophy

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Abstract

Researchers have long believed that consumers adjust their functional expectations in accordance with a product's physical appearance. Recently this belief has come under fire. Product categories are converging rapidly. Take modern cell phones; the physical appearance of the iPhone is only tangentially related to the breadth of its functionality. Examples like this have sparked a wealth of interest in exploring how consumers generate inferences for products with functions that span multiple categories. One important finding is that consumers tend to generate functional inferences based mainly on the knowledge of a single category. This suggests that new hybrid products are not necessarily seen as hybrid, at least not when it comes to functional expectations.

Although highlighted as a major marketing challenge, very little progress has been made in explaining why single category beliefs occur, and why any one particular category is chosen above another. I seek to mend this gap by illustrating how context frames single category beliefs by inferring the manufacturer's intent. Specifically, I demonstrate that context alters functional expectations (*study 1*), attribute preference (*study 2*), perceptions of proto-typicality (*study 3*), and attitude stability (*study 4*). When combined, the four studies offer a comprehensive extension of the literature on product categorization, and more importantly, illustrate the need to account for context when estimating how consumers will respond to new products with functions that span multiple categories.

Keywords: Hybrid Products; Thematic Processing; Schema Congruity; Attribute Preference; Single Category Beliefs; Context Effects

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Table of Contents

List of Tables

List of Figures

List of Appendices

Chapter 1

> "*Always design a thing by considering it in its next larger context—a chair in a room, a room in a house, a house in an environment, and environment in a city plan*." —Eliel Saarinen (architect)

1 Introduction

What does it mean when someone says, "I know a cellphone when I see one"? Although intuitively appealing, the statement presupposes that consumers navigate their world in a very precise and particular way. Indeed, this is not news. Researchers have long believed that consumers adjust their functional expectations in accordance with a product's physical appearance. Yet recently this belief has come under fire. Product categories are converging rapidly. Take modern cellphones; the physical appearance of the iPhone is only tangentially related to the breadth of its functionality. Examples like this have sparked a wealth of interest in exploring how consumers generate inferences for products with functions that span multiple product categories (Gill & Dubé, 2007; Gregan-Paxton, Hoeffler, & Zhao, 2005; Lajos et al., 2009; Moreau, Lehmann, & Markman, 2001a; Moreau, Markman, & Lehmann, 2001b; Noseworthy & Goode, 2011; Rajagopal & Burnkrant, 2009).

A dominant finding in this work is that consumers tend to generate functional inferences based mainly on the knowledge of a single category (Gregan-Paxton et al., 2005; Moreau, et al., 2001b; Noseworthy & Goode, 2011). This suggests that new hybrid products are not necessarily seen as hybrid, at least not when it comes to functional expectations. Rajagopal and Burnkrant (2009) coined this "*the single category belief*

problem," and identified it as a major challenge for marketers given that consumers rely on category beliefs to generate product inferences, expectations, and evaluations (p. 232).

The major concern with single category beliefs is that they lead consumers to ignore key attributes from a hybrid product's supplementary category (i.e., the category that does not frame the single category belief). Hence, single category beliefs pose a serious challenge for marketers because they bias consumer inferences. For example, Noseworthy and Goode (2011) found that when people were exposed to a new mountable tablet (a novel take on the iPad) with television-related functions and computer-related functions, people anchored only on *one* of the categories to generate functional expectations, and once formed, these beliefs proved resilient over time. It is in this respect that the single category belief problem is an activation problem. The first category that activates is the only category considered, and as long as the category submits a viable answer, all other categories are ignored (Murphy & Ross, 2010).

Despite the concern, very little progress has been made in explaining why single category beliefs occur in the first place, and why any one particular category is chosen above another. The goal of this dissertation is to illustrate that people use the surrounding context to set the base referent for new ambiguous products, and this has significant implications beyond categorization. Specifically, I find that context influences functional expectations (*study 1*), attribute preference (*study 2*), perceptions of proto-typicality (*study 3*), and most importantly, attitude stability (*study 4*). When combined, the four studies offer a comprehensive extension of the literature on product categorization, and in particular, they illustrate the need to account for context when estimating how consumers will respond to new hybrid or boundary-spanning (cross-category) products.

Chapter 2

2 Conceptual Background

In marketing, we tend to adopt our theories from root disciplines, be they sociology, economics, or psychology. With theory comes a standard of rigor and conduct. Consider the broad area of *information processing*; researchers exploring categorization and dual processing models have put intense effort into stripping away the external context to explore a phenomenon in the absence of confounding factors. We refer to this quite fondly as experimental control. Indeed, the scientific method dominates the root discipline of cognitive psychology. Hence, it is not surprising that we design consumer experiments divorced from context. This has led many consumer researchers to trade off external validity for the sake of internal validity—a trend that has led some to question the fundamental identity of consumer behaviour (Deighton, 2007; MacInnis & Folkes, 2010).

The problem with such a strong emphasis on experimental control is that it neglects to acknowledge that consumption is widely contextual. Hence, context is not something marketers should dismiss, rather it should be embraced because it is fundamental to consumer behavior. In recent years, several consumer researches have examined the contextual variability of well-established theories (e.g., Kim & Meyers-Levy, 2008; Milberg, Sinn, & Goodstein, 2010). The authors typically couch their contribution as a boundary condition. It is my contention that many of these so-called boundary conditions are not boundary conditions at all, but fundamental parameters. That is, the context does

not moderate the theory, but rather the theory operates exclusively in a very specific context. There is a dramatic difference in how we frame the two. The former gives implicit permission to dismiss context as just another variable that may attenuate a phenomenon, whereas the latter acknowledges that context defines where and when a phenomenon will manifest. It is my contention that marketers can and should achieve a level of experimental control while still accounting for context.

2.1 Of Artifacts and Natural Kinds

There is a general belief that when categorization is ambiguous (i.e., when a product's appearance, label and/or functions suggest conflicting product categories), consumers tend to rely on a product's physical appearance to generate inferences and expectations (Gregan-Paxton et al., 2005). This observation fits the common view in cognitive psychology that perceptual cues dominate human categorization (Nosovsky, 1986; Sloman, 1998). There are competing views, however, that suggest conceptual cues dominate (Yamauchi & Markman, 2000; Yamauchi, 2005). The discrepancy is in the type of category.

With what are referred to as *artifact categories* (things built by humans), perceptual cues are weighted more heavily than conceptual cues; conversely, with what are referred to as *natural categories* (naturally occurring objects: apples, dogs, trees, etc.), conceptual cues are weighted more heavily (Matan & Carey, 2001). It would seem that only the former is relevant when discussing hybrid products. This is important because artifact categories are typically organized by function (Barton & Komatsu, 1989), and although

conceptual cues provide some expectations, physical appearance is highly correlated with assumed functionality (Matan & Carey, 2001). Thus, unlike natural categories, artifact categories may be subject to perceptual similarity for functional inferences. If true, we would indeed know a cellphone when we saw one. Yet there is reason to question this assumption.

Generally speaking, categorization is believed to be graded for artifact kinds but absolute for natural kinds (Diesendruck & Gelman, 1999; Estes, 2003; 2004). Consider man's best friend; the concept of a dog is absolute, which is to say a *Chihuahua* and a *Great Dane* share equal membership. A Chihuahua may be an atypical dog, maybe even an ugly dog, but it is a dog nonetheless. The concept of a cellphone, on the other hand, is graded (i.e., any one cellphone can be more or less representative of the cellular category). Today's cellphones, or as they are aptly referred to as smartphones, can *sort of* be computers or even digital cameras. This is important because a graded structure supports the dominant view of perceptual similarity in artifact recognition (Matan & Carey, 2001). Conversely, an absolute structure supports the dominant view of essentialism in natural kinds (Medin & Ortony, 1989). Yet perceptual similarity (e.g., Nosofsky, 1986; Rosch & Mervis, 1975) has proven to be a less than satisfactory account of artifact recognition, because it is widely regarded as too unconstrained (Malt & Johnson, 1992; Murphy & Medin, 1985). Ironically, the opposing, more constrained views have also fallen short because they cannot account for gradients in perceived typicality (Smith & Medin, 1981). This has led some researchers to combine the two. One researcher in particular, Paul Bloom (1996), has offered a theory that holds promise. It is a theory of intuition, or better yet, a theory of intent.

Regardless of the differences, a Chihuahua is no less of a dog than a Great Dane, but any given cellphone may be more or less representative of the cellular category. Such is the difference between absolute and gradient membership. Bloom (1996; 1998) argued that artifacts lack an absolute essence because they are governed by intent. Indeed, this makes sense; consumer goods are designed to serve a very precise function or desire. Although consumers may believe dogs have some internal property or essence that makes them dogs, no consumer holds this belief about cellphones. The cellphones of today barely resemble those of yesterday. If your cellphone were to break, it would not cease to be a cellphone. Similarly, if you call your mother on a cordless phone, this would not make it a cellphone. Of course, if asked to describe how a cellphone is different from a cordless phone, we could do so with ease. Yet accessing this knowledge is inefficient. This is not something we do when navigating the consumption environment.

Implicit in the above line of reasoning is a temporal distinction. Intuition would suggest that a cellphone is a cellphone when it allows a user to make cellular calls. However, research supports the opposite; physical appearance drives functional inferences (Gregan-Paxton et al., 2005). A cellphone is a cellphone when it looks like one. Its function—its ability to make cellular calls—is inferred given that the object was created with intent (Bloom, 1996). After all, why would something look like a cellphone if it did not have cellular capabilities? This is a far more efficient way of navigating our environment, with evolutionary benefit. Certainly, we would rather not test the functional merits of the maxillary canines on a sabre-toothed tiger. Evolution would favour those of us who hold that inference at a distance. Although plausible, the role of intent in artifact

recognition has been debated, given there are occasions when perceptual similarity fails (Malt & Johnson, 1998).

As a youth, I was a proud owner of a novelty phone that looked like a duck and quacked incessantly to cue incoming calls. I was under no illusion, however. I was well aware that the product was not meant to be a duck, but a phone that looked like a duck. It was never meant to fly. Yet, how did I know? If physical appearance drives functional inferences, would I not have at least been curious? Of course, this could have something to do with a duck being a natural kind. Yet this example is not restricted to natural-artifact combinations (cf. Gill & Dubé, 2007). It is also true for artifact-artifact combinations. Bloom (1988) and Malt and Johnson (1998) debated the concept of a radio shaped like a Coke bottle. In marketing, we refer to this as product ambiguity or conceptual incongruity—where form (bottle) and function (radio) are at odds (Noseworthy, Cotte, & Lee, 2011). Given the intent of a bottle is to hold liquid and the intent of a radio is to convey audio, why, if perceptual cues dominate artifact recognition, do consumers have little difficulty understanding that this product is a radio? Bloom dismissed the point; he argued that if the Coke-radio were to break, it would not resort to being a Coke bottle, but merely be a broken radio because it was never *intended* to be anything else. Yet this line of reasoning fails to account for how we know a manufacturer's intent in the first place.

The literature on artifact recognition has struggled to account for such anomalies due in part to the current emphasis on perceptual identification, and the fact that experimental stimuli are typically isolated from their natural context. What I argue is that Bloom's notion of intent is correct, but it is not restricted to perceptual identity. I will

demonstrate that context transcends perceptual similarity to establish a manufacturer's intent. In short, I argue that we knew the Coke bottle was a radio because it was not found in the fridges of our local convenience store, but rather in the consumer electronics section of our local department store. Hence, we discounted its perceptual identity as mere novelty, which of course, was the manufacturer's intent.

2.2 Context Effects on Information Processing

Researchers in consumer behaviour have struggled with the assumption that people generally possess stable attitudes and beliefs. This struggle has featured prominently in the literature on product categorization. The difficulty resides in the fact that there are times when individuals act in accordance with their ideals, and then there are times when behaviour seems to be shaped by the particularities of the current context (Kim, Park, & Wyer, 2009). Current perspectives on product categorization only accounts for the former. Indeed, questions of whether or when attitudes are more or less context dependent have been the focus of historic debate (e.g., Fazio & Towles-Schwen, 1999; Fishbein & Ajzen, 1974). Consistent with this body of work, I assume the primary function of attitudes is evaluative, in that they serve to provide a quick summary of whether an object or event is positive or negative in order to facilitate approach or avoidance (Eagly & Chaiken, 1998; Wilson, Lindsey, & Schooler, 2000). Further, I assume that different ways of mentally representing a product will translate into differences in attitude stability over time (something that will be explored in depth in

study 4). This is important because rarely is the context stable between exposure (i.e., when we view an advertisement or see a product on a shelf) and consumption.

Nam and Sternthal (2008) argued that exploring context is important "because brands are invariably presented in a context that might influence how they are perceived (p. 668)." Unfortunately, challenges such as this have not advanced the discipline of consumer behaviour as much as one might expect. Nevertheless, there is an emerging stream of research examining how context can alter evaluative judgments in line with what are referred to as *contrast* or *assimilation* effects (Meyers-Levy & Sternthal, 1993; Nam & Sternthal, 2008). Assimilation effects occur when individuals evaluate a product more (less) favourably when it appears in a context that is more (less) favourable. Some examples include, viewing a car more favourably after viewing an attractive vacation destination (Raghunathan & Irwin, 2004), or viewing a restaurant more favourably after being exposed to designer (as opposed casual) clothing (Stapel, Kooman, & Velthuijsen, 1998; Meyers-Levy & Sternthal, 1993).

It is common when exploring assimilation effects also to observe what are referred to as a contrast effect. Contrast effects occur when individuals do the opposite of the assimilation effect and evaluate a product less (more) favourably when it appears in a context that is more (less) favourable (Meyers-Levy & Sternthal, 1993). Predictions of whether or when a context will support contrast or assimilation seem to hinge on an individual's level of prior knowledge or expertise (Meyers-Levy & Sternthal, 1993; Nam & Sternthal, 2008; Stapel et al., 1998). For example, consider if you were to view an advertisement for a vacation destination while flipping through a magazine. Now say you have existing knowledge that there is extensive driving required to navigate the

destination—something you are not particularly fond of doing while on vacation. Just then, you turn the page and see an advertisement for a new car. Regardless of how attractive the car may be, you might evaluate it less favourably than you normally would. What is interesting about this effect is it occurs even with *seemingly* unrelated advertisements. It just matters that they are viewed in relative proximity to one another. I refer to this as the *advertising context* (Malaviya 2007; Noseworthy et al., 2010).

We have known for quite some time that ads for several unrelated products versus ads for several competing products will differentially influence processing (Malaviya, 2007; Malaviya et al., 1996). An unrelated ad context (e.g., an ad for a cellphone alongside ads for a wristwatch, shampoo, and a cold medicine) encourage what is referred to as *item-specific elaboration*, which is a type of processing that emphasizes feature information (Malaviya 2007; Malaviya et al. 1996). A competing ad context (e.g., an ad for a wristwatch alongside ads for other wristwatches) encourages *relational elaboration*, which is a type of processing that emphasizes shared themes and focuses the individual on the product category (Kim & Meyers-Levy, 2008; Malaviya et al., 1996; Noseworthy, Lee, & Cotte, 2010).

Although contrast effects are commonly observed when products are seen in a context of unrelated products, they have also been observed in competing contexts. Specifically, assimilation effects occur during similarity-focused relational elaboration (identifying commonalities among products), whereas contrast effects occur during dissimilarity-focused relational elaboration (contrasting disparities between the products; Kim & Meyers-Levy, 2008; Noseworthy et al., 2011). The reason this is particularly relevant to a discussion on category activation, is the idea that when people use context to

discern what a product is like or what features it possesses, an assimilation effect will likely occur (Nam & Sternthal, 2008). The problem with this statement, however, is that it does little to prescribe when and why a consumer will use the context to figure out what a product is like. This is where the problem of single category beliefs comes in.

Hybrid products are inherently ambiguous. They have features that span multiple product categories (Rajagopal & Burnkrant, 2009), but they tend to resemble only one category (Gregan-Paxton et al., 2005). It is in this respect that most hybrid products have conceptual cues (what the product is labelled as or how it functions) that are incongruent with its perceptual cues (what the product looks like; Noseworthy & Goode, 2011). This is important because incongruity can cause an expectancy violation that motivates contextual rehearsal (Hirshman, Whelley, & Palij, 1989; Noseworthy et al., 2011). Thus, if contextual information can activate associations that help people interpret a product (Nam & Sternthal, 2008), then hybrid products in particular may be highly susceptible to contextual cues. That is, consumers may use the surrounding context to make sense of hybrid products.

2.3 The Schema Congruity Effect

When it comes to making sense of products, we are really talking about judgments of category fit. New hybrid products have competing mental representations, sort of like dueling schemas. A significant amount of research in marketing supports a theory of schema congruity (Aggarwal & McGill, 2007; Campbell & Goodstein, 2001; Meyers-Levy & Tybout, 1989; Peracchio & Tybout, 1996; Stayman, Alden, & Smith, 1992). The

theory was originally adopted from George Mandler's (1982) seminal thesis. Mandler predicted that individuals will actively try to fit an incongruent object into an existing schema, and the success or failure to do so will influence how the object is evaluated. This is quite relevant to a discussion on single category beliefs because schema congruity theory is based on the premise of activation. That is, the first schema that activates tends to be the one that people try to match with an incongruent product (Mandler, 1982). Indeed, this is quite consistent with the single category belief problem.

In several applications of schema congruity theory the manipulation of incongruity could have easily substituted as a manipulation for product ambiguity or hybridization (Aggarwal & McGill, 2007; Meyers-Levy & Tybout, 1989; Peracchio & Tybout, 1996; Stayman et al., 1992). For instance, Meyers-Levy and Tybout (1989) found that describing a soft drink in terms of all natural flavour was seen as incongruent. Although the combination may be incongruent in the normative sense of what a soft drink ought to be, neither feature is a novel addition to the concept of a beverage. Indeed, all natural flavour would be quite congruent with a variety of fruit juices. Yet, even when participants were faced with this inconsistency, the juice category did not activate. In this respect, many instances of conceptual incongruity are the result of the product having functions that span multiple categories. This is quite consistent with hybrid products. What schema congruity theory adds to the discussion is that depending on which of the multiple categories activate, consumers may like the product more. This raises the question of whether marketers could use single category beliefs to strategically augment product evaluations.

The schema congruity effect is predicated on a dynamic relationship between tension and arousal (Mandler, 1982; see also Di Muro & Murray, 2012). Consumers try to overcome the tension that results from an inconsistency between perceptions and expectations, and if successful, they tend to enjoy the product more. In this respect, incongruity can enhance consumers' extremity of evaluation (Meyers-Levy & Tybout, 1989). Mandler posited that different internal processes operate at different levels of incongruity. Mandler's work was based primarily on classic notions of assimilation and accommodation (Piaget, 1981), as well as the fundamental principle of *cognitive consistency*, or fit (Osgood & Tannenbaum, 1955). Thus, the degree of fit (or lack thereof) between a product and an activated schema in memory will determine whether the product will be assimilated or accommodated into the schema (Meyers-Levy & Tybout, 1989).

Assimilation, in the categorical sense, refers to the ability to fit a product into an activated schema without modifying the schema itself. According to Mandler (1982), assimilation is likely to occur when incongruity is mild to moderate. For instance, Sujan and Bettman (1985) found that consumers could rather easily assimilate moderately incongruent brand attributes into a generic product category. They referred to this as weak differentiation, because the incongruity is not necessarily innovative, and thus it is assimilated with minimal cognitive effort. Accommodation, on the other hand, occurs when individuals are faced with extreme or severe incongruity (Mandler, 1982; Meyers-Levy & Tybout, 1989; Noseworthy et al., 2011). A good example would be seeing a vitamin infused beer. Extreme incongruity requires substantial cognitive resources to interpret incongruent information or to restructure an existing schema. If restructured, the

resulting schema typically becomes a sub-type, sort of like an exception or special case (Taylor & Crocker, 1981). In severe instances, the cognitive requirements are so demanding that people fail to resolve the incongruity altogether (Mandler, 1982). This leads to negative evaluations because the task is simply too taxing.

Mandler (1982) argued that the relationship between incongruity and evaluation is nonmonotonic, or what is commonly described as an inverted-U. This phenomenon has been confirmed in the marketing literature. Consumers will evaluate a moderately incongruent brand or product more favourably than a congruent or extremely incongruent alternative (Meyers-Levy & Tybout, 1989; Noseworthy et al., 2011; Noseworthy & Trudel, 2011; Peracchio & Tybout, 1996; Stayman et al., 1992). Although true to Mandler's original thesis, the inverted-U has since been coined *the moderate incongruity effect* (Campbell & Goodstein, 2001). The effect has proven quite robust when the motivation and the availability of cognitive resources allow an individual to assimilate an incongruent product or brand. Researchers have used the phenomenon to predict consumers' processing of anthropomorphized products (Aggarwal & McGill, 2007), brand extensions (Meyers-Levy, Louie, & Curren, 1994), taste (Stayman et al., 1992), advertisements (Goodstein, 1993), and new product attributes (Meyers-Levy & Tybout, 1989).

Until recently, researchers exploring the moderate incongruity effect have rarely taken into account the context where the incongruent product is perceived. The one exception was Noseworthy, Cotte, and Lee (2011) who found that the advertising context (i.e., ads for several competing products) could help certain consumers—females in particular—accommodate, and thus appreciate, extreme incongruity. This finding

suggests that context can influence the accommodation process. Indeed, up to this point, extreme incongruity was all but ignored in the literature because researchers believed it would result in negative evaluations in line with Mandler's (1982) original predictions. In fact, close inspection of the literature reveals there are several observations that question whether Mandler's predictions hold in a real world context. In particular, the moderate incongruity effect has been attenuated by a variety of factors, such as dogmatism (Meyers-Levy & Tybout, 1989), prior knowledge (Aggarwal & McGill, 2007; Peracchio & Tybout, 1996), prior category affect/processing goals (Goodstein, 1993), perceived risk (Campbell & Goodstein, 2001), and most recently and relevant to this discussion, experiential appeals (Noseworthy & Trudel, 2011) and thematic positioning (Noseworthy et al., 2010). Taken as a whole, these factors caution that the moderate incongruity effect may be quite sensitive to anything that focuses consumers' attention away from the target product.

2.4 Taxonomic versus Thematic Processing

So why does the moderate incongruity effect only manifest when people attend directly to an incongruent product? The answer to this question lies at the heart of artifact recognition. People make sense of new objects by comparing them to existing representations in memory (i.e., schemas). These representations are believed to derive from what is referred to as semantic memory (Tulving, 1972). Semantic memory houses our composite of categorical knowledge (Hodges & Patterson, 2005). We use it to understand what things are and what functions they perform. Currently, the literature on

the moderate incongruity effect has adopted the view that assimilation and accommodation are generalizations of semantic membership. That is, people try to figure out what the product is by comparing it to an existing schema (i.e., a semantic taxonomy; Mandler, 1982). However, there is much more to semantic memory than mere taxonomic processing.

Taxonomic processing is the mental association of shared features that define a category, such as Coke and Pepsi being soft drinks (basic level) or soft drinks and juice being beverages (superordinate level; Hashimoto, McGregor, & Graham, 2007). Taxonomic processing allows people to organize their world into meaningful representations (Landau, Smith, & Jones, 1988; Markman, 1989). These representations are concrete (feature-based), within-category, and context independent (Barsalou 1983; Felcher, Malaviya & McGill, 2001). Put simply, taxonomic representations exist in the absence of the context where they are observed. Taxonomic processing serves a very important purpose. It allows for classification and inference (Medin & Ortony, 1989). It allows us to interact appropriately with objects and even people. It affords a measure of efficiency by organizing objects that need not look the same, but operate similarly or share the same function. This is how we understand that a hammer and wrench are tools, even when there is little need to fix something. What taxonomic processing does not do, however, is contextualize consumption. It does not convey information about the context where the product may be encountered. Nor does it allow the context to convey information about the product.

Relative to the wealth of literature on taxonomic processing, there has been rather sparse research on thematic processing. Consider if you were asked the common

question, “What would you like to drink?” Wine is as plausible a response as water. Both are semantically equivalent in terms of the link between the category (beverages) and the desired action (drink). However, wine is consumed more for indulgence than sustenance—at least for some. Hence, it may or may not factor top of mind. If, however, a waiter in a restaurant were to ask the same question, the concept of wine may be far more accessible because a waiter and wine are invariably linked in the restaurant context. This is defined as a thematic representation (Barsalou, 1999; Markman, 1984). Of course, a waiter and a glass of wine share few—if any—features.

Thematic representations constitute “causal, spatial, and temporal relationships among objects” (Ji, Nisbett, & Zhang, 2004, p. 57). They allow people to organize information in space and time. Thematic representations tend to be abstract, between-category, and context dependent (Lin & Murphy, 2001; Markman, 1984; Noseworthy et al., 2010). Of course, knowing that wine is a beverage, similar to a soft drink, is of little use in generating expectation for the experience of *dining-out*. The combination of wine and waiter, however, can cue a context (e.g., a high-end restaurant) that informs expectations for etiquette, quality, and price. It is in this respect that thematic processing allows people to extend beyond classification to develop contextually appropriate inferences and behaviour (Estes, Golonka, & Jones, 2011). Hence, it seems plausible that thematic processing would inform functional inferences.

Consider the vacation and car example discussed earlier. Although *seemingly* unrelated advertisements, the two are thematically related—a car is used to navigate a destination. Hence, the two are semantically linked, just not in the taxonomic sense. In essence, things are thematically related if they perform complementary roles in a specific

context (Golonka & Estes, 2009; Lin & Murphy, 2001; Wisniewski & Bassok, 1999). These compliments can be defined by conventional association (being commonly seen together) or by affordance (being commonly used together; Estes et al., 2011). A waiter and wine are related in the restaurant context through convention. However, a hammer and nail are related in the construction context through affordance (the hammer strikes the nail). When exploring thematic processing, it is important to identify *how* objects are related. In marketing, some of the more relevant compliments are spatial (e.g., electronics store and cellphone), temporal (e.g., summer and sunscreen), and functional (e.g., wine and cheese). The contextual dependency of these relations is what makes thematic processing unique. The context gives convention, and without it, the relationship would not exist (Estes et al., 2011; Noseworthy et al., 2010). Indeed, this is quite relevant in marketing, where the context is at least somewhat under the marketer's control, and where choice is never void of context, be it the brand, the ad composition, or a physical store layout.

It is probably important to take a step back at this point and note the distinction between thematic and goal-derived or ad-hoc categorization (Barsalou, 1983). Members of goal-derived categories differ from thematic membership in that they have some internal goal-based property which they all possess (Estes et al., 2011). Consider, for example, the common goal of losing weight: if we think of *things to eat while on a diet* we could think of things like salad, low-fat yogurt, and high-fiber cereal. However, each of these objects has a specific attribute (a health-related feature) that relates specifically to the goal, and without the goal there is no conventional association that unites them. These items do not functionally complement one another in the same way that wine and

cheese does (Estes et al., 2011). Wine and cheese has no inherent attribute that relates to a specific goal beyond the normative convention.

Indeed, it is a fine distinction. An astute reader would probably argue that wine and cheese may activate under the goal, *things to eat when dining out*. The point, however, is there is in no intrinsic property beyond the convention association with the context of dining out. This is a common misinterpretation in consumer research, often labeled as unconscious goal activation. The distinction is important because functional relationships inform functional inferences. Goals do not. Hence, context is not the goal per se, but the trigger that activates the relationship.

In sum, although rarely distinguished, taxonomic processing and thematic processing are important to the field of consumer behaviour. Where taxonomic processing is essential for language and the formation of lexical categories (Landau et al., 1988; Markman, 1984), thematic processing is necessary for making sense of the past and predicting the future (Lin & Murphy, 2001; Markman, 1984). In a sense, it is the difference between identifying what a product is and imagining what it would be like to consume it. Both are imperative to a product's success. Taxonomic processing is thought to be mainly dependent on perceptual features (Medin & Ortony, 1989), whereas thematic processing is thought to draw on the memory of encountering certain objects together in a particular context (Collins & Loftus, 1975; Lin & Murphy, 2001). Put simply, taxonomic processing focuses on properties that are characteristically identifiable to a particular *sort*, whereas thematic processing, by virtue of shared themes among disparate objects, focuses on relationships that are characteristically identifiable to a particular *scene* (Whitmore, Shore & Smith, 2004). Hence, when it comes to inferences

about functional intent, thematic processing is just as important, if not more so, than taxonomic processing because it accounts for the product category, the product context, and the interaction between the two.

2.5 Why is Thematic Processing Important for Single Category Beliefs?

There is a general belief that most objects, be they artifacts or natural kinds, have attributional and relational properties (Felcher et al., 2001; Ji et al., 2004; Ratneshwar, Pechmann, & Shocker, 1996). Where attributional properties are processed taxonomically via concrete, feature-based, within-category comparisons (e.g., *Chihuahua & Great Dane = Dogs*), relational properties are processed thematically via abstract, context-based, between-category comparisons (e.g., *Chihuahua & Ball = Park*; Noseworthy et al., 2010). There is evidence to suggest that attributional and relational properties are processed independently (Fenker et al., 2005; Ratneshwar et al., 1996; Sailor & Shoben, 1996). Where relational properties facilitate conceptual associations, attributional properties facilitate perceptual identification (Cohen & Basu, 1987; Felcher et al., 2001). Hence, the former handles incongruity by comparing it to prior knowledge of convention or affordance, whereas the latter handles incongruity by comparing the object against a mental representation or prototype (Noseworthy et al., 2010). The dominance of taxonomic processing in the marketing literature is interesting, considering that thematic violations (e.g., seeing a product in an unexpected context) would seem to occur quite

regularly, and may negatively influence product evaluations (e.g., seeing a luxury car in front of a discount department store). This relates to the discussion on contrast effects.

To date, only one study has explored how taxonomic product adjustments influence thematic processing, and even then, the study did not look at thematic violations per se, but more so how taxonomic adjustments (i.e., changing a feature of a product) can inhibit thematic activation. Nevertheless, the study is informative because it illustrates that the moderate incongruity effect is contingent on the type of schema that activates. Noseworthy, Finlay, and Islam (2010) found that when a perceptually incongruent product (a weird looking soft drink bottle) was positioned taxonomically (*juice & soft drinks = beverages*), the standard moderate incongruity effect emerged (i.e., people liked the moderately incongruent bottle more so than the congruent bottle). However, when the same product was positioned thematically (*soft drinks & popcorn = night out at the movies*), people showed preferential evaluations for congruency. The authors concluded that congruency was required to activate the contextually dependent schema. This finding fits with evidence in developmental psychology that suggests people are more apt to attend to novel adjustments taxonomically—that is, we try to make sense of incongruity *within* a category (Whitmore, Shore, & Smith, 2004). It also fits the literature in psycholinguistics, which suggests that when asked to list associates of an object, people tend to offer taxonomic, definitional associates for incongruent objects, and thematic, eventlike associates for congruent objects (Blaye & Bonthoux, 2001; Chaffin, 1997; Osborne & Koppel, 2001). Hence, it seems reasonable that product incongruity can inhibit thematic activation by focusing peoples' attention on the product type as opposed to the context of consumption. Yet how do we reconcile this evidence with the finding

that incongruity causes an expectancy violation that motivates contextual rehearsal (Hirshman et al., 1989; Noseworthy et al., 2011)? The answer may be in the type of incongruity.

A product can be either perceptually incongruent in that its physical appearance defies a normative expectation (e.g., Dyson's new Bladeless Fan), or it can be conceptually incongruent in that its functions do not align with its physical appearance (e.g., Vusix's new sunglasses-Mp3 player). Again, most hybrid products conform to the latter. This is an important distinction. Evidence that incongruity inhibits thematic activation was found only for perceptual incongruity (Noseworthy et al., 2010). This is not surprising. When people first categorize an object, they tend to do so at what is referred to as the *basic level* (Rosch, Mervis, Johnson, & Boyes-Braem, 1976). Basic level categories are highly sensitive to perceptual identity (Noseworthy et al., 2011; Rosch et al., 1976). They tend to maximize within-category similarity (most wristwatches look similar), but minimize between-category similarity (a wristwatch and cell phone tend to look different). Basic level categories are the first categories learned, they warrant the fastest reaction time, and importantly, they lend detailed inferences (Rosch et al. 1976). Basic level categorization is one explanation for why when context is stripped away and participants are asked to classify a hybrid device, perceptual similarity seemingly frames single category beliefs. Yet there is no reason to believe this will occur when context is present.

Chaffin (1997) cautioned that the degree of taxonomic processing that occurs when a person is faced with figuring out a novel object will vary with their prior knowledge of the category. This is quite relevant to a discussion on schema congruity theory and single

category beliefs. Evidence suggests that prior knowledge moderates the moderate incongruity effect (Peracchio & Tybout, 1996). Similarly, prior knowledge about core features can override perceptual similarity to inform single category beliefs (Noseworthy & Goode, 2011). This is why individuals show preferential evaluations for congruency when it comes to evaluating anthropomorphized products—we have strong prior knowledge about the human schema (Aggarwal & McGill, 2007). Hence, people tend to favour congruity in instances where they have well-established beliefs and expectations.

Given that thematic processing is necessary for making sense of the past and predicting the future (Lin & Murphy, 2001; Markman, 1984), it seems reasonable that contextually cued schemas will favour congruency. After all, contextual relationships are based on prior knowledge. This line of reasoning makes even more sense when it comes to conceptual incongruity (as opposed to perceptual incongruity), because the issue has less to do with taxonomic violations, as much as taxonomic ambiguity (Gregan-Paxton et al., 2005). That is, the product could very well be identified as belonging to one of two or more different categories (Rajagopal & Burnkrant, 2009).

If the schema congruity effect is predicated on the activation of a single product schema, and if single category beliefs are the result of singular activation, it seems plausible that prior knowledge or even a normative expectation of a product category within a particular consumption setting will inform single category beliefs. In other words, the fit between a product and its surrounding context should predict the single category that will be chosen. This prediction is not without support. Researchers have shown that a person's evaluations of an object will depend on his or her subjective representation of that object (Lord & Lepper, 1999). However, the variability in

subjective representations across contexts can give rise to evaluative inconsistencies (Ledgerwood, Trope, & Chaiken, 2010). Thus, consumers' evaluations of any given product should be influenced by the context where the product is perceived. This is indicative of Ferguson and Bargh's (2007) suggestion that attitudes might best be described as evaluations of "object-based contexts" (p. 232). Given the current emphasis on taxonomic processing, it is not surprising that the literature on single category beliefs has been silent when it comes to contextual influence.

Indeed, human beings have a unique capacity to regulate their behaviour not only for the here and now but also for the future. Yet taxonomic processing does not account for this. There is a dramatic difference between asking someone to evaluate a new product, and asking someone to evaluate what it would be like to use it. There is no reason to believe evaluations would be consistent between the two. Nevertheless, the former dominates marketing research, despite the latter more closely approximating reality. As stated previously, the goal of this dissertation is to illustrate that the fit between the context and product, be it the brand or product category, will predict which of the multiple categories that make up a hybrid product will come to frame single category beliefs. Importantly, at the heart of this dissertation is the strategic consideration that marketers may be able to utilize the context to activate the category that benefits from the most favourable evaluation and highest price expectation.

2.6 The Current Research

The single category belief problem is the claim that consumers seemingly employ only a single category to make functional inferences for products that span multiple categories (Rajagopal & Burnkrant, 2009). It is an activation problem that has neither sufficient predictors nor adequate explanation. The effect has proven robust even after extensive category learning (Murphy & Ross, 1994; Noseworthy & Goode, 2011). It has been extended to natural categories like people (Malt, Murphy & Ross, 1995) and conceptual artifacts like food (Murphy & Ross, 1999). Hence, single category beliefs are not restricted to technological innovation despite the prevalence of tech-based products blurring category boundaries.

This is not to suggest the field is short of attempts to predict single category beliefs. Researchers have shown that a product's perceptual similarity can predict single category activation (Gregan-Paxton et al., 2005). Others have shown that dominant features, acting as rules, can take precedence over perceptual similarity (Noseworthy & Goode, 2011). Then there is the argument for the product label (Moreau et al., 2001b). There is really no clear consensus. It is believed that single category beliefs just happen as a result of an adaptive heuristic, which for what it lacks in accuracy it makes up for in efficiency (Murphy & Ross, 1994; 1999). Murphy and Ross (2010) argued that people generally make single category inferences based on the first category that comes to mind, and as long as that category submits a viable answer, no other category is explored. Unfortunately, this does little to predict which category will come to mind.

It is not surprising that with the lack of understanding when and why single category beliefs manifest, researchers have turned their focus to exposing when

consumers will use multiple category inferences. Examples include when a marketer explicitly highlights the relationship between a hybrid product's features and its multiple categories (Moreau et al., 2001b), when consumers are unfamiliar with the multiple categories that make up the hybrid product (Gregan-Paxton et al., 2005), when using psycholinguistic property priming (Rajagopal & Burnkrant, 2009), and most recently, when putting consumers into a rather severe negative state (Noseworthy & Goode, 2011). However, these examples constitute exceptions, not the norm. The default seems to be that despite consumers becoming increasingly aware of new products that consolidate two or more categories, they tend not to look at them that way when using a heuristic to establish the product's membership.

To date, the vast body of research on this topic has exclusively examined category ambiguity in isolation from the natural context, be it the physical location, or even the promotional strategy. This is where thematic processing comes into the mix. Thematic processing cues contextual relationships that activate a specific schema from memory. Hence, a thematic view of single category beliefs would argue that context predicts the first category that comes to mind, and once activated, consumers will try to assimilate a novel hybrid device into the contextual schema. If successful, consumers' functional inferences (i.e., expectations for how the product works) will align with the context, and evaluations should be enhanced. This is the logic behind schema congruity theory, particularly with respect to the moderating role of prior knowledge. Study 1 was designed to explore these predictions.

Chapter 3

3 Study 1: Context Influences Category Activation

Study 1 was designed to set the foundation for a thorough examination of schema activation in artifact recognition. The core objective of study 1 was to test whether a brand and/or the ad context can influence which schema will activate for a hybrid product with features that fit one category but a physical appearance that fits a different category. Hence, study 1 was designed to put perceptual similarity to the test in a consumption setting that incorporates the natural context. In line with the idea of single category beliefs, the second objective was to demonstrate that schema activation corresponds with functional expectations. Finally, the third objective was to illustrate that both schema activation and the subsequent change in functional emphasis (i.e., whether the product functions better as product A or product B) will translate into meaningful and predictable differences in both product evaluations and willingness to pay.

At the heart of this study is the theoretical premise that people like things that fit. Hence, it was predicted that individuals would favour, and thus be willing to pay more for, a product with a brand and ad context that convey a unified schema, even if that schema is antithetical to perceptual similarity. Consider the Apple iWatch concept (mp3-wristwatch hybrid). Given the Apple brand signals Mp3 more so than wristwatches, people should like the product more if is found in a context that supports the Mp3 category (e.g., an Mp3 display) than in a context that supports the alternate category (e.g., a wristwatch display). Although the perceptual similarity of the iWatch favours the

wristwatch category, it does not favour our expectations for Apple. Hence, it is my contention that the context where we see a new hybrid device matters. Exhibit 1 presents the core hypotheses that underlie the proposition that *context influences category activation* (P1).

Exhibit 1: Proposition #1 – Context Influences Category Activation

SUMMARY OF STUDY 1 CORE HYPOTHESES	
1.1	*Schema Activation.* When the brand and/or ad imagery (i.e., pictures in the ad) reinforce a hybrid product's perceptual schema, participants will be more likely to categorize the product by perceptual similarity. However, when the brand/or ad imagery reinforce the conceptual schema, participants will be more likely to categorize the product based on conceptual similarity.
1.2	*Functional Expectations.* When the brand and/or ad imagery reinforce a hybrid product's perceptual schema, participants will make functional inferences in line with perceptual similarity. However, when the brand/or ad imagery reinforce the conceptual schema, participants will make functional inferences in line with conceptual similarity.
1.3	*Perceived Typicality.* When the brand and ad imagery are aligned (i.e., fit a normative expectation), participants will see the hybrid product as more typical than if unaligned. This will be true whether the brand and ad imagery align in favour of the perceptual or conceptual schema.
1.4	*Target Evaluations.* Participants will favour the hybrid product more when the brand and ad imagery are aligned than if unaligned. This will be true whether the brand and ad imagery align in favour of the perceptual or conceptual schema.
1.5	*Willingness to Pay.* Participants will be willing to pay more for the hybrid product when the brand and ad imagery are aligned than if unaligned. This will be true whether the brand and ad imagery align in favour of the perceptual or conceptual schema.

3.1 Method

3.1.1 Participants & Design

Undergraduate students (N = 124; 52% female; M_{age} = 21.2) participated in this study in exchange for course credit. The ad manipulation and dependent measures were administered electronically in a behavioural lab. Participants were tested in groups of 10–15 individuals, and were randomly assigned to one of four experimental conditions in a 2 (thematic context: perceptual imagery vs. conceptual imagery) × 2 (brand fit: match vs. mismatch) between-subjects factorial design.

3.1.2 Operationalization of Brand Consistency

The operationalization of brand consistency began with the selection of a hybrid product. Given the purpose of this study was to explore conceptually incongruent products—where the product's physical appearance and functionality suggest two different categories—it was imperative to select a hybrid product that did not have overlapping functions (i.e., the product had features from two distinct categories). There was also a need to be sensitive to the sample population. Thus, the hybrid device chosen for this study was a PEN + USB flash drive combination.

To make sure that perceptual similarity was as concrete as possible, the object shown to participants was merely a generic pen. Hence, the USB category was purely conceptual. A pre-test (n = 30) had people list the top five brands that come to mind when they think of a PEN and the top five brands for a USB flash drive. Participants then passed their list to another participant and proceeded to rank order their peer's list for

how well all 10 brands matched both the pen *and* USB category. The top PEN and top USB brand, in terms of frequency and rank, and without cross-categorization (hence, excluding known hybrid brands like *Kingston* and *SanDisk*), were subsequently chosen [*BIC* = PEN; *MICROSOFT* = USB].

3.1.3 Operationalization of Thematic Context

The operationalization of thematic imagery was established through a two-stage pre-test. The first pre-test (n = 60) consisted of two conditions. The conditions were designed such that a generic fountain PEN or a generic USB flash drive was shown with a blank white background. All identifying information was removed and a single corresponding title, "*Fountain Pen"* or *"USB Flash Drive*" appeared at the top of the screen. At the bottom of the screen appeared a single sentence, "*A Much Needed School Supply*" or "*A Much Needed Computer Accessory*." Participants were asked to review the product at their own pace and then complete an exemplar-listing task (Felcher et al., 2001; Noseworthy et al., 2010). For the exemplar-listing task, participants were asked simply to list three products that relate to the product they just reviewed. It was predicted that individuals would generate between-category, thematic exemplars in line with the stipulated context (e.g., school supplies).

Following the exemplar-listing task, the top three USB/computer accessory exemplars (in descending order: *keyboard*, *computer mouse*, and *webcam*) and the top three fountain pen/school supply exemplars (*notebook/agenda/paper*, *reading glasses*, and *stapler*) were carried forward into the second stage. The second stage (n = 40) consisted of two between-subjects conditions. In one condition, participants randomly

saw images of either the three USB related exemplars followed by the three PEN related exemplars, or vice versa, and were asked to rate the USB-related exemplar's similarity to a USB flash drive and the PEN-related exemplar's similarity to a PEN (anchored: 1 = *extremely different*; 9 = *extremely similar*). In the other condition, participants saw the exact same stimuli with the addition that they were asked to think about the products in terms of *computer accessories* (for the USB exemplars) and *school supplies* (for the PEN exemplars). The idea being that the aggregate context would cue individuals to see thematic exemplars as more similar (Noseworthy et al., 2010). The results support this prediction.

A repeated measure ANOVA with category type (PEN vs. USB) as the within-subjects factor and category context (cued vs. not cued) as the between-subjects factor, revealed that participants rated the exemplars as more similar to the target product when they were contextualized ($M = 6.62$) than when they were not contextualized ($M = 4.31$), $F(1, 38) = 19.73$, $p < .001$. The within-subjects effect was not significant ($F < 1$). Hence, the *school supply* and *computer accessory* contexts were relatively equivalent in augmenting similarity judgments. Given that the pre-test established the basic principle of thematic processing, the top two products from the PEN and USB exemplar-listing tasks were subsequently chosen to make the thematic imagery for the actual study (appendix A).

3.1.4 Procedures & Dependent Measures

Participants were randomly assigned an electronic instrument that consisted of an online newsfeed with a pop-up web advertisement (one of the four between-subjects

conditions in appendix A). Participants were told that the purpose of the exercise was to evaluate a new product, and they were to review the product at their own pace and then complete a brief questionnaire. The questionnaire consisted of 13 items. Five of the items (anchored: 1 = *not at all*; 7 = *extremely*) captured participants' overall attitude towards the product (left a favourable impression; is likeable; is appealing; is desirable; interested in trial; Malaviya, 2007). Three of the items (anchored: 1 = *not at all*; 7 = *extremely*) captured participants' perceived typicality (is unique [reverse coded]; is likely; matches expectations; Campbell & Goodstein, 2001). Two of the items (anchored: 1 = *extremely poor*; 9 = *extremely good*) separately captured participants' estimated PEN functionality and USB functionality (Gregan-Paxton et al., 2005). Finally, willingness to pay (WTP) was collected by simply asking individuals to list how much they would be willing to pay for the new product (open-ended).

Following the randomized 13-items, the software switched to a schema activation task. Participants were given the layout of a hypothetical department store—sort of like a blueprint—with several departments, including computers and computer accessories, school supplies, televisions and DVD players, clothing, kitchen supplies, and automotive equipment (Moreau et al., 2001b; Noseworthy & Goode, 2011). Participants were asked, "If you were shopping for this device in the store shown below, where is the FIRST place in the store you would go to find it?" Participants were instructed to click the location with their mouse. The department selected represented participants' categorization of the device, or in this case, their schema activation (coded: 0 = *computer accessories*;1 = *school supplies*; no other locations were selected). The entire procedure averaged approximately 15 minutes.

3.2 Results[1]

3.2.1 Schema Activation

A binary logistic regression (0 = *computer accessorie*s; 1 = *school supplies*) revealed that participants who saw the MICROSOFT logo rather than the BIC logo were about eight times (1/Odds Ratio) more likely to associate the hybrid pen with *computer accessories* than with *school supplies*, $B = -2.04$, $SE = .42$, $p < .001$, OR = .13. Furthermore, participants who were exposed to thematic imagery that emphasized the conceptual schema (a keyboard and mouse) rather than the perceptual schema (a date book and reading glasses) were about twice as likely to associate the hybrid pen with *computer accessories* than with *school supplies*, $B = -.83$, $SE = .42$, $p < .05$, OR = .43. The thematic context × brand consistency interaction was not significant ($p = .32$). The results support hypothesis 1.1; the brand and the ad context shifted participants' schemas in favour of the conceptual category. Perceptual similarity only dominated when the ad imagery and brand reinforced the product's physical appearance. Table 1 presents the proportion of *school supply* activation across the four conditions, along with the core dependent measures for study 1.

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[1] Unless otherwise noted, all planned contrasts and simple effects throughout this thesis were accomplished by estimating the error term. Hence, the dfs are held constant, but should not be taken as indication of cell loadings within the contrasts.

Table 1: Treatment Means and Cell Counts for the Core Measures in Study 1

	BIC		MICROSOFT	
	Perceptual Context	Conceptual Context	Perceptual Context	Conceptual Context
Schema Activation *	74%	65%	34%	13%
Functional Index	.09 (.20)	.01 (.21)	-.05 (.17)	-.10 (.22)
Perceived Typicality	4.62 (.87)	3.78 (.86)	3.26 (.85)	3.67 (.83)
Product Evaluations	4.61 (.81)	4.20 (.82)	3.77 (.85)	4.32 (.82)
Willingness to Pay	$25.49 (16.23)	$22.91 (16.36)	$29.42 (13.29)	$38.77 (18.72)
Cell Size	31	31	31	31

*Note.—Standard deviations are reported in parentheses; * = percent of perceptual (school supply) activation as opposed to conceptual (computer accessory) activation.*

3.2.2 Functional Expectations

A functional index was calculated by subtracting participants' estimates of USB functionality from their estimates of PEN functionality, divided by the sum of the two. A positive number indicates superior PEN functionality, a negative number indicates superior USB functionality, and zero indicates the device was perceived as equivalent in both. It was predicted that participants' schema activation would correlate with their functional expectations. In line with this prediction, the correlation between schema activation (0 = *computer accessorie*s; 1 = *school supplies*) and the functional index was positive and significant ($r = .39$, $p < .001$). There was a main effect of brand consistency; participants believed the BIC hybrid pen had superior PEN functionality ($M = .06$), and the MICROSOFT hybrid pen had superior USB functionality ($M = -.08$), $F(1, 120) =$

13.57, $p < .001$, $\omega^2 = .07$. There was also a main effect of thematic context; participants believed the hybrid pen had superior PEN functionality when the ad imagery emphasized the perceptual schema ($M = .03$), and superior USB functionality when the ad imagery emphasized the conceptual schema ($M = -.04$), $F(1, 120) = 3.72$, $p < .05$, $\omega^2 = .02$. The brand consistency × thematic context interaction was not significant ($F < 1$). Hence, in support of hypothesis 1.2, perceptual similarity drove functional inferences only when the brand and the advertising context favoured perceptual similarity. When the two favoured the conceptual schema, participants adjusted their functional expectations accordingly.

3.2.3 Perceived Typicality

The three typicality items were averaged to form an internally consistent measure ($\alpha = .72$). There was a significant main effect of brand consistency; the ad promoting the BIC hybrid pen was seen as more typical ($M = 4.20$) than the ad promoting the MICROSOFT hybrid pen ($M = 3.46$), $F(1, 120) = 23.08$, $p < .001$, $\omega^2 = .14$. The main effect was qualified by a significant thematic context × brand consistency interaction, $F(1, 120) = 16.27$, $p < .001$, $\omega^2 = .09$. Simple effects revealed that participants perceived the BIC hybrid pen to be more typical when the ad imagery emphasized the perceptual category ($M = 4.61$) as opposed to the conceptual category ($M = 3.79$), $F(1, 120) = 14.59$, $p < .001$, $\omega^2 = .08$. Conversely, participants perceived the MICROSOFT hybrid pen to be more typical when the ad imagery emphasized the conceptual category ($M = 3.67$) as opposed to the perceptual category ($M = 3.26$), $F(1, 120) = 3.55$, $p = .06$, $\omega^2 = .01$. A planned contrast confirmed that despite the asymmetrical pattern in perceived typicality, the BIC hybrid pen with perceptual imagery was seen as more typical ($M = 4.61$) than the

MICROSOFT hybrid pen with conceptual imagery ($M = 3.67$), $t(1, 120) = 4.36$, $p < .001$. Nevertheless, in support of hypothesis 1.3, participants saw the hybrid pen as more typical when the brand and ad imagery conveyed a consistent schema. In line with the idea of single category beliefs, the finding that participants saw the pen as more typical when the brand and ad imagery favoured the conceptual category supports that participants were not accessing the PEN schema to make this judgment, but relying solely on the USB schema (which the schema activation task would also support).

3.2.4 Target Evaluations

The five evaluation items were averaged to form an internally consistent measure ($\alpha = .83$). There was a significant main effect of brand consistency; the ad promoting the BIC hybrid pen was evaluated more favourably ($M = 4.41$) than the ad promoting the MICROSOFT hybrid pen ($M = 4.04$), $F(1, 120) = 5.92$, $p < .05$, $\omega^2 = .04$. The main effect was qualified by a significant thematic context × brand consistency interaction, $F(1, 120) = 10.63$, $p < .005$, $\omega^2 = .07$. Simple effects revealed that participants evaluated the BIC hybrid pen more favourably when the ad imagery emphasized the perceptual category ($M = 4.61$) as opposed to the conceptual category ($M = 4.20$), $F(1, 120) = 3.87$, $p = .052$, $\omega^2 = .01$. Conversely, participants evaluated the MICROSOFT hybrid pen more favourably when the ad imagery emphasized the conceptual category ($M = 4.32$) as opposed to the perceptual category ($M = 3.77$), $F(1, 120) = 6.99$, $p < .01$, $\omega^2 = .04$. Hence, in support of hypothesis 1.4, participants liked the hybrid device more when the ad imagery and the brand were aligned than when they were at odds. They did not like, at least not to the same extent, when the brand and the ad imagery were ambiguous. This finding fits the

idea that people seek cognitive equilibrium—we like things that fit, be it perceptually *or* conceptually.

3.2.5 Willingness to Pay

There was a significant main effect of brand consistency on participants' willingness to pay; participants were willing to pay more for the hybrid pen when it was promoted with the MICROSOFT logo ($M = 34.10$) than the BIC logo ($M = 24.20$), $F(1, 120) = 11.76$, $p < .001$, $\omega^2 = .07$. The main effect was qualified by a significant thematic context × brand consistency interaction, $F(1, 120) = 4.28$, $p < .05$, $\omega^2 = .02$. Simple effects revealed that participants were willing to pay more for the MICROSOFT hybrid pen when the ad imagery emphasized the conceptual category ($M = 38.77$) as opposed to the perceptual category ($M = 29.42$), $F(1, 120) = 5.25$, $p < .05$, $\omega^2 = .03$. There was no difference in participants' willingness to pay for the BIC hybrid pen regardless the type of ad imagery ($F < 1$). Hence, in partial support of hypothesis 1.5, it seemed that depending on consistent activation, individuals' willingness to pay varied, yet this did not occur for the BIC pen. The reason this hypothesis was not fully supported could have something to do with category-specific price expectations. That is, pens do not have the same variance in price that USB keys do.

3.3 Discussion

The results of study 1 support the proposition (P1) that both the brand as well as the promotional context can independently inform single category beliefs, yet their fit

dramatically influenced category activation. Prior work has established that perceptual similarity drives functional inferences. However, prior studies have predominantly focused on products with either the brand removed or a fictitious logo, and rarely, if ever, has this work considered that the promotional context may transcend physical appearance to inform category judgments, inferences, and evaluations. This study extends prior work by demonstrating that single category beliefs are not only contextually dependent, but they can be strategically altered.

The observation that people favour products more when the promotional context aligns with the brand suggests that participants were actively exploring the context to make sense of the hybrid device. This was also evident in participants' perceptions of typicality. Indeed, individuals liked the product more when they were able to make sense of it. The willingness to pay results were also informative because price expectations aligned with schema activation. Consider if you were Microsoft, would you rather activate the category that fits your core competency and carries a greater price anchor, or the one that your product resembles? The results of this study suggest companies can benefit from activating a schema that best fits the brand. Finally, the observed changes in functional expectations relates to a second proposition (P2) that *context influences attribute preference*. If individuals adjust their functional expectations in line with an activated schema, it seems reasonable that attribute preference would adjust accordingly.

Up to this point, I have demonstrated how the imagery used in advertisements can influence category activation and overall product preference, and how this can transcend the product's perceptual identity. Of course, it is common for marketers to use associative imagery in their ads to contextualize a product. Yet, this is not the only type of context

consumers see, and it may not be the most dominant. One of the most salient contexts is the in-store display. Consumers have preconceived expectations for the features of well-known product concepts, and because new hybrid products tend to consolidate two or more pre-existing categories, these general expectations should persist. The question is: Does it matter where hybrid products are placed in a store?

There is a wealth of evidence to suggest that attribute preference is relative (for a review, see Markman & Lowenstein, 2010). Researchers have yet to explore whether attribute preference is also schema dependent. Consider, yet again, the Apple iWatch. Does it make a difference whether Apple places the iWatch among wristwatches or among mp3 players? Will this change how consumers see the iWatch? More importantly, will this change what consumers like about the iWatch? Now consider if the iWatch had superior wristwatch features. Does that make a difference? Intuition would suggest that preference for superior features would align with category activation. That is, we should like the iWatch more when we see its superior wristwatch features among other wristwatches. This same intuition is why marketers tend to promote in accordance with their product's strengths. However, there is reason to question our intuition when it comes to new hybrid products.

As mentioned previously, most hybrid products have conceptual cues (what the product is labeled as or how it functions) that are incongruent with the product's perceptual cues (what the product looks like; Gregan-Paxton et al., Noseworthy & Goode, 2011). This is believed to result in category uncertainty (Gregan-Paxton et al., 2005; Moreau et al., 2001b). Researchers have recently discovered that consumers will actively contrast incongruent products against the surrounding context as a means to

resolve category uncertainty (Noseworthy et al., 2011). This finding fits with evidence that a normative expectation for a product within a particular consumption setting can lead to comparative contrast effects (Stapel, Koomen, & Velthuijsen, 1998). Given that contrasting information is a more involved process than assimilating information (Stapel & Marx, 2006), and given that greater involvement can make individuals focus on nonalignable attributes (i.e., the attributes in the target that are missing or absent in the surrounding products; Zhang & Markman, 2001), it seems plausible that the very act of contrasting a new hybrid product against competing products may not only dictate consumers' classification judgments, but it will put more emphasis on the attributes that make the product different or unique (i.e., the supplementary attributes).

What does this mean for the Apple iWatch? Superior wristwatch attributes may be far more salient when the iWatch is seen among mp3 players. If so, this finding would directly challenge the fundamental prediction of the single category belief problem (i.e., that attributes from the supplementary category will go ignored; Rajagopal & Burnkrant, 2009). This is important because a significant amount of time and money is spent on product design, and if context can influence category inferences as well as attribute preference, then *where* consumers see a new hybrid product may be just as important. The goal of study 2 is to test this, and in doing so, pit the strength of contextual activation against yet another favoured category cue: the product label (Moreau et al., 2001b).

Chapter 4

4 Study 2: Context Influences Attribute Preference

One of the fundamental predictions of the single category belief problem is that once the consumer categorizes the hybrid product, attributes from the category that does not frame the base referent (i.e., the supplementary category) will go ignored (Rajagopal & Burnkrant, 2009). This would indeed be a major marketing challenge, if it were true. However, researchers have yet to test this. This prediction is based on the unfettered faith that inferences predict preference. Yet we know this is not always true. The problem with exploring single category beliefs is that participants are often explicitly asked to categorize the hybrid product. Hence, the practice forces a commitment that favours the proposition. Indeed, it would be difficult to observe multiple category beliefs in a scenario where you are asked to commit to just one. This is why researchers have begun to challenge the veracity of single category beliefs, arguing that people are quite open to using multiple category inferences when they are aware of the costs of not considering the properties from all categories, and when they are *not* explicitly asked to categorize the object (Hayes & Newell, 2009). What is interesting about this challenge is it fits quite well with consumer choice. Consumers are not forced to categorize a product, and most consumers are well aware of the costs of choosing one product over another, particularly when it comes to feature availability or price.

One way to get around the problem of preferences being confounded by explicit categorization is through a *Discrete Choice Experiment* (DCE). DCE allows researchers

to infer the value consumers place on various attributes without asking the participant to make any explicit evaluative judgment about the product (Louviere, Hensher, & Swait, 2000). In essence, the point of DCE is not to infer what a product is, but to estimate preference based on what it offers. A typical DCE consists of a set of choice scenarios that describe a selection of products, and participants are asked to state the most preferred product in each set (Louviere, Islam, Wasi, Street, & Burgess, 2008; Street & Burgess, 2007). Products are described by a combination of attributes and levels assigned by the researcher based on the experimental design. By including competing alternatives, DCE incorporates the context of consumption.

Consider, for example, if you were to see LG's new Hifi (a hybrid headphone/cellphone combo) in a high-end consumer audio store. You may find more utility in an attribute that relates to *noise cancellation* than *text messaging*. However, consider the exact same product in a cellphone kiosk at your local mall, and you may see more utility in *text messaging* than *noise cancellation*. Beyond the theoretical implication, this is of great practical relevance. DCE is one the few academic tools to transfer into practical use. Hence, the observation of contextual variability in DCE would be of utmost importance to marketers testing new products.

An additional benefit of using DCE is that it is believed to have high external validity given it simulates virtually all aspects of the real market (Louviere & Woodworth, 1983). In this respect DCE is quite optimal for exploring hybrid products because it allows for the co-occurrence of multiple categories, making the trade-off among features more salient. A final benefit of DCE is that preferences towards a product can be further decoupled into preferences towards attributes (Louviere & Woodworth,

1983). The link between consumer inferences and preferences has been surprisingly absent in the literature on product categorization. If preference is the direct determinant of purchase behaviour, as many researchers believe, then this omission is not trivial. Exhibit 2 presents the core hypotheses that underlie the proposition that *context influences attribute preference* (P2).

Exhibit 2: Proposition #2 – Context Influences Attribute Preference

SUMMARY OF STUDY 2 CORE HYPOTHESES	
2.1	*Category Activation.* When the physical context favours one particular category of a hybrid product, participants will be more likely to make category judgments that support the context, even if those judgments are antithetical to the product's label.
2.2	*Elaborative Processing.* When the physical context favours one particular category of a hybrid product, participants will contrast (as opposed to assimilate) the hybrid product against the context as a means of making sense of it.
2.3	*Attribute Preference.* When the physical context favours one particular category of a hybrid product, participants will see more utility in the attributes from the supplementary category than from the category that matches the context.*
* = *Directly challenges the single category belief problem*	

4.1 Method

4.1.1 Participants & Design

Participants (N = 132; 39% females; M_{age} = 28.6) were recruited through mall intercept, and paid $10 for participating in the study. Each participant was randomly assigned to one of three in-store context conditions. The choice task was nested within an ad context manipulation, resulting in a 3 (ad context: cellular display vs. headphone

display vs. ambiguous display) × 2^7 (choice task: seven attributes with two levels each) mixed design. Unlike study 1, an ambiguous condition was included in the analysis. This not only served to offer a control condition for comparative purposes, but it also lent confidence that any observed changes in attribute preference were the result of the context manipulation, and not the method.

The target product chosen was LG's new Hifi concept (a headphone/cell phone hybrid; see Appendix B). The LG Hifi was selected because it has the unique capability of morphing to represent the physical form of either a headphone or a cellular phone. This allowed the product to be depicted as a hybrid product without explicitly stating it was a hybrid or listing hybrid attributes on the packaging. Hence, I could examine the influence of a category label while controlling for other confounding cues (e.g., perceptual similarity, Gregan-Paxton et al., 2005; or dominant associations with key attributes, Noseworthy & Goode, 2011).

4.1.2 Procedures & Dependent Measures

Participants were randomly assigned research booklets. Each booklet contained a photograph of one of the three in-store displays, purportedly taken from somewhere in the mall (a guise). A depiction of the packaging for the LG Hifi appeared on the adjacent page. The LG was introduced as "the next innovation in *Cell Phones*." The cellular label was chosen because the cellular depiction of the Hifi was not as intuitive as the headphone depiction (see Appendix B). Hence, the label reinforced the Hifi was hybrid while testing for the labeling effect. Participants were simply asked to imagine approaching the particular display (on the left page) and seeing the new LG Hifi (on the

right page). Nothing else varied across the conditions. Once participants viewed the product and contextual photos, they then transitioned to the discrete choice task followed by the questionnaire.

Unlike in study 1, it would have been inappropriate to measure schema activation via the store-layout classification task because the in-store display (the photographs) would have confounded the classification (i.e., it would have gave participants the location). Hence, the classification task was replaced with similarity judgments (1 = *not at all similar*; 9 = *extremely similar*; Noseworthy et al., 2010), which separately measured how closely participants perceived the LG Hifi fit the cellphone and headphone concepts. Given that similarity estimates are not conceptually distinct from measures of perceived typicality, replacing the classification task with similarity judgments not only offered insight into category activation, but it also allowed for a conceptual replication of the contextual influence on perceived typicality (study 1).

In addition to the choice task and similarity judgments, participants were asked to list as many thoughts as they could about the target product (Malaviya et al. 1996). A two-minute time limit was imposed to increase the likelihood of capturing only the most accessible thoughts (Cacioppo & Petty, 1981). Participants' thoughts were coded by two judges who were unaware of the research hypotheses. The judges were instructed to rate any thoughts that relate to the product's features (e.g., "I like that the LG has noise cancelation abilities") as item-specific, and rate any thoughts that relate the product to other products or a specific convention (e.g., "the LG made me think of listening to music on my way home from work") as relational. All outstanding disagreements between the two judges were resolved through discussion. Although the thought task offers some

insight into the underlying mechanism, merely knowing whether people focused on attributional or relational properties does little to infer the cause of any shift in attribute preference. For this, the judges were required to go one step further.

Researchers have recently made the empirical distinction between two sub-types of relational processing: (1) *similarity-focused relational elaboration* (identifying commonalities among objects) and (2) *dissimilarity-focused relational elaboration* (contrasting disparities between objects; Kim & Meyers-Levy, 2008; Noseworthy et al., 2011). Hence, in addition to coding for item-specific and relational thoughts, the two judges further coded whether respondents were dissimilarity-focused (e.g., "The LG has network capabilities whereas other headphones don't") or similarity-focused (e.g., "Nowadays all headphones have noise cancellation"). The reason this was important is because similarity-focused thoughts indicate processing is being driven by an assimilation effect, whereas dissimilarity-focused thoughts indicate processing is being driven by a contrast effect. Hence, if people assimilate new hybrid products with the surrounding context, their preferences should align with their single category beliefs (this would support the single category belief problem). However, if people contrast new hybrid products against the surrounding context, their preferences should be antithetical to their classification judgments.

4.1.3 Estimating the Choice Model

The conceptual basis for estimating DCE is random utility theory (RUT; Manski, 1977). RUT argues that each individual holds latent preferences (utilities) associated with all choice options. Individuals maximize utility by choosing their most preferred option.

Latent preferences are specified by two components (an observed and unobserved component). This is where it gets a bit technical. Different discrete choice models are derived from different assumptions about the unobserved component. The best known model is the conditional multinomial logit model (MNL; McFadden, 1974), which assumes the unobserved component is independent and identically distributed across choices and individuals. In this model, the latent utility of option *i*, judged by respondent *n*, is as follows:

$$U_{ni} = \beta' X_{ni} + \varepsilon_{ni} \quad (1)$$

Where X_{ni} is the vector of attributes of option *i*, and β is a vector of parameters representing the preference (i.e., weight) associated with each attribute. By assuming ε_{ni} to be the independent and identically distributed (iid) extreme value, McFadden (1974) showed that the choice probability from a total of J options is:

$$P_{ni} = \frac{\exp(\beta' X_{ni})}{\sum_{j=1}^{J} \exp(\beta' X_{nj})} \quad (2)$$

It is important to recognize that the MNL model parameters in equation (1), β_{MNL}, are not the true underlying β in U_{ni}. As is the case for all choice models, the estimates are confounded with σ_ε, the standard deviation of the error distribution (McFadden, 1974). Thus, one actually estimates $\beta^* = \lambda\beta$, where λ is commonly referred to as "the scale

parameter." The MNL model normalizes (or "scales") the utility function by a factor of λ ($\lambda > 0$) so that the variance of the unobserved portion equals $\pi^2/6$, and the resulting relationship is $\lambda = \pi/(\text{sqrt}(6)\ \sigma_\varepsilon)$.

However, due to the restrictive assumptions that (i) the ε_{nj} are iid and (ii) tastes for observed attributes are homogenous, MNL imposes a very specific structure on how changes in elements of x_{ni} can affect choice probabilities. Unlike the MNL, mixed logit models (MIXL; Revelt & Train, 1998) account for unobserved heterogeneous tastes over the observed product attributes. In MIXL, one allows the preference parameters β^* to vary between individual consumers, but restricts the scale parameter to $\lambda = 1$ for all consumers. It is still possible to misinterpret differences in the true underlying β between classes, which may be due only to differences in λ (Louviere, 2001). Scale heterogeneity models (S-MNL) takes into account choice variability (i.e. scale differences) but do not accommodate unobserved heterogeneity in preferences. To remedy this, Fiebig et al. (2010) recently proposed a new approach to modeling heterogeneity, the *Generalized Multinomial Logit Model* (G-MNL), which stays within the classical framework and retains the simplicity of MIXL, but extends to accommodate both scale and taste heterogeneity.[2] Hence, I adopted this model for study 2.

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[2] Taste heterogeneity (or preference heterogeneity) is the unobserved individual differences in preferences, whereas scale heterogeneity is the variance of the unobserved component (or variation in choice outcomes) that is not explained by the systematic component or taste heterogeneity.

4.1.4 Selecting Attributes

A pre-test was conducted (n = 50) to determine the attributes that best represent the headphone and cellphone categories. Participants were asked to compare groups of attributes (collected from internet retail websites like www.bestbuy.com) and to indicate which attribute is most important and which one is least important. The technique, referred to as *best-worst scaling* (Finn & Louviere, 1992), involves calculating the number of times each attribute is rated as most important and subtracting it from the number of times the same attribute is rated least important. The combined results lend insight into the relative importance of each attribute.

The top three headphone attributes (sound quality, noise cancelling ability, and surround sound) and the top three cell phone attributes (camera resolution, network capability, and display type), along with price, framed the seven features to be varied in the DCE. Once the features were selected, two attribute levels (e.g., camera resolution: 6mp vs. 10mp) were chosen from the most common variations in current production (taken from retail websites such as www.bestbuy.com). For the detailed description of the attributes and their respective levels, see Table 2).

Table 2: Key Attributes and Attribute Levels Used in Study 2

Features	Descriptions of Features	Levels
Price		$60 or $80
Headphone Sound Quality	Sound quality is gauged through parameters such as clarity of the sound, sharpness of the sound, the balance of the sound, and the supported sound range.	Moderate or Good
Headphone Noise Cancellation	Noise cancellation helps hush ambient noise by creating *anti-noise* that obviates the noise at your ear. It doesn't eliminate noise entirely, but the better models significantly reduce ambient noise, like the *whoosh* of jet planes' air conditioning systems.	No or Yes
Headphone Surround Sound	True surround sound headphones create a more spacious sound than conventional stereo headphones.	Conventional or True Surround
Cell Phone Camera Resolution	Most new cell phones include a built-in camera that works the same as a regular digital camera. Camera resolution is commonly rated in mega-pixels (mps), with higher mps leading to cleaner and crisper images.	6mp or 10mp
Cell Phone Network Capability	Network capability refers to 2G (second generation) and 3G (third generation) data-transmission speeds -- with 3G being generally faster than 2G.	2G or 3G
Cell Phone Display Type	Most cell phones have a monochrome display (16 grays), but there are a growing number that have true color. Cell phones with true color screens tend to be brighter and clearer than the traditional monochrome display.	Monochrome or True Color
Note.—Participants read these key attributes prior to engaging in the choice task.		

To generate the discrete choice design, we followed the procedures laid out by Green (1974). First, I generated 16 choice options from the 2^7 attribute combinations using an orthogonal main effect plan (OMEP). I then used a balanced incomplete block design (BIBD) to put the 16 choice combinations into 20 choice sets. In each choice set, participants were asked to consider *four different Hifi concepts* under the guise that LG is currently testing various versions prior to release. This allowed me to hold brand and aesthetic appearance constant, and thus get at a true estimate of attribute preference. Hence, the choice context was incidental in that participants were not required to choose among the products seen in the display. This afforded the ability to test whether the mere exposure to surrounding products altered attribute preference.

The order of the 20 choice sets was established through a Latin square design. For each of the 20 scenarios, respondents were simply asked to indicate, "*Which of the LG Hifi models would you be most likely to choose?*" I excluded the no-choice option to engage participants in more thoughtful decision making and to alleviate any identification issues that may occur if a high proportion of participants exercise the option not to choose (Park, Ding, & Rao, 2008; but see Dhar & Simonson, 2003).

4.2 Results

4.2.1 Schema Activation (Similarity Judgments)

Overall, there was a main effect of context on participants' judgments of cellphone similarity, $F(2, 129) = 12.92$, $p < .001$, and headphone similarity, $F(2, 129) = 18.08$, $p < .001$. Pairwise comparisons revealed that participants' perceptions of cellphone similarity

did not differ between the cellular display (M = 6.07) and the ambiguous display (M = 5.87; Tukey's HSD, $p > .70$). However, participants believed the LG Hifi was more similar to the cellular concept when seen alongside the cellular display than the headphone display ($M_{Cellular}$ = 6.07 vs. $M_{Headphone}$ = 4.52; $p < .001$). Similarly, participants' perceptions of headphone similarity did not differ between the cellular display (M = 3.16) and the ambiguous display (M = 3.59; Tukey's HSD, $p > .80$). However, participants believed the LG Hifi was more similar to the headphone concept when seen alongside a headphone display rather than the cellular display ($M_{Headphone}$ = 5.16 vs. $M_{Cellular}$ = 3.16; $p < .001$). As expected, when participants' similarity judgments were indexed, such that the headphone similarity was subtracted from cellphone similarity and then divided by the sum of the two, the correlation between the resulting similarity index and functional index (calculated in the same manner as study 1) was positive and significant, $r = .22$, $p < .01$. Hence, people not only saw the Hifi as more similar to its surrounding context, but they adjusted their functional expectations accordingly. These findings support hypothesis 2.1.

4.2.2 Type of Elaborative Processing

Two unaffiliated coders (intercoder reliability = .87) classified participants' thoughts as either item-specific or relational, and if relational, they further classified the thoughts as either dissimilarity-focused or similarity-focused. Overall, there was a main effect of advertising context on type of elaborative processing, $F(2, 129) = 21.10$, $p <$ .001. The cellular display led to more relational elaboration (M = -.14) and the ambiguous

display led to more item-specific elaboration (M = .08; Tukey's HSD, $p < .001$). Likewise, the headphone display led to more relational elaboration than the ambiguous display ($M_{\text{Headphone}}$ = -.07 vs. $M_{\text{Ambiguous}}$ = .08; $p < .005$). The cellular and headphone display conditions did not significantly differ ($p > .20$; though directionally favouring the cellular display, which would support the strength of the labeling effect).

When relational elaboration was subdivided into dissimilarity-focused and similarity-focused thoughts, the results confirmed that 71% of relational thoughts were dissimilarity-focused in nature. When the dissimilarity-focused thoughts about the supplementary attributes were removed from the cumulative count of relational elaboration, the influence of context on type of elaborative processing fell to non-significance ($p > .40$). In support of hypothesis 2.2, these results suggest that it was indeed a contrast effect driving participants' processing. This should be reflected in attribute preference.

4.2.3 Shift in Attribute Preference

As mentioned, attribute preference coefficients for this study were estimated using the *Generalized Multinomial Logit Model* (G-MNL; see Fiebig et al., 2010). In the G-MNL, the utility to person n from choosing alternative j on the purchase occasion (or in the choice scenario) t is calculated as follows:

$$U_{njt} = [\sigma_n\beta + \gamma\eta_n + (1 - \gamma)\sigma_n\eta_n]\, x_{njt} + \varepsilon_{njt} \qquad (3)$$

Where γ is a parameter between 0 and 1, σ_n is the random variable that captures scale heterogeneity, η_n is the random variable that captures taste heterogeneity, x_{njt} is a vector of observed attributes of alternative j, β is a vector of utility weights (homogenous across consumers), and ε_{njt} —referred to as the independent identical distributed (iid) extreme value—is the *idiosyncratic* error.

G-MNL nests the multinomial logit model (MNL), the taste heterogeneity model (MIXL), the scale heterogeneity model (S-MNL), and two versions of G-MNL (GMNL-I and GMNL-II) by the parameter γ. In order to impose the restriction that γ must lie between 0 and 1, Fiebig et al. (2010) use a logistic transform, $\gamma = \exp(\gamma^*)/[1+ \exp(\gamma^*)]$, and estimate the parameter γ^*. The parameter γ governs how the variance of residual taste heterogeneity varies with scale heterogeneity in a model that includes both. The scale heterogeneity parameter σ_n is positive, as it represents the consumer's specific standard deviation of the idiosyncratic error. It is operationalized as a log normal distribution with mean 1 and standard deviation τ, or $LN(1, \tau^2)$. Thus, τ is the key parameter that indicates if scale heterogeneity is present in the data. By accounting for both preference (taste) and scale heterogeneity, the G-MNL offers the most optimal estimates of attribute preferences.

Before examining the effect of in-store display on attribute preference, I used a likelihood-ratio test (LRT) to check whether preference coefficients varied by display. The LRT explores whether the three displays share the same population parameters (i.e., whether headphone, cellphone, and ambiguous displays led to relatively consistent preferences). I compared the log likelihoods of the pooled model, Log L = -2383.20, param. = 16, with the separate coefficient estimates from the three display conditions,

Log L = -2274.14, param. = 44. The results revealed significant difference in perceived utility across the three displays, LRT(28) = 218.12, $p < .001$.[3] The results of the G-MNL estimates along with model fit for the various nested models are summarized in Table 3.

Table 3: GMNL Model Estimates and Model Fit for Study 2

	Feature Levels	Mean Estimates			Standard Dev. Estimates		
		β	SE(β)	t-ratios	η	SE(η)	t-ratios
Cellular	Price	-0.06	0.02	-2.80	0.10	0.03	3.82
Display	Headphone Sound Quality	1.46	0.31	4.77	1.34	0.24	5.50
	Headphone Noise Control	0.91	0.23	4.00	1.01	0.29	3.44
	Headphone Surround Sound	0.90	0.19	4.76	0.20	0.16	1.25
	Cellphone Camera Res.	0.14	0.06	2.24	0.13	0.14	0.93
	Cellphone Network	2.08	0.24	8.85	1.04	0.22	4.80
	Cellphone Display Type	0.43	0.18	2.44	0.67	0.14	4.68
Headphone	Price	-0.11	0.02	-5.02	0.07	0.02	4.47
Display	Headphone Sound Quality	0.69	0.15	4.79	0.51	0.21	2.40
	Headphone Noise Control	0.59	0.13	4.41	0.00	0.18	0.00
	Headphone Surround Sound	0.30	0.07	4.06	0.55	0.16	3.52
	Cellphone Camera Res.	0.59	0.17	3.47	0.26	0.15	1.78
	Cellphone Network	2.45	0.34	7.14	1.20	0.42	2.88
	Cellphone Display Type	0.65	0.17	3.74	0.51	0.16	3.17
Ambiguous	Price	-0.03	0.02	-1.86	0.08	0.02	4.54
Display	Headphone Sound Quality	0.52	0.16	3.37	0.22	0.19	1.17
	Headphone Noise Control	0.35	0.11	3.32	0.16	0.13	1.28
	Headphone Surround Sound	0.14	0.18	0.77	0.65	0.15	4.34
	Cellphone Camera Res.	0.62	0.22	2.79	0.79	0.27	2.88
	Cellphone Network	1.64	0.24	6.98	1.07	0.30	3.60
	Cellphone Display Type	0.53	0.11	4.84	0.16	0.08	1.96
	τ	0.94	0.10	9.20			
	γ*	-2.50	1.43	-1.75			
		MNL	S-MNL	MIXL	G-MNL		
Model Fit	Parameters (P)	21	22	42	44		
	Log L	-2609.0	-2502.3	-2315.6	-2274.1		
	BIC*	5297.9	5088.4	4791.1	4715.8		
	AIC**	5260.0	5048.7	4715.3	4636.3		

* *BIC: Bayesian Information Criterion (-2 Log L + 2 P);*

** *AIC: Akaike Information Criterion (-2 Log L + P log n), where n is sample size.*

[3] I simultaneously estimated the data from the three context conditions by stacking the design matrix (i.e. attributes) in block diagonal where off diagonal elements are zero. In this way, differences in both taste and scale heterogeneity across the three contexts were accounted for in the G-MNL. I thank Dr. Nada Wasi for providing access to the MATLAB program used to estimate the G-MNL model in Fiebig et al., 2010.

The model fit measures (Log Likelihood, AIC and BIC) all favour the G-MNL over its nested counterparts of MNL, S-MNL, and MIXL. The preference estimates for the superior attributes (including price) have the expected signs and most are significant. The significant scale parameter, $\tau = .94$; $t = 9.20$, and significant standard deviation estimates (η) imply there is a substantial amount of scale and taste heterogeneity in the data. The direction of γ^* estimates (i.e. -2.50) indicates the variance of taste heterogeneity varies with scale. Hence, as expected, the G-MNL was the most optimal to test whether attribute preference varied by in-store context.

I used the Wald statistic to test whether the shift in preference for the combined attributes was statistically different from zero. The Wald test statistic was calculated as follows:

$$W = (R|\hat{\beta}| - r)'[R\ \mathrm{VCOV}(\hat{\beta})R']^{-1}(R|\hat{\beta}| - r) \sim \chi^2_q \quad (4)$$

Where R is a q × k matrix of restrictions, q is the number of restrictions (here q = 1), k is number of parameters in the restriction, VCOV is variance-covariance matrix of $\hat{\beta}$, and r in our case is 0. Given that the LG Hifi possesses six functional attributes, three from the headphone category and three from the cellphone category, the key theoretical contrasts were to explore the combined preference for the mp3 attributes and the combined preference for the wristwatch attributes across the three ad contexts. Consider, for example, one of the key restriction coefficients for the headphone attributes, R(1 1 1 -1 -1 -1). The three 1s are for the combined preference of the headphone attributes when the LG Hifi is seen in the headphone display, and the three -1s are for the combined

preference of the headphone attributes when the LG Hifi is seen in the ambiguous display (the control). The null hypothesis is simply, $R|\hat{\beta}| = 0$.

As expected, the preference structures between the three in-store display conditions differed. The combined preference for the cellphone attributes was *highest*, when the LG Hifi was seen alongside a headphone display relative to the ambiguous display, $R|\hat{\beta}| = .90$; $W = 3.37$, $p = .07$, or the cellular display, $R|\hat{\beta}| = 1.03$; $W = 5.08$, $p < .05$. Conversely, the combined preference for the headphone attributes was *highest* when the LG Hifi was seen alongside a cellphone display relative to the ambiguous display, $R|\hat{\beta}| = 2.26$; $W = 20.83$, $p < .005$, or the headphone display, $R|\hat{\beta}| = 1.69$; $W = 12.85$, $p < .01$. As expected, the effect did not manifest in the ambiguous (control) condition. People predictably used the product's label to infer that the LG Hifi was more similar to a cellphone ($M = 5.87$) than a pair of headphones ($M = 3.59$, $p < .001$), and consequently, they reported greater preference for the product's primary (alignable) cellular attributes, $R|\hat{\beta}| = 1.79$; $W = 17.61$, $p < .001$.

These findings confirm that as long as there is a context that affords a category cue, consumers will prefer superior attributes more when they were supplementary than when they aligned with the primary category belief. However, when a hybrid product is stripped from its normative context (as is commonly done when researchers explore new hybrid products), the link between single category inferences and attribute preference (i.e., the single category belief problem) is quite robust. Hence, whether single category beliefs will lead people to ignore attributes from a product's supplementary category depends to a large extend on the external context. In fact, by supporting hypothesis 2.3,

the results of this study question the robustness of the single category belief problem in a consumption environment where competition is ever present.

4.3 Discussion

Consistent with the literature on single category beliefs, the results of study 2 confirm that consumers tend to make classification judgments and generate inferences for new hybrid products in line with only a single category. The results extend this observation by confirming that context plays a major role in whether these inferences will translate into preference. Contrary to the prediction that consumers will ignore attributes from the category that does not frame the single category belief (i.e., the supplementary category), this work suggests that as long as there is a means of relative comparison, superior attributes will be preferred more when they are supplementary than when they align with the primary category. What is particularly notable is the strength of this effect. The influence of the in-store placement on predicting the single category referent overrode even the product's explicit label (Moreau et al., 2001b). This suggests that an in-store display can significantly alter attribute preference for new hybrid products. These findings have important implications for theory and practice, particularly given that in-store placement is at least somewhat under the marketer's control.

From a theoretical perspective, study 2 extends our understanding for when and why consumers will focus on nonalignable differences. Most notably, there has been increased interest in examining the influence of add-on extensions (e.g., adding an

external hard-drive to an existing computer platform). Bertini, Ofek, and Ariely (2009) found that alignable add-ons tend to decrease consumers' evaluations of a base product because these attributes indicate the product could have been better in the first place. Conversely, positive nonalignable add-ons increase consumers' evaluations of the base product because these add-ons indicate positive latent functionality. Although Bertini et al. did not directly explore multiple-category inferences or context effects, their findings share important parallels with the current work.

Like an add-on, which is an extra feature, benefit, or device that one can purchase in addition to the target product, a hybrid product offers additional benefits and features that are not traditionally associated with a single base referent. However, unlike with add-ons, the additional features and benefits of a hybrid product are combined during product development, and as such, the base referent is often not so clear once the product hits the market (Moreau et al. 2001b). As discussed, this initial ambiguity is believed to result in category uncertainty (Gregan-Paxton et al., 2005). The single category belief problem is believed to manifest from consumers attempting to overcome this uncertainty (Noseworthy & Goode, 2011; Rajagopal & Burnkrant, 2009). What Bertini et al. offer is some insight into what may occur when the base referent is set and when there is no ambiguity. This is where the role of context comes in.

Where the current work makes a significant departure from Bertini et al. (2009) is in the argument that hybrid products do not augment preference because hybrid functionality is latent, but because attribute preference is relative and context dependent. As Bertini et al. note, an important extension of their work is exploring how competition influences preference for alignable versus nonalignable differences. The authors also

highlight the need to address what happens when alignable and nonalignable differences co-occur (as is common with hybrid products). Study 2 addresses both calls. Yet, where Bertini et al. speculate that alignable attributes may have greater impact on consumer judgments when alignable and nonalignable differences co-occur, this work finds that nonalignable supplementary attributes have greater impact on preference.

Marketers could benefit from this knowledge by strategically placing a new hybrid product in a context that optimizes attribute preference. In a sense, this evidence goes against common intuition that marketers should position a product in accordance with its strengths. On the contrary, the current research suggests that if a new hybrid product has superior attributes that fit one category and standard attributes that fit another, marketers may be better off placing the product in a context that activates the standard category, and allow the superior attributes to standout. This is particularly noteworthy given the vast commercial use of conjoint-based techniques. Hence, the results of this study have significant implications for marketers involved in product testing and development. Marketers may want to consider testing new hybrid products in a variety of contexts prior to release.

When we take study 1 and study 2 together we can see something rather interesting. Study 1 showed that people favour a product's consistency or fit (e.g., when the brand matched the imagery in the ad, people liked the product more); however, study 2 showed people favour product *attributes* more when they did not fit. These results may seem conflicting, but at the aggregate level they are not. In both studies, the context (be it thematic imagery or the in-store display) predicted the single category belief. At the aggregate level (i.e., preference for the product), the overall beta-weights in study 2 (as

depicted in the β column in Table 2) favoured the label. Hence, not only was the label indeed a strong category cue, but it once again demonstrated that preferences can be augmented by fit (people liked the product more when its superior attributes fit the label). This fits with study 1. What is important, however, is that preferences were shifted by the supplementary attributes. Hence, supplementary attributes were not ignored, as the single category belief problem predicts.

So why has this effect not been realized in prior work? Put simply, researchers tend not to disaggregate the preference for features from the overall preference for the product because it is quite difficult to do (hence, the use of DCE). It is not that single category beliefs are overstated, but that researchers should be cautious when estimating the link between inferences and attribute preference. Inferences (i.e., category beliefs) and preference need not align. This is one of the several reasons why we tend to see such poor correlations between product evaluations and purchase intent. Unfortunately, this is not the only methodological limitation that has led to erroneous implications in prior research. This brings us to study 3.

Chapter 5

5 Study 3: Context Influences Perceptions of Proto-typicality

Mandler (1982) argued, "schemas are representations of *experience* that guide action, perception, and thought [italics added]" (p. 3). Product schemas tend to develop from repeat exposure to a particular product within a particular context. The resulting familiarity allows expectations to guide inferences about the product's functionality and intent. Hence, it seems reasonable that perceptions of proto-typicality (i.e., judgments of fit) should vary by context. If so, this would be quite problematic for researchers exploring *the moderate incongruity effect* or *single category beliefs*, particularly given that past manipulations have examined ambiguous products in the absence of contextual influence, and given that researchers tend to use typicality judgments as a means to establish their manipulations. Such examinations, though informative, are restrictive in that they account only for the exposure to the product category and not to the context where the product is observed. Of course a new product may pretest as moderately incongruent (e.g., a new weird-looking cellphone), but this does not mean it will be perceived this way in its normative context (e.g., a cellular kiosk at the mall).

I argue that neglecting the natural context of consumption forces individuals to draw inferences based solely on perceptual similarity—there really is nothing else. Thus, the claim that visual perception dominates product categorization may be grossly overstated. Indeed, evidence from studies 1 and 2 would support this prediction.

Perceptual identity is but one aspect that informs categorization. As mentioned, what the object relates to is just as important in saying what the object is, if not more so, given that it accounts for the category, the context, and the interaction between the two (Estes et al., 2011). The goal of study 3 is to demonstrate that the practice of removing product stimuli from their surrounding context can bias proto-typicality estimates, making some products seem more atypical than they naturally would be. Exhibit 3 presents the formal hypotheses that underlie the proposition that *context influences perceptions of proto-typicality* (P3).

Exhibit 3: Proposition #3 – Context Influences Perceptions of Proto-typicality

SUMMARY OF STUDY 3 CORE HYPOTHESES	
3.1	*Product Evaluations.* Participants will evaluate a hybrid product more favourably when there is a contextual cue that thematically links the hybrid product with disparate products, than when there is no contextual cue present.
3.2	*Perceived Typicality.* Participants will perceive a hybrid product to be more typical when there is a contextual cue that thematically links the hybrid product to disparate products, than when there is no contextual cue present.
3.3	*Elaborative Processing.* Participants will be more likely to engage in relational processing when there is a contextual cue that thematically links the hybrid product to disparate products, than when there is no contextual cue present.
3.4	*Functional Associations.* Participants will be more likely to trade-off functional features that fit the context when there is a contextual cue that thematically links the hybrid product to disparate products, than when there is no contextual cue present.
3.5	*Post-test Results.* The effects of a contextual cue on category inferences will persist over time. Specifically, following a lengthy delay, participants' classification judgments (in terms of speed and categorization) will be biased in favour of a prior contextual cue, and this will lead to predictable errors in recall (indicating thematic processing persists over time).

5.1 Method

5.1.1 Participants & Design

Undergraduate students (N = 180; 56% female; M_{age} = 19.7) participated in this study in exchange for course credit. The sample requirement was estimated based on the standard significance criterion (α = .05), power (1 - β = .80), and an a priori effect size estimation (f = .25; Cohen, 1988). The sample worked out to be 30 participants per cell (rounded up considering some of the smaller effects in study 1). The product chosen for this study was Vuzix's new sunglasses-mp3 combo (see appendix C). The Vuzix's hybrid was chosen because of its high degree of ambiguity. Specifically, its perceptual similarity supports the sunglasses category, whereas its conceptual functionality supports both the sunglasses and the mp3 player categories. A pretest (n = 32) confirmed that when all ad information was stripped away and nothing else accompanied the Vusix other than a blank white background, 77% of participants categorized the Vusix as a pair of sunglasses, 17% said it was an mp3 player, and the remaining 6% were undecided. Hence, consistent with predictions in marketing that perceptual similarity guides category inferences (Gregan-Paxton et al., 2005), people tended to see the Vusix as a pair of sunglasses rather than an mp3 player.

The ad manipulation and dependent measures were administered electronically in a behavioural lab. Participants were randomly assigned to one of six experimental conditions in a 2 (advertising context: consumer fashion vs. consumer electronics) × 3 (magazine label: Wired vs. Vogue vs. no label [control]) between-subjects factorial design. The primary purpose of the design was to test what would happen if two

advertising arrays of four thematically related products were seen in a specific magazine that linked the ads through conventional association. Hence, once again, there was a fit condition, whereby the magazine label and advertising context could either unite around the perceptual category (sunglasses) or the conceptual category (mp3 players). This of course allowed for two mismatched conditions, whereby the magazine label and contextual arrays were at odds, as well as a control condition where there was no contextual cue to unite the array. The idea is that, participants' perceptions of typicality would vary by the contextual match.

Beyond the theoretical contribution, the secondary purpose of this study design was to show how the current practices of removing products from their normative context can bias results. To accomplish this, the control condition served to replicate the common practice of showing the product in isolation from other products. The general prediction was that doing so would bias responses in favour of perceptual similarity, but also put a downward bias on estimates of perceived typicality (i.e., make the product seem more atypical) because there is nothing to facilitate the product's membership. Hence, the design served two purposes: (1) it explored the influence of contextual match on perceptions of proto-typicality, and (2) it highlighted how the common experimental practice of removing new product stimuli from their natural context may be leading researchers to rather tenuous and/or lab specific effects.

5.1.2 Stimuli Construction

Unlike study 1 and 2, which operationalized context via associative imagery and the physical store layout, this study explored yet another type of context: *the ad composition* (henceforth referred to as the *ad array*). As mentioned previously, it is well documented that ads for several unrelated products versus ads for several competing products will differentially influence processing (Malaviya, 2007; Malaviya et al., 1996). Specifically, a series of unrelated ads encourages people to focus on feature information, whereas a series of competing ads (i.e., ads for products from the same category) encourages people to focus on commonalities or discrepancies among the products (Malaviya 2007; Noseworthy et al., 2011).

To date, researchers exploring the influence of ad composition have yet to consider that objects from disparate categories (i.e., unrelated products) can be related, just not in the taxonomic sense—they can be thematically related. This is more common that one might expect. For example, many specialty magazines (e.g., Hunting and Fishing) show a variety of ads that collectively account for the namesake of the publication (e.g., Fishing Lures, Compound Bows, etc.). If a marketer were to introduce a new product in this magazine they would want to consider that consumers may be predisposed to the context (activity). This predisposition could be used to facilitate new product introductions. If so, we should see predictable changes in how people process thematically related ads when the magazine facilitates the conventional association.

Cognitive processing in a thematically cued context should more closely resemble that of a competing ad context (relational elaboration) as opposed to an unrelated ad

context (item-specific elaboration). After all, thematic processing draws conventional *relationships* between two or more otherwise disparate stimuli (Estes et al., 2011; Noseworthy et al., 2010). However, without the cue (i.e., the magazine label) to highlight the conventional relationship, participants should resort back to item-specific elaboration. If so, this would again be of theoretical significance given that magazines of all sorts tend to favour a certain activity or genre. Hence, researchers exploring the influence of ad arrays may want to consider that most manufacturers put considerable thought into ad placement, and because of this, they tend to inadvertently assist in relating disparate categories through conventional association.

The selection of the thematic ad arrays was accomplished in a two stage pre-test. The first pretest (n = 44; 50% females) asked participants to identify three disparate products (in addition to the target product) that were related in favour of the perceptual category (sunglasses), and three disparate products that were related in favour of the conceptual category (mp3 player). Sticking with four advertisements to define the advertising context was consistent with prior work (Malaviya, 2007; Malaviya et al., 1996; Noseworthy et al., 2011). Participants were specifically instructed to choose three additional products that relate to the target product, which were not from the same category, but were commonly seen together in some sort of commercial or consumption-related scenario (e.g., a certain type of store). They were also asked to report the scenario they thought of when listing the related products.

The results revealed the top three most commonly associated products, in terms of frequency and rank (excluding products with intrinsic properties that unite around a goal), were *laptops*, *cellphones*, and *tablets* for the mp3 player target (context = *consumer*

electronics store), and *bags, running shoes*, and *wristwatches* for the sunglasses target (context = *consumer apparel/fashion outlet*). Of course, one could imagine how some of these products may equally relate to both concepts (e.g., *running shoes & mp3 player = morning run; running shoes & sunglasses = morning run*). This made the contextual arrays rather conservative, which set a nice foundation to test whether the magazine labels could draw out the conventional associations.

Following the first pretest, a second pretest (n = 52; 50% females) had participants read one of the two product lists from pretest 1 that either made up *the consumer electronics context* or *the consumer fashion context*. After reading one of the product lists, participants were asked to name a common magazine that would tend to feature *all four* of the products in any given issue. Once completed, participants were instructed to flip the page where they viewed a list of 10 different magazine titles (five technology-focused and five fashion-focused). Participants were instructed to allocate 100 points based on how likely the product list would appear in any of the magazines. So, for example, if participants believed the consumer fashion list would most likely be seen in a magazine like *Cosmopolitan*, they could allocate 80 points (or 90) to this magazine, leaving 20 points (or 10) to be disbursed among the remaining nine magazines.

Beyond identifying the magazine labels for the actual study, pretest 2 lent some insight into whether the context adopted by participants in pretest 1 would remain salient when the product array was reverse-engineered (i.e., when the array was used to cue the context as opposed to the context being used to cue the array). The results were quite consistent.

The most common magazine titles selected by participants were "*Wired Magazine*" for the consumer electronic list (59%, all other magazines < 14%) and "*Vogue Magazine*" for the consumer fashion list (37%, all other magazines < 25%). Note: the muted dominance of Vogue—relative to the selection of Wired Magazine—was due to the fact that female respondents reported severe variance in preference for consumer fashion magazines (not surprising considering the vast array of options targeted to the 18-20 female demographic). Nevertheless, the point allocation results from the second half of the pretest were quite informative because the task included the two magazines in the 10 options.

A repeated measure ANOVA, with the point allocation for the *Wired magazine* and *Vogue magazine* as the within subject factor and with gender and product listing as between subject factors, yielded a significant point allocation × product listing interaction, $F(1, 48) = 255.27$, $p < .001$. Multivariate simple effects confirmed the nature of the interaction was such that when participants were exposed to the *consumer electronic list*, they allocated more points to Wired than to Vogue ($M = 59.61$ vs. $M = 6.19$, $p < .001$). Similarly, when participants were exposed to the *consumer fashion list*, they allocated more points to Vogue than to Wired ($M = 37.65$ vs. $M = 3.92$, $p < .001$). Admittedly, this effect is rather intuitive given the obvious nature of the product listing. However, what was important was that the gender × product listing interaction was not significant ($F < 1$), and the three-way interaction among gender, product listing, and point allocation was only directional ($p = .14$). The three-way interaction revealed that the point allocation × product listing interaction only slightly varied by gender in that the selection for Vogue magazine was stronger for males in the consumer fashion context

(again, not because males prefer Vogue, but because females were far more sporadic when allocating points among fashion magazines). Nevertheless, both genders reported Wired as an equally unlikely option for the consumer fashion listing.

Given that pre-test 2 confirmed the relationship between the contextual representations (the magazine labels) and the product lists, the product lists were then adopted as the foundation for the contextual arrays. To accomplish this, nine real advertisements were chosen to represent the three products that appeared in the consumer electronics list, the three products that appeared in the consumer fashion list, as well as three unrelated products to round out the control condition (see appendix C). The only alteration was to photo edit additional claims on to the ads. This served two purposes: (1) it allowed for the ability to test participants' type of processing (i.e., whether they clustered the ads relationally or not), and (2) it allowed for a test of whether thematically binding disparate ads has any lasting consequence on ad claim recognition. Once finalized, the magazine labels and the ad arrays were taken forward into the study.

5.1.3 Procedures & Dependent Measures

Participants were randomly assigned to read an editorial excerpt from an eMagazine (www.emagazines.com). The excerpt was designed so that four ads (i.e., the consumer fashion array or the consumer electronics array) would randomly appear as participants scrolled through the editorial. In one condition, participants were told that the excerpt was taken from the popular magazine *Wired*. In another condition, participants were told the excerpt was taken from the popular magazine *Vogue*. In the control, participants were not informed of the magazine label. The logos for each of the

magazines were photo-edited above their respective editorials. In all cases, the excerpt was an editorial piece about how clothing retailers are currently using social media like Twitter and Facebook to target consumers. This specific editorial was chosen after debriefing participants in the two-stage pretest (discussed above). The participants indicated that the social media editorial was one of five editorials that would be equally likely to be featured in Vogue and Wired (plausibility between labels, $p = .53$).

Participants read the editorial and viewed the ads at their own pace. Once finished, they were informed that they were going to be asked specific questions about one of the four advertisements, chosen at random (a guise). In fact, all participants were asked specific questions about the Vusix advertisement. The questionnaire was relatively consistent with the instrument used in study 1 with some rather important additions/alterations. Specifically, after participants recorded their attitude towards the product (i.e., target evaluations) and perceived typicality, a functional association task was administered.

The functional association task required participants to view photographs of scenery (sunglasses association) that accompanied select tracks of classical music (mp3 association). The gradients in brightness of the photographs (ranging from very bright to strongly shaded) were designed so that they negatively correlated with the clarity and quality of the music tracks. Participants were exposed to six different combinations that ranged in terms of how severe the trade-off was between picture brightness and sound quality. After going through all six variations, participants were asked to select which of the trade-offs best represents the performance they would expect from the target product. The idea is that individuals who activated the sunglasses schema will trade-off sound

quality for brightness, and those that activated the mp3 schema will trade-off brightness for sound quality. This effect should be exacerbated in the label × context fit conditions.

Following the functional association task, the questionnaire concluded with a free-recall task. The free-recall task simply instructed participants to list everything they could recall about each of the ads they viewed within the array. This allowed for a check of the type of processing participants' employed when viewing the ads. It was predicted that in the two contextualized arrays (consumer fashion array and consumer electronics array), participants would more likely engage in relational elaboration, whereas in the control condition (no label) participants would more likely engage in item-specific elaboration.

5.1.4 Post-test Measures

After completing the questionnaire, participants were thanked for taking part in the study and discharged with a request to return in 30-minutes to sign for participation credit (no reference was given to a follow-up task). Upon returning, participants were administered a surprise Latency Association Task (LAT; Noseworthy & Goode, 2011). The LAT works on the same guiding principles as the Implicit Association Task (IAT; Greenwald, McGhee, & Schwartz 1998). Both are an indirect measure of relative strength of association between concepts or objects in memory. Hence, it can be used to test whether the context effects observed in the first half of the study persist over time. That is, if the fit between the magazine label and thematic context predict the classification judgments of an ambiguous product, the LAT can tell us whether the association to the product category will remain intact when the context is no longer present.

Similar to how the IAT requires participants to map items onto two predetermined keys on a keyboard (e.g., “A” and “L”), the LAT assigns concepts to specific keys (e.g., “A” = sunglasses; “L” = mp3 players). The LAT continuously displays consecutive objects in the center of a computer display (in this case, the software randomly displayed five different pairs of sunglasses, five different mp3 players, and the Vusix target). The LAT is somewhat simpler than the IAT in that participants are merely asked to categorize the products as soon as they appear on the screen by pressing the appropriate response key that represents the category that best fits the product. Participants should be quicker at matching the Vusix target with the mp3 category when they previously saw the Vusix advertised in the Wired magazine editorial accompanied by the consumer electronics array. Conversely, people will be quicker at matching the Vusix target with the sunglasses category when they previously saw the Vusix advertised in the Vogue magazine editorial accompanied by the consumer fashion array. Both of these conditions should generate faster responses than the two mismatched conditions (i.e., Wired + consumer fashion array; Vogue + consumer electronics array).

The IAT is predicated on the idea that the ease or difficulty with which people are able to assign the same response to distinct concepts is taken as a measure of strength of the association in memory (Greenwald & Farnham, 2000). For example, if this was a true IAT, participants might be asked to press ‘A’ with their left hand as quickly as possible whenever something that relates to sunglasses or if the brand Oakley appears on the screen. Similarly, participants might be asked to press “L” with their right hand whenever something relates to mp3 players or the brand Apple. The conditions would then be randomized and counterbalanced, thereby creating a reversed trial that can be directly

compared to the initial combined task. The LAT differs in that it merely requires individuals categorize the product as quickly as possible.

This should get interesting when we compare the results against the control condition. The core prediction for the LAT is that people's prior schematic activations will persist over time. That is, if the first part of the study activated the conceptual category, a memory node should be created, and participants should then see the target product as more closely associated (as indicated by faster response times) with the mp3 player category. Conversely, if the first part of the study activated the perceptual category, participants should see the target product as more closely associated with the sunglasses category. If, however, there was no label in the first half of the study (control), participants should be more prone to classify the product as a pair of sunglasses (perceptually), but they should not necessarily be as fast doing so as participants in the perceptual fit condition. Hence, the first part of the study will dictate participants' memory over time—demonstrating the strength, not only of single category beliefs, but also the pitfalls of not taking into account the surrounding context.

Following the latency association task, participants undertook a cued recall task. The task consisted of a list 10 different ad claims, which were displayed on the left side of the screen, and the Vusix, with all ad information stripped away, was displayed on the right. Participants were required to select which of the claims actually appeared in the Vusix advertisement. The task was designed such that four of the 10 claims actually did appear in the Vusix advertisement (hits), three did not appear in any advertisement (false alarm), and the remaining three claims appeared in the array but not in the Vusix ad (ad claim intrusions). The ad claim intrusions and false alarms were counterbalanced such

that the intrusions in the fashion array condition were the false alarms in the electronics array condition, and vice versa.

Given that thematic processing constitutes the mapping of relational properties, people should mistakenly recall generic ad claims from the thematic ads when the magazine cued the conventional association (i.e., ad claim intrusions; Noseworthy et al., 2011). This should be less of a problem in the mismatch condition, and should not happen at all in the control condition. If participants explicitly categorize the product in the control, they do so taxonomically, hence ad claims intrusions resulting from thematic mapping across advertisements would not manifest. This task would not only offer an important implication of schematic activation, but also further confirm the type of processing.

5.2 Results

5.2.1 Target Evaluations

An analysis of target evaluations as a function of contextual array (consumer fashion vs. consumer electronics) and magazine label (Wired vs. Vogue vs. no label) yielded a significant contextual array × label interaction, $F(2, 174) = 6.50$, $p < .005$, $\eta^2 = .07$. As illustrated in table 4, the nature of the interaction was such that the magazine label (or lack thereof) altered target evaluations as a function of the contextual array. Specifically, planned contrasts revealed that participants who viewed the Vusix within the *consumer fashion array* evaluated it more favourably when the array was featured in

Vogue magazine (M = 6.18) than when featured in Wired (M = 5.52), $F(1, 174) = 7.16$, $p < .01$, or when no label was presented (M = 5.43), $F(1, 174) = 8.99$, $p < .005$. Conversely, participants who viewed the Vusix within the *consumer electronics array* evaluated it more favourably when the array was featured in Wired magazine (M = 5.91) than when featured in Vogue (M = 5.36), $F(1, 174) = 4.97$, $p < .05$, and marginally more than when no label was presented (M = 5.51), $F(1, 174) = 2.53$, $p = .10$. Hence, consistent with hypothesis 3.1, the fit between the contextual array and the magazine labels seemed to augment target evaluations.

Table 4: Means, Standard Deviations, Proportions, and Cell Counts for Study 3

	Consumer Fashion Array			Consumer Electronics Array		
	Wired	Vogue	Control	Wired	Vogue	Control
Target Evaluations	5.52 (.92)	6.18 (.86)	5.43 (.99)	5.91 (.84)	5.36 (.91)	5.51 (1.09)
Perceived Typicality	3.47 (.92)	3.86 (.96)	3.43 (.97)	3.75 (.98)	3.27 (.86)	3.28 (.93)
Processing	.18 (.20)	.26 (.18)	.12 (.09)	.31 (.20)	.21 (.15)	.14 (.13)
Functional Associations	3.83 (1.26)	4.87 (1.41)	4.23 (1.33)	3.84 (1.62)	4.30 (1.53)	4.33 (1.49)
Post-test: LAT						
Categorization *	60%	83%	63%	26%	67%	63%
Response Latencies **	2.01 s	1.61 s	2.26 s	1.45 s	2.22 s	2.06 s
Post-test: Cued Recall						
A'	.58 (.16)	.57 (.16)	.70 (.20)	.61 (.18)	.59 (.17)	.69 (.16)
FA_c	.22 (.19)	.25 (.18)	.12 (.09)	.29 (.21)	.24 (.18)	.15 (.13)
B''	.07 (.25)	.13 (.23)	.12 (.23)	.13 (.22)	.06 (.26)	.11 (.18)
Cell Size	30	30	30	30	30	30

*Note—Standard deviations are reported in parentheses; * = % of sunglasses (as opposed to mp3 player) categorization; ** = listed in seconds.*

5.2.2 Perceived Typicality

In step with the target evaluation results, an analysis of perceived typicality as a function of contextual array and magazine label yielded a significant contextual array × label interaction, $F(2, 174) = 3.10$, $p < .05$, $\eta^2 = .03$. Planned contrasts revealed that participants who viewed the Vusix within the *consumer fashion array* perceived it as more typical when the array was featured in Vogue magazine ($M = 3.86$) than when featured in Wired ($M = 3.47$), $F(1, 174) = 3.88$, $p < .05$, or when no magazine label was presented ($M = 3.43$), $F(1, 174) = 3.67$, $p = .057$. Conversely, participants who viewed the Vusix within the *consumer electronics array* perceived it as marginally more typical when the array was featured in Wired magazine ($M = 3.75$) than when featured in Vogue ($M = 3.27$), $F(1, 174) = 2.41$, $p = .12$, or when no label was presented ($M = 3.28$), $F(1, 174) = 3.03$, $p = .08$. Hence, consistent with hypothesis 3.2, the fit between the contextual array and the magazine labels altered participants' perceptions of prototypicality. Importantly, some of the lowest estimates of perceived typicality were observed in the conditions that lacked a contextual cue.

5.2.3 Elaborative Processing

Using an adjusted ratio of clustering (ARC; Roenker, Thompson, & Brown, 1971), a researcher can see whether individuals were more likely to cluster ad claims together or recall them in isolation. Clustering has been used to show evidence of relational processing—a higher degree of clustering is strong indication of relational mapping (Kim & Meyers-Levy, 2008; Noseworthy et al., 2011). An ARC score represents the proportion

of actual repetitions above chance to the total possible repetitions. ARC scores for this study were calculated such that chance clustering was set to 0 and perfect clustering was set to 1. An individual's ARC score is calculated as follows:

$$ARC = \frac{R - E(R)}{\max R - E(R)} \tag{5}$$

Where *R* is the number of pairs of ad claims recalled in successive order, max*R* is the maximum possible number of ad repetitions, and *E(R)* is the expected (chance) number of ad repetitions. Max*R* is calculated by $N - k$, where *N* is the total number of claims recalled, and *k* is the number of categories represented in the recall protocol. *E(R)* is calculated as follows:

$$E(R) = \frac{\sum_i n_i^2}{N} - 1 \tag{6}$$

Where n_i is the number of claims recalled from category *i,* and *N* is as before.

As previously mentioned, the two core ad arrays (consumer fashion array and consumer electronics array) consist of disparate product categories that could only be linked through conventional association. Hence, the ads did not share specific feature information per se. As a result, clustering was assessed by calculating the number of times the features (including the brand) from one ad were related to the features in

another (e.g., "*It'd be nice if the Vusix had the same storage capacity as the BlackBerry Curve*," "*I don't think the Vusix brand embodies style like Dior or Gucci*").

The prediction was that individuals who process the array in the absence of a contextual cue (i.e., the no label control condition) will be more prone to view the ads in an unrelated manner, and thus be less likely to cluster the claims. This finding would be consistent with prior work demonstrating that people are more apt to processes an unrelated ad context in an item-specific (as opposed to relational) manner (Malaviya, 2007; Malaviya et al., 1996; Noseworthy et al., 2011). If, however, the magazine label can cue a conventional association, people should be far more likely to bind the claims together (relationally), and as such, clustering should increase. Indeed, this prediction is rather important given the dominant belief that disparate objects can only lead to item-specific processing. The results confirm this is not the case.

An analysis of participants' ARC scores as a function of contextual array and magazine label yielded a significant contextual array × label interaction, $F(2, 174) = 3.96$, $p < .05$, $\eta^2 = .04$. Planned contrasts revealed that participants who viewed the Vusix within the *consumer fashion array* were more likely to cluster the ad claims/concepts when the array was featured in Vogue magazine ($M = .26$) than when featured in Wired ($M = .18$), $F(1, 174) = 3.31$, $p = .07$, or when no magazine label was presented ($M = .12$), $F(1, 174) = 11.34$, $p < .005$. Conversely, participants who viewed the Vusix within the *consumer electronics array* were more likely to cluster the ad claims/concepts when the array was featured in Wired magazine ($M = .31$) than when featured in Vogue ($M = .21$), $F(1, 174) = 4.51$, $p < .05$, or when no label was presented ($M = .14$), $F(1, 174) = 15.20$, $p < .001$. Hence, consistent with hypothesis 3.3, the fit between the contextual array and the

magazine labels altered how participants processed the target product. This finding, coupled with the typicality results, suggests that participants were indeed using the array to process the product. If so, the contextual arrays should influence consumers' functional associations.

5.2.4 Functional Associations

As mentioned previously, participants' functional associations were gathered by having them to trade-off gradients in brightness and visibility for clarity and quality of sound. Given that participants were exposed to six different combinations which varied the severity of the trade-off, functional association was treated as a continuous variable. Hence, a score of 6 (perfect visibility but very poor sound quality) would indicate pure sunglasses association, whereas a score of 1 (perfect sound quality but very poor visibility) would indicate pure mp3 player association.

An analysis of participants' functional associations as a function of contextual array and magazine label yielded a significant main effect of label, $F(2, 174) = 4.09$, $p < .05$, $\eta^2 = .04$. Planned contrasts revealed that participants were more likely to trade off image quality for sound quality when the Vusix array was featured in Vogue magazine ($M = 4.35$) than when featured in Wired ($M = 3.99$), $F(1, 174) = 8.06$, $p < .01$, but not more so than when no magazine label was presented ($M = 4.28$, $p = .26$). The contextual array × magazine label interaction was not significant ($F < 1$). Hence, although hypothesis 3.4 was not supported, it did seem that the labels had some influence on participants' functional inferences. This should not be taken as evidence that thematic arrays have no influence on functional expectations. We have to be careful when assuming the null in

this case, particularly following a post study debrief that revealed several participants attributed the sound degradation to the lab computers and thus based their inferences on picture quality alone. Hence, the association task may not have been ideal.

5.2.5 Post-test Latency Association

To circumvent the problem of raw latencies having a skewed distribution, response times were standardized within-subjects. For the sake of interpretation, all means are listed in seconds, but analyses were conducted on the standardized data. Before exploring participants' response latencies it was important to analyze their actual responses. As previously discussed, the latency association task randomly displayed five different pairs of sunglasses, five different mp3 players, and the Vusix target. Participants' categorization of the Vusix served to test whether the contextual array, the magazine label, or the interaction between the two, could influence category judgments over time.

A binary logistic regression on the categorization of the Vusix in the latency association task (*sunglasses* = 0, *mp3 player* = 1) yielded a main effect of label, Wald Z = 12.89, $p < .005$, and a main effect of contextual array, Wald Z = 5.23, $p < .05$. Specifically, though not significant, participants were nevertheless almost twice as likely (1/Odds Ratio) to categorize the Vusix as a pair of sunglasses, relative to an mp3 player, when they saw the Vusix in the Vogue editorial rather than in the control condition (no magazine label), $B = -.61$, $SE = .41$, $p = .14$, OR = .55. Participants were also about twice as likely to categorize the Vusix as an mp3 player, relative to a pair of sunglasses, when they saw the Vusix in the Wired editorial rather than in the control condition, $B = .85$, $SE = .39$, $p < .05$, OR = 2.34. Furthermore, participants were twice as likely to categorize the

Vusix as a pair of sunglasses, relative to an mp3 player, when they saw the Vusix in the consumer fashion array rather than the consumer electronics array, $B = -.78$, $SE = .33$, $p < .05$, OR = .46. The interaction between the magazine label and the contextual array was not significant ($p = 18$). However, as illustrated in table 4, the proportional responses actually favour the power of the magazine label to unite the contextual array.

An analysis of participants' response latencies as a function of contextual array and magazine label yielded a moderately significant contextual array × label interaction, $F(2, 174) = 2.61$, $p = .07$, $\eta^2 = .03$. Planned contrasts revealed that participants who viewed the Vusix within the *consumer fashion array* were directionally faster at categorizing the product when the array was featured in Vogue magazine ($M = 1.62$ s) than when featured in Wired ($M = 2.01$ s, $p = .28$), and marginally faster than when no magazine label was presented ($M = 2.26$ s), $F(1, 174) = 3.07$, $p = .08$. Conversely, participants who viewed the Vusix within the *consumer electronics array* were faster at categorizing the product when the array was featured in Wired magazine ($M = 1.45$) than when featured in Vogue ($M = 2.22$), $F(1, 174) = 4.31$, $p < .05$, and marginally faster than when no label was presented ($M = 2.06$), $F(1, 174) = 2.71$, $p = .10$. Although these effects come across as rather tenuous, given their marginal nature, they nonetheless support the certainty demonstrated in the categorization results.

5.2.6 Post-test Cued Recall

Given our limited understanding of the shape and distribution of recognition indices, the cued recall data was analyzed using a nonparametric *signal detection analysis* (Snodgrass & Corwin, 1988). Following this approach, the stated claims that were

correctly identified (hits) and those that were wrongly identified (false alarms), were used to calculate a recognition index (A′). Prior to this calculation, all hit and false alarm rates were corrected using a log-linear transformation to account for undefined z-scores of 0 and 1. The resulting recognition index (A′) varied from .5 to 1, with .5 indicating no ad claim recognition, and 1 indicating perfect ad claim recognition (for a discussion of the equations used in the recognition index, see Snodgrass & Corwin, 1988).

An analysis of ad claim recognition as a function of contextual array and magazine label yielded a significant main effect of label, $F(2, 174) = 7.91$, $p < .005$, $\eta^2 = .08$. Planned contrasts revealed that participants were better able to distinguish which ad claims belonged to the Vusix when no magazine label was presented ($M = .70$) than when the Vusix array was featured in Vogue magazine ($M = .57$), $F(1, 174) = 12.92$, $p < .001$, or Wired magazine ($M = .59$), $F(1, 174) = 10.71$, $p < .005$. There was no difference in participants' ad recognition between the Vogue and Wired conditions ($F < 1$). This effect suggests there is something about the conventional cues (i.e., the magazine labels) that led to relatively poor ad claim recognition (relative to the control). An analysis of the nature of participants' false alarms offered some further insight.

Consistent with prior work (Noseworthy et al., 2011), false alarms can be broken down into pure errors (i.e., stating a claim was made in the Vusix ad that did not appear in any of the ads) and errors of composition—also known as *category intrusions* (i.e., stating a claim was made in the Vusix ad that was actually made in one of the other ads). An analysis focusing solely on the ad claim intrusions (FA_c) as a function of contextual array and magazine label yielded a significant main effect of label, $F(2, 174) = 8.62$, $p < .001$, $\eta^2 = .07$. In step with the recognition index results, planned contrasts revealed that

participants were less likely to make errors of composition when no magazine label was presented (M = .14) than when the Vusix array was featured in Vogue magazine (M = .24), $F(1, 174) = 13.88$, $p < .001$, or Wired magazine (M = .25), $F(1, 174) = 11.93$, $p < .001$. No other significant contrasts were recorded ($Fs < 1$). Of course, the descriptive statistics suggest a comparatively small degree of intrusions relative to prior work (cf. Noseworthy et al., 2011). This was not surprising given the products in the arrays were not from the same category—only a few features could normatively relate. Nevertheless, the fact that intrusions occurred at all across disparate products when a thematic cue conventionally link them, fits perfectly with the elaborative processing results and the typicality results. People were using the context to make sense of the Vusix.

To be certain, one final step was administered to rule out the possible alternate explanation that people were maybe a bit more confused when the labels were presented and thus were biased towards the affirmative (i.e., they merely said they saw any claim). Using the same parameters employed to calculate the recognition index, a bias index (B″) was calculated. The index varied between +1 and -1, with a positive number indicating a bias towards the affirmative (yea-saying) and a negative number indicating a bias towards the negative (nay-saying). The results revealed that participants were no more biased when recalling the ad claims when there was no label presented then when they viewed the array with a Vogue label or Wired label (M_{Control} = .12 vs. M_{Vogue} = .09 vs. M_{Wired} = .10; $Fs < 1$). Thus, the ad claim intrusions could not be attributed to a propensity to respond in the affirmative. When combining the post-test results (i.e., the category intrusion results, latency results and the categorization results), it seems as though hypothesis 3.5 was partially supported. That is, category inferences did persist over time,

and in the absence of the contextual cue, but they were not perfectly consistent with the interactions observed in the first half of the study.

5.3 Discussion

Up to this point, I have demonstrated that context can alter category activation and thus inform functional expectations (study 1), attribute preference (study 2), and now perceptions of proto-typicality (study 3). Beyond extending our understanding of how hybrid products interact with their surrounding environment, study 3 also served to replicate the fit results observed in studies 1 and 2, while using a different hybrid product and different context manipulation. Nevertheless, a discussion of the merits of study 3 would not be complete without an equal acknowledgment of its shortcomings. For what it may have made up for in creativity, the functional association task lacked validity. Furthermore, despite the upward adjustment of the sample requirement in light of the small effect sizes observed in study 1, the sample estimate did not take into account that study 1 had a stronger manipulation (i.e., brand + imagery fit). Hence, the sample requirement (i.e., the power) should probably have been raised to seek out even smaller effects. This would have helped the numerous marginal contrasts.

With that said, the true value in study 3 comes from illustrating how the common practice of analyzing new ambiguous products in the absence of a natural context can lead to erroneous results. This is particularly problematic given the finding that contextual cues can alter estimates of proto-typicality. Indeed, there is a precision required of researchers examining the moderate incongruity effect. It is imperative that

manipulations are indeed moderately incongruent. Given that most incongruity manipulations have employed conceptual incongruity (i.e., product ambiguity; Meyers-Levy & Tybout, 1989; Perrachio & Tybout, 1996), one cannot help but wonder if the stimuli would truly be moderately incongruent if observed in a normative context.

Beyond the implications for the literature on the moderate incongruity effect, the results of study 3 also offer an interesting take on the single category belief problem. Consumer researchers exploring product ambiguity have shown that perceptual similarity can dominate single category beliefs (Gregan-Paxton et al., 2005), and this effect can persist over time (Noseworthy & Goode, 2011). This research is the first to show that the consumption context can override perceptual similarity, and its influence can equally persist. This specific finding fits with recent evidence that consumers can sometimes use the surrounding context to make sense of incongruent products (Noseworthy et al., 2011). The study 3 results support the primary finding from study 2.

An interesting finding to emerge from study 3 is that exploiting fit is not without its cost. Despite the fact that contextual cues seemed to persist over time, participants were more likely to mistakenly recall contextual information for product information. Not only is this further confirmation of the extent to which consumers will use the surrounding context to make sense of a new ambiguous product, but it affords a cautionary note that context can also confuse customers. Beyond questioning the dominance of perceptual similarity in artifact recognition and single category beliefs, the observation that category beliefs can persist over time, suggests that context can influence category judgments in both the near and far term. This has direct and meaningful implications for the literature on attitude stability, which brings us to our final study.

Chapter 6

6 Study 4: Context Influences Attitude Stability

Although not explicitly acknowledging hybrid products, researchers have begun exploring the impact of ambiguous product features on attitude stability over time (Kim et al., 2009; Zhao, Hoeffler, & Zauberman, 2007). In one of the more recent examples, Kim, Park and Wyer found that when consumers were shown a new radio set with positive sound-related features and negative clock-related features and vice versa, they considered sound-related features regardless of whether they planned to use the radio immediately or in the future, but considered clock-related features more so in the immediate context. The authors couched their findings in *construal level theory* (CLT; Trope & Liberman, 2003), arguing that consumers consider high-level desirability-related features regardless of when they anticipate using the product, but also consider low-level feasibility-related features when anticipating immediate consumption. This logic was based on Trope and Liberman's (2000) distinction between central and peripheral features. Despite the notable commonalities between Kim et al. and Trope and Liberman, there is a rather subtle conceptual detail separating the two papers.

Unlike Kim et al. (2009), Trope and Liberman (2000) did not assign central and peripheral properties to the product per se, but to the product's goal. For example, if you believe a new product was *intended to be a radio*, and if there is a choice between a radio with good sound functions but poor clock functions, and a radio with good clock

functions but poor sound functions, sound quality should be more central than clock quality—given the product's goal. Trope and Liberman (2000) argued, "features that are relevant to the *product's intended goal* are more central than goal-irrelevant features and therefore constitute a higher level of construal [italics added]" (p. 882). Temporal Construal Theory (TCT) predicts that "the preference for options with a positive high-level construal over options with a negative high-level construal will be stronger in the distant future than in the near future" (Trope & Liberman, 2000, p. 880). Hence, Trope and Liberman predicted and indeed found that preference for a radio with good sound-related functions but poor clock-related functions increases over time, whereas preference for a radio with poor sound-related functions but good clock-related functions decreases over time. Again, this is presumably contingent on the consumers seeing the product as a radio. If consumers believed the product was *intended to be a clock*, we should see the opposite pattern of effects—a manipulation surprisingly absent from both papers.

If Trope and Liberman (2000) are correct, then merely labeling a clock-radio a *clock* should flip which features are seen as desirable and feasible in the Kim et al. paper (2009). After all, Kim et al. achieved remarkable consistency with Trope and Liberman by labeling the product a *radio set*. Yet there is reason to predict that this will not happen.

There is a fundamental difference between focusing on the present and imagining the future, and arguably this difference extends beyond the nature of construal to incorporate unique characteristics of the consumption context. Researchers have shown that evaluations can flexibly incorporate contextual information in a near scenario, but be relatively void of contextual influence in a far scenario (Ledgerwood, Trope, & Chaiken, 2010). Indeed, this phenomenon is rather robust if one restricts their definition of context

to the immediate physical context. Yet this is not the only context consumers operate in. There is a broader context seldom explored by marketers, and this context guides a vast array of consumption-related behaviours. It is when an attitude towards a product is more strongly linked to what it would be like to interact with the product. This type of context relies on mental simulation, which is the ability to project one's *self* into an imaginary future (Taylor, Pham, Rivkin, & Armor, 1998; Tulving, 2002). It incorporates one's personal identity, or better yet, one's *ideal self*. This is why mental simulation can be biased by an individual's self-concept (Conway & Pleydell-Pearce, 2000; Wilson & Ross, 2003).

Consider the clock-radio example. A clock-radio can be described in multiple ways, and these descriptions can be ordered on a continuum from concrete (e.g., purchasing the best features for the best price) to abstract (e.g., purchasing the one that goes best with *my* décor; Trope & Liberman, 2010; Vallacher & Wegner, 1985). On one end of the continuum, concrete construals define an object in terms of its constituent parts, whereas on the other end, abstract construals define an object in relation to its broader context (Libby & Eibach, 2011). Hence, it could be that in the near future, consumers are more apt to process the product within the immediate context, whereas in the distant future, consumers are more apt to process the product within the broader context (i.e., the usage experience). This prediction is not without support.

There is a wealth of literature to suggest that future thinking tends to incorporate principle characters, contexts, and actions (Gardiner, Ramponi & Richardson-Klavehn, 2002). Future simulations also tend to feature more particularities than regularities (Suddendorf & Corballis, 2007). As such, our ability to travel forward in time, what is

commonly referred to as *mental time travel*, is more about shaping planned behaviour and imagination (Schacter, Addis, & Buckner, 2007; Suddendorf & Corballis, 1997; Tulving, 2001). Hence, it seems almost fitting that future simulations tend to be coloured by affect (D'Argembeaua & Linden, 2007; 2004). Consider, for example, if you were asked to name a luxury sports car. Knowing that a Ferrari fits the normative definition is very different than imagining driving one. Indeed, you would likely not imagine being stuck in traffic—though an equally probable event. This is one of the reasons why people often make "choices that fail to optimize hedonic experience" (Wirtz, Kruger, & Diener, 2003, p. 522). Most prospective simulations are biased by current emotions.

It may be tempting to dismiss the role of emotion when it comes to the clock-radio example given that Trope and Liberman (2000) explicitly argued in favour of temporal construal theory over *valence-dependent time discounting*—the idea that temporal distance will increase the attractiveness of an object to the extent that it is associated with positive or negative features (Lewin, 1951; Miller, 1944). The argument being that the clock-positive but sound-negative radio and clock-negative but sound-positive radio both "give rise to a conflict between positive *and* negative features [italic added]" (Trope and Liberman, 2000, p. 882). However, this line of reasoning assumes that a *radio* with good sound-related features but poor clock-related features is of equal valence as a *radio* with poor sound-related features but good clock-related features. Not only was this assumption not tested, but there is reason to believe it to be invalid, particularly when it comes to an ambiguous product where only the sound-related features were consistent with the product's category.

If we consider the single category belief problem, the results of Kim et al. (2009) and Trope and Liberman (2000) are perfectly consistent with valence-dependent time discounting. Both studies were dealing with competing categories where only one category was activated, and temporal distance increased the attractiveness of the product to the extent that the activated category was associated with positive or negative features. This is particularly problematic for Kim et al. given the authors' position study 1 as a replication to motivate their inquiry, but their distinction between desirable and feasible features would seemingly support differences in valence—something Trope and Liberman did not endorse.

The reason why it matters whether the results were due to valence-dependent time discounting or goal dependent construals is because, in the case of valence-dependent time discounting, the product's intended goal is a sufficient but not a necessary requirement to predict preferences over time. That is, just because we can show that a radio's sound quality matters more than its clock quality, does not mean that if we manipulated the product's goal to be a clock, the discrepancy in preference would reverse. Why? Because focusing on the impact of sound quality within the broader usage experience may evoke a stronger emotional response than focusing on the impact of clock quality. Hence, when we imagine interacting with the product, the valence of the sound-related features may take precedence because they simply matter more.

If future simulations are more likely to conjure a product's usage experience, and if future simulations can be biased by affect, attitude stability over time may indeed have more to do with how the valence of the features relate to the usage experience than to the product's intended goal. Hence, regardless of whether we manipulate a manufacturer's

intent for a clock-radio to be a *radio set* or a *clock*, and more importantly, regardless of whether consumers classify a clock-radio as a radio set or a clock, attitudes may remain predictably unstable in the same direction. That is, irrespective of goal or classification judgment, preference for good sound-related features but poor clock-related features may increase over time, whereas preference for poor sound-related features but good clock-related features may decrease over time.

The challenge with the above prediction (H4.1) rests not in testing attitude consistency, but in testing whether the effect is truly the result of representing the usage experience in the distant future as opposed to the product category in the near future. To do this, we must first understand what it would mean to represent the usage experience as opposed to the object. In particular, we should see clear differences between near future and distant future simulations in terms of how people mentally represent the product (H4.2), themselves (H4.3), and the act of consumption (H4.4), and these representations should correspond with predictable changes in memory (H4.5). Should these effects manifest as expected, they would not only pose a considerable challenge for the notion of goal dependent construals, but more importantly, they would suggest that researchers contrasting temporally near simulations against temporally far simulations may be tapping two distinct aspects of consumption. The following paragraphs handle each of the subsequent hypotheses in detail (H4.2 to H4.5). Exhibit 4 presents the core hypotheses that underlie the proposition that *context influences attitude stability* (P4).

Exhibit 4: Proposition #4 – Context Influences Attitude Stability

SUMMARY OF STUDY 4 HYPOTHESES	
4.1*	*Target Evaluations.* A product's intended goal will predict consumers' target evaluations in the near future but not in the distant future.
4.2	*Category Representations.* Consumers will be more likely to think about a common usage experience when simulating distant future consumption than when simulating near future consumption, whereas they will be more likely to think about the product's features when simulating near future consumption than distant future consumption.
4.3	*Mental Representations.* Consumers will be more likely to imagine consuming in the third person (relative to the first person) when simulating distant future consumption than when simulating near future consumption.
4.4	*Consumption Representations.* Consumers will be more concerned with regrets of inaction (relative to regrets of action) when simulating distant future consumption than when simulating near future consumption.
4.5	*Simulation Recall.* Consumers will recall more affective reactions to features, psychological states, first-person accounts, fine details, and associated thoughts after simulating near future consumption, whereas they will recall more affective reactions to the experience, spatial relations, third-person accounts, peripheral details, and aspects on their physical appearance after simulating distant future consumption.
** Core Hypothesis for which H4.2 to H4.5 attempt to explain (i.e., highlight the mechanism)*	

6.1 Category Representation (H4.2)

The literature on single category beliefs is predicated on taxonomic processing—identifying what a product is and stating its core functionality. Researchers have yet to examine how single category beliefs operate over time. Researchers have shown that taxonomic processing benefits from a concrete construal, whereas thematic processing benefits from an abstract construal (Noseworthy et al., 2010). This is not surprising given that thematic processing allows individuals to make sense of the past and *predict the*

future (Lin & Murphy, 2001; Markman, 1984). Hence, in the near future, people may be more prone to represent a product taxonomically (what the product is and what it does), whereas in the distant future, people may be more prone to represent a product thematically (how the product is used and what it is used with). This would be consistent with recent findings that abstract construals can increase the number of complementary, between-category purchases (Goldsmith, Xu, & Dhar, 2010). If so, this finding would begin to support the idea that individuals who imagine the distant future tend to process the usage experience as opposed to the product category. Furthermore, if participants do indeed generate more thoughts about the usage experience in the distant future, and if the nature of the thoughts does not vary with the product's intended goal, then one would be hard pressed to argue in favour of goal dependent activation.

6.2 Mental Representation (H4.3)

Of course, mental simulation plays a crucial role in our ability to plan and prepare for our future (Atance & O'Neill, 2001; Schacter et al., 2007; Wheeler, Stuss, & Tulving, 1997). However, it also plays a role in how we literally see ourselves. There is recent evidence linking mental simulation and particularly imagery perspective (whether we see ourselves in third person or in first person) to an individual's level of construal (Libby, Shaeffer, & Eibach, 2009; Vasquez & Buehler, 2007).

Libby and Eibach (2011) argued that a first-person perspective involves a bottom-up style of thinking in which people incorporate concrete features and define events in terms of constituent aspects, while a third-person perspective involves a top-down style

of thinking in which people integrate the broader context and define events in terms of its abstract meaning (p. 188). Researchers have confirmed that people who imagine in the third person tend to process information more abstractly, whereas people who imagine in the first person tend to process information more concretely (Shaeffer, Libby, & Eibach, 2011). What is fascinating about this effect is that it is bidirectional—people who think abstractly favour a third-person perspective, whereas people who think concretely favour a first-person perspective (Libby et al., 2009).

Given that near future events correspond with concrete thinking, whereas distant future events correspond with abstract thinking (Liberman & Trope, 1998), it could be that when people imagine temporally distant consumption they tend to do so in the third person, as an actor consuming the usage experience. In temporally near consumption, such mental simulation is of little value because it is the product, as opposed to the usage experience, that is being consumed. Hence, when people imagine temporally near consumption they should do so more in the first person. This prediction would fit with hypothesis 4.2 given that thematic processing contextually links disparate products through conventional association (the usage experience) and a third-person perspective may make the association more salient.

6.3 Consumption Representation (H4.4)

Rosenweig and Gilovich (2011) recently noted an important distinction in the nature of regret for material and experiential purchases. Material purchases tend to generate regrets of actions (buyer's remorse), whereas experiential purchases tend to

generate regrets of inaction (missed opportunities). This phenomenon shares an important relationship with hypothesis 4.3 given there is evidence linking regret to imagery perspective. Specifically, picturing a regrettable incident from the third-person perspective rather than first-person perspective can decrease regrets of action but increase regrets of inaction (Valenti, Libby, & Eibach, 2011). Of course, our clock-radio is a material purchase. Hence, we should see buyer's remorse factor more strongly than missed opportunities, particularly given that the product explicitly conveys some inferior features. However, if people are processing temporally distant consumption as a usage experience, they should be more concerned with missed opportunities than with buyer's remorse. Alternately, in the near future, people should process the clock-radio as a material purchase and thus be more concerned with buyer's remorse than missed opportunities. Again, should this finding manifest it would suggest that the temporal frame was cuing much more than just a change in construal. If so, we should see predictable differences in how participants represent near and distant simulations.

6.4 Simulation Recall (H4.5)

Researchers have shown that along with differences in evaluations caused by the temporal frame, people tend to show predictable differences in memory. Specifically, Kim et al. (2009) observed that people were more apt to recall sound-related features (as opposed to clock-related features) when imagining the distant future, whereas in the near future, people recalled both the sound-related and clock-related features about equally.

The authors interpreted this as evidence that individuals considered feasibility (clock-related) features in the near future more so than in the distant future.

Although plausible, it is important to note that in the Kim et al. studies there was always a desirability-related feature tagged to the feasibility-related feature. That is, the clock-positive product was always sound negative, and the sound positive product was always clock negative. Hence, another interpretation that is consistent with Trope and Liberman (2000) is simply that high-level (sound-related) features carry more weight over time. Although the two interpretations may sound equivalent, the latter suggest that in the absence of a high-level feature the difference in recall for the low-level features may disappear. In other words, the high-level features were driving the effect. The reason this is important is because it brings up the question about what it means for something to carry more weight over time.

Like many of the other hypotheses, hypothesis 4.5 shares an important relationship with hypothesis 4.3. Researchers have linked changes in memory with imagery perspective. Specifically, when people imagine themselves in the first-person, they tend to recall more information about their bodily sensations, affective reactions, and psychological states, whereas when people imagine themselves in the third-person they tend to remark on peripheral details, while focusing on key actions, spatial relations, and their physical appearance as actors within a scene (Fiske, Taylor, Etcoff, & Laufer, 1979; McIsaac & Eich, 2002). If the relationship between construal level theory and imagery perspective is as strong as evidence would suggest, then we should see corresponding differences emerge as a function of the temporal frame. If so, this would be strong evidence that there may be more to how consumers represent objects in memory than

mere route recall. That is, there may be qualitatively distinct concepts that emerge over time that drive one target feature (sound related feature) to be more salient than the other (clock related features).

Bringing all of this together, I predict that in the distant future, consumers will be more likely to process the usage experience than the product itself. Specifically, when consumers imagine the distant future, they will envision themselves as actors engaging in consumption [third person], they will conjure a scenario where the consumption took place [experiential consumption], they will concern themselves with regrets of inaction [missed opportunities], and their recollections will focus primarily on the events surroundings the product's usage experience. Conversely, when consumers simulate the near future, they will envision the product as if through their own eyes [first person], they will focus on the product's transient utility [material consumption], they will concern themselves with regrets of action [buyer's remorse], and their recollections will focus primarily on the product's physical characteristics. Should the results manifest as expected, they would lend some much needed insights into the nature of anticipatory consumption.

6.5 Method

6.5.1 Participants & Design

Undergraduate students (N = 240; 51% female; M_{age} = 21.1) participated in the study in exchange for course credit. The sample was calculated based on standard estimates for the social sciences ($1 - \beta = .80$; $f = .25$; $\alpha = .05$; Cohen, 1998), and then

rounded up to account for the somewhat small effect sizes observed in prior work (e.g., Trope & Liberman, 2000; Kim et al., 2009; Zhao et al., 2011). The sample requirement worked out to exactly 30 participants per cell. The manipulation and dependent measures were administered electronically in a behavioural lab. Participants were randomly assigned to one of eight experimental conditions in a 2 (target: sound-positive vs. clock-positive) × 2 (temporal distance: near future vs. distant future) × 2 (category cue: clock vs. radio) between-subjects factorial design. The study followed the exact same procedures outlined in Kim et al. (2009; study 1) while using Trope and Liberman's (2000; study 3) manipulation for the target.

6.5.2 Stimuli Construction

The scenarios used in this study were taken directly from Trope and Liberman (2000; study 3). The only difference being that two additional scenarios were created to shift the product's intended goal towards being a clock rather than a radio set (see scenarios 3 and 4 below). The four scenarios shown below, including their temporal frame (i.e., tomorrow vs. one year from now) made up the eight experimental conditions.

1. **Radio, Sound-Positive:** "Imagine that tomorrow [one year from now] you will buy this new radio set (shown below). You need a simple set in the kitchen to listen to morning programs and music when you get up. When you arrive home, you discover that it fits just great in the place you wanted to put it, and the sound is really good. However, the clock that is built into the set turns out to be pretty useless. The digits are too small and can be hardly seen unless you stand right in front of it."

2. **Radio, Clock-Positive:** "Imagine that tomorrow [one year from now] you will buy this new radio set (shown below). You need a simple set in the kitchen to listen to morning programs and music when you get up. When you arrive home, you discover that if you put the radio in the place you wanted, the reception is bad, and to get reasonable reception you have to put it in a rather inconvenient place. However, the clock that is built into the set turns out to be pretty useful. It has large clear digits that can be easily seen from anywhere in the kitchen."

3. **Clock, Sound-Positive:** "Imagine that tomorrow [one year from now] you will buy this new clock (shown below). You need a simple clock in the kitchen to keep you on track in the morning. When you arrive home, you discover that it fits just great in the place you wanted to put it, and the radio that is built into it sounds really good. However, the clock turns out to be pretty useless. The digits are too small and can be hardly seen unless you stand right in front of it."

4. **Clock, Clock-Positive:** "Imagine that tomorrow [one year from now] you will buy this new clock (shown below). You need a simple clock in the kitchen to keep you on track in the morning. When you arrive home, you discover that if you put the clock in the place you wanted, the built in radio gets bad reception, and to get reasonable reception you have to put it in a rather inconvenient place. However, the clock turns out to be pretty useful. It has large clear digits that can be easily seen from anywhere in the kitchen"

To ensure that individuals were not ignoring the product's goal, each scenario accompanied a visual depiction. Given that category activation tends to occur rather quickly at the basic level, and given that basic-level processing is highly visual (Rosch et al., 1976), combining a visual depiction with the label was believed to assist in reinforcing the product's goal. The selection of an appropriate visual depiction was accomplished through a pretest (n = 46). Participants were shown photographs of 12 different clock-radios, and were asked to classify each photograph as either depicting a clock, a radio, or uncertain. The stimuli with the greatest frequency of being categorized as a clock (radio) while having the lowest frequency of being categorized as a radio (clock) are shown in figure 1. The photographs (whichever matched the label) were

displayed beneath the four scenarios listed above—hence, the "shown below" statement in parentheses in each scenario.

Clock: 92%

Radio: 90%

Figure 1: Clock and Radio stimuli used with the product labels

6.5.3 Procedures & Dependent Measures

Prior to reading the script and seeing the corresponding photographs, participants were instructed that they were about to read a common scenario and were explicitly asked to imagine what it would be like to be in the specified scenario. Participants then read the scenario and viewed the product. Consistent with prior work, participants were asked to evaluate the product for use either the next day (near-future) or one-year from now (distant-future). The ratings were indicated on scale ranging from 1 (unsatisfactory) to 7 (satisfactory; Kim et al., 2009; Trope & Liberman, 2000). Participants were then informed that consumers often imagine interacting with a product in a variety of ways, and were asked to indicate whether they imagined interacting with the product discussed in the scenario in the first-person ("as if looking out of your own eyes at your hands holding the product") or whether they imagined interacting with the product in the third-

person ("as if watching yourself holding the product"; Libby et al., 2009). Participants then read the following:

> "Presumably, most of your purchases have worked out well for you. Occasionally, however, we make decisions that we end up regretting. And when we do, there are two kinds of regrets we can have. We can regret: (1) things we did that we wish we hadn't done, and (2) things we didn't do that we wish we had. When you think back to the scenario you just read, and whether or not you would purchase the product, what would you say would possibly be your biggest regret?"—Rosenweig & Gilovich, 2011

Both the imagery perspective (first-person vs. third-person) and the nature of regret (action vs. inaction) were presented as binary choices. After completing the evaluation measures, participants engaged in a though listing task. A two minute time-limit was imposed on the task to capture only the most accessible thoughts (Cacioppo & Petty, 1981). Upon completing the thought task, participants were administered a mental recollection task, which simply asked that they revisit their previously imagined scenario and write down exactly what they imagined (what they saw, what they felt, etc.). The entire task took approximately 20 minutes to complete.

6.6 Results

6.6.1 Target Evaluations

An analysis of target evaluations as a function of target (sound positive vs. clock positive), category cue (radio vs. clock), and temporal distance (near future vs. distant future) yielded a significant three-way interaction, $F(1, 232) = 3.98$, $p < .05$, $\eta^2 = .02$. The nature of the three-way interaction was such that in the *near future* there was a significant

category cue × target interaction, $F(1, 232) = 3.29$, $p < .05$. As illustrated in table 5, when the product's goal was to be a clock, participants evaluated the clock-positive target more favourably ($M = 3.63$) than the sound-positive target ($M = 3.13$). When the product's goal was to be a radio set, participants evaluated the sound-positive target more favourably ($M = 3.93$) than the clock-positive target ($M = 3.62$). Each of these contrasts was not significant, which is consistent with near future conditions in prior work. Nevertheless, the pattern would seem to support the influence of the product's intended goal. This all changed when participants imagined the distant future. In the distant future, the interaction between category cue and target was not significant ($F < 1$). The only significant result was a main effect of target. Specifically, participants evaluated the sound-positive target ($M = 3.87$) more favourably than the clock-positive target ($M = 3.10$), $F(1, 232) = 11.65$, $p < .001$. Hence, consistent with hypothesis 4.1, the product's goal influenced participants' evaluations in the near future but not in the distant future.

The three-way interaction results pose a serious challenge for the claim of goal dependent construals (Trope and Liberman, 2000). Unlike Kim et al. (2009; study 1) and Trope and Liberman (2000; study 3), only half of the participants were told the product was a radio set. The remaining half was told the product was a clock. Nevertheless, when estimating preference in the distant future, individuals preferred the sound-positive product over the clock-positive product, regardless of the product's intended goal. If the results are not due to goal dependent construals then maybe there is something to the argument made by Kim et al. (2009) that some features are more desirable whereas other features are more feasible. However, the data does not support this interpretation either.

Table 5: Means, Standard Deviations, Proportions, and Cell Counts for Study 4

	Near Future				Distant Future			
	Clock		Radio Set		Clock		Radio Set	
	Sound-Positive	Clock-Positive	Sound-Positive	Clock-Positive	Sound-Positive	Clock-Positive	Sound-Positive	Clock-Positive
Evaluations	3.13 (1.22)	3.63 (1.19)	3.93 (1.12)	3.62 (1.21)	3.83 (1.18)	2.86 (1.11)	3.90 (1.20)	3.33 (1.15)
Category Reps.	.20 (.73)	.27 (.72)	-.09 (.72)	-.14 (.78)	.06 (.76)	.27 (.60)	-.02 (.74)	-.16 (.76)
Experiential	28%	13%	12%	23%	47%	58%	40%	42%
Material	47%	50%	54%	43%	37%	30%	33%	27%
Mental Reps. *	20%	33%	30%	43%	47%	57%	47%	60%
Consump. Reps. **	23%	7%	17%	10%	43%	30%	50%	23%
Simulation Recall								
Affect: features	3.80 (1.95)	4.72 (2.29)	4.30 (1.76)	5.07 (2.58)	2.26 (1.87)	2.13 (1.65)	3.30 (2.38)	1.63 (1.27)
Affect: experience	.93 (1.01)	1.07 (.84)	.99 (1.03)	1.30 (1.07)	2.23 (1.68)	1.97 (1.60)	2.33 (1.56)	2.13 (1.75)
Psychological State	4.83 (2.27)	3.69 (2.12)	3.36 (2.23)	3.80 (1.97)	3.10 (1.68)	2.70 (1.44)	2.76 (1.54)	2.96 (1.60)
Associative Thought	2.03 (1.29)	1.34 (1.39)	1.43 (1.59)	1.30 (1.41)	1.27 (1.38)	1.60 (1.35)	1.23 (1.22)	1.37 (1.52)
Spatial	.90 (1.32)	2.34 (2.14)	1.70 (2.07)	2.29 (2.08)	3.28 (2.96)	2.57 (2.95)	3.10 (2.33)	3.53 (2.35)
Appearance	.80 (.81)	.79 (.90)	.70 (.84)	.81 (.85)	.93 (1.11)	1.23 (1.13)	.87 (1.16)	1.43 (.94)
First Person	4.60 (2.45)	5.10 (3.00)	5.00 (2.54)	4.77 (3.23)	4.13 (1.94)	3.27 (2.21)	3.37 (2.23)	3.90 (2.32)
Third Person	1.30 (1.31)	1.48 (1.54)	2.56 (3.72)	1.26 (1.34)	1.27 (1.33)	1.10 (1.18)	1.22 (1.48)	1.32 (1.11)
Fine Details	2.20 (1.47)	1.51 (1.54)	2.57 (2.12)	1.17 (1.34)	1.25 (1.38)	1.13 (1.11)	1.27 (1.40)	1.90 (1.42)
Periph. Details	1.33 (1.18)	1.55 (1.37)	1.29 (1.25)	1.50 (1.22)	1.63 (1.42)	2.37 (2.34)	1.93 (1.74)	2.57 (2.51)
Cell Size	30	30	30	30	30	30	30	30

*Note—Standard deviations are reported in parentheses; * = % of third-person imagery; ** = % of regrets of inaction (missed opportunities).*

Along with the three-way interaction, the results yielded a significant target × temporal distance interaction, $F(1, 232) = 7.44$, $p < .01$, $\eta^2 = .03$. Simple effects revealed that participants who considered the product for future use evaluated the sound-positive target more favourably ($M = 3.87$) than the clock-positive target ($M = 3.11$), $F(1, 232) = 11.65$, $p < .001$. Participants who considered the product for immediate use, however, did not differ in target evaluations ($M_{\text{Sound\_Pos}} = 3.53$ vs. $M_{\text{Clock\_Pos}} = 3.63$). Of course, this interaction is embedded in the previously discussed three-way interaction, but the reason it is worth mentioning is because it is perfectly consistent and even reported in the identical fashion as Kim et al. (2009). However, Kim et al. interpreted the interaction as indication that participants considered high-level (sound-related) features regardless of whether they planned to use the radio set immediately or in the future, *but considered low-level (clock-related) features to a greater extent in the former condition than the latter* (p. 637).

Not only would the above interpretation require a different statistical contrast, but it is conceptually problematic because the clock-positive product always had poor sound-related features. This is what made it, by definition, clock positive. It is in this respect that the target labels are a somewhat misleading. Hence, observing that preferences dropped over time for a clock-positive product really gives no indication that people were considering the clock-related features at all. In fact, assuming participants were not considering the clock-related features would be consistent with construal level theory. Trope and Liberman (2000) predicted that preference for a negative high-level feature will decrease over time (poor sound quality), whereas preference for a positive high-level feature will increase over time (good sound quality). Kim et al. acknowledged that the

sound-related features were indeed the high-level features. Hence, it could have been the negative sound-related features driving the effect. Given there was no control condition to decouple the valence of features, it is difficult to accept an interpretation that goes against the theory being used to predict it.

The question then is: if not the product's intended goal, and if not the characteristics of the features themselves, then what caused the observed discrepancy in evaluations?

6.6.2 Category Representations

Two unaffiliated coders classified participants' thoughts for whether they mentioned the clock category, radio category, or remained undefined. In addition, each coder was instructed to record whether participants explicitly identified a specific usage experience (e.g., "getting to school on time"), and whether they explicitly mentioned the product features—good or bad (e.g., "I doubt this clock would work that well because of the small digits"). The two coders' results were consistent (intercoder reliability = .78). All outstanding disagreements were resolved through discussion.

A thought index was constructed by taking the difference between the number of clock-related thoughts and radio-related thoughts, divided by the total number of thoughts. Zero indicates an equal number of clock and radio-related thoughts, a positive number indicates more clock-related thoughts, and a negative number indicates more radio-related thoughts. A full factorial ANOVA revealed only one significant effect. Participants were more likely to list clock-related thoughts when the target was labeled as a clock (M = .20) and were more likely to list radio-related thoughts when the target was

labeled a radio set (M = -.10), $F(1, 232) = 10.02$, $p < .005$, $\eta^2 = .04$. No other effects approached significance ($Fs < 1.5$). Hence, this effect did *not* vary by temporal distance. The results confirm that the category cues altered the product's intended goal as expected. This should not be surprising given what we know about the strength of the product's visual appearance and label in defining consumer inferences (Gregan-Paxton et al., 2005; Moreau et al., 2001b; Noseworthy & Goode, 2011). Nevertheless, this occurred despite distant future evaluations remaining consistent across the two categories.

As mentioned, beyond the category itself (whether a clock or a radio), the coders also classified the characteristics of participants' thoughts. This is where the usage experience becomes important. Consistent with hypothesis 4.2, of the 120 participants in the distant future condition, 38 (32%) explicitly remarked on the product's functionality (good or bad), whereas of the 120 participants in the near future condition, 58 (48%) explicitly remarked on the product's functionality, $\chi^2(1) = 6.94$, $p < .05$, □ = .17. Contrast this with the observation that 55 of the 120 participants (42%) in the distant future condition explicitly identified a usage experience, a result vastly different than the 23 out of 120 participants (19%) who identified a usage experience in the near future condition, $\chi^2(1) = 14.35$, $p < .001$, □ = .25. These results confirm that participants were more likely to focus on the product in the near future than in the distant future, but were more likely to focus on the product's usage experience in the distant future than in the near future.

A follow-up content analysis of participants' experiential thoughts revealed no material difference across category cues in the distant future condition. The majority of participants described some variant of *listening to music in the kitchen in the morning*. Hence, despite individuals thinking about the product as clock or a radio, they did not

differ in how they imagined interacting with the product. This would support the idea that people are more likely to process the usage experience in the distant future than in the near future. If so, we should see differences in others factors that relate directly to how people represent the usage experience.

6.6.3 Mental Representations

A binary logistic regression was conducted with imagery perspective (0 = *first person*; 1 = *third person*) as the dependent variable and temporal distance (near future vs. distant future), target (sound positive vs. clock positive), and category cue (clock vs. radio set) as the predictor variables. Overall, there was a significant effect of temporal distance on imagery perspective. Consistent with the bidirectional relationship linking abstract (concrete) construals to third-person (first-person) imagery (Libby et al., 2009), and consistent with hypothesis 4.3, participants were more than twice as likely to imagine the product in the third-person perspective, relative to the first-person perspective, when they considered the distant future rather than the immediate future, $B = .89$, $SE = .27$, $p < .005$, OR = 2.43.

Beyond the effect of temporal distance, there was also a significant effect of target (sound-positive vs. clock-positive). Participants were more likely to imagine the product in the third-person perspective when they imagined purchasing the clock-positive product rather than the sound-positive product, $B = .54$, $SE = .27$, $p < .05$, OR = 1.72. Although not predicted, this finding is rather informative because it relates directly to the interpretation made by Kim et al. (2009). It may be tempting to interpret this result as

participants responding to the clock-positive features, however, there is reason to believe this result has nothing to do with clock quality, and everything to do with sound quality.

Researchers have linked imagery perspective with affect and emotion. Third-person imagery can be used to blunt an emotional event, assisting an individual to process the event in a detached manner (Kenny et al., 2009; McIssac & Eich, 2004; Williams & Moulds, 2007). Third-person imagery can also be used for self-enhancement when people want to disavow responsibility for an undesirable action (Sanitioso, 2008). Presumably, in each of these cases the third-person perspective served as a coping mechanism. Hence, it is not that third-person imagery uniformly dampens emotion. This observation led Libby and Eibach (2011) to propose a contingency framework, whereby third-person imagery will reduce affective response in situations where the broader context of one's life reduces the emotional power of the event, but enhance affective response in situations where the broader context of one's life enhances the emotional power of the event. Hence, it could be that individuals were more apt to imagine the sound-negative (vis. clock-positive) product in the third person as a means of detaching themselves from the usage experience. Not only would this support valence-dependent time discounting, but it would also support hypothesis 4.1. Sound quality had a greater emotional impact on the usage experience than clock quality.

6.6.4 Consumption Representations

A binary logistic regression was conducted with the nature of regret (0 = *regret of action*; 1 = *regret of inaction*) as the dependent variable and temporal distance, target,

and category cue as the predictor variables. In step with the mental representation results, there was a significant effect of temporal distance on the nature of regret. Consistent with evidence that the nature of regret is different for material and experiential purchases (Rosenweig & Gilovich, 2011), and consistent with hypothesis 4.4, participants were almost three times more likely to anticipate regrets of inaction (missed opportunities), relative to regrets of action (buyer's remorse), when they considered the distant future rather than the immediate future, $B = 1.05$, $SE = .33$, $p < .005$, OR = 2.87. More specifically, 17 of the 120 participants (14%) in the near future condition indicated that their biggest regret was one of inaction, a result quite different than the 38 out of 120 participants (32%) in the distant future condition whose biggest regret was one of inaction, $\chi^2(1) = 10.41$, $p < .005$, □ = .21.

Consistent with the mental representation results, there was more than just temporal distance influencing participants' consumption representations. Again, there seemed to be something about the target. Participants were about twice as likely to anticipate regrets of inaction, relative to regrets of action, when they imagined purchasing the sound-positive product rather than the clock-positive product, $B = .65$, $SE = .32$, $p < .05$, OR = 1.92. Although not hypothesized, this finding reinforces the idea that the targets were not identical (i.e., poor clock quality ≠ poor sound quality). This occurred despite the category representation results confirming the cues activated the target's intended goal. Indeed, if sound quality causes greater affective reaction when conjuring the usage experience, this finding makes intuitive sense. However, up to this point, the role of affect can only been inferred from the results. To confirm whether affect played a role in the target evaluation, we would need to observe it in participants' mental simulations.

6.6.5 Simulation Recall

Participants' recollection protocols were coded into ten categories by two unaffiliated coders, both blind to study conditions and hypotheses (intercoder reliability = .88). Following a coding scheme modified from McIsaac and Eich (2002), the ten categories were defined in terms of statements (single words or phrases) reflecting *affective reactions*, whether emotional or motivational towards (1) the product's features or towards (2) the product's usage experience (e.g., it's *fun* to listen to music in the morning; I'm *determined* buy a clock with bigger digits); (3) *psychological states* (e.g., I *wondered* if I made the best purchase; I was *confused* about where to put it); (4) *associated thoughts*, including knowledge or experiences outside of the task (e.g., I usually have a coffee when I wake up in the morning; I need to buy new earphones for my iPod); (5) *personal appearance* (e.g., I can see myself in my pajamas; I can see me fixing my hair in the morning); (6) *spatial relations* (e.g., the clock was *beside* my coffee maker; the radio was just *to the left* of my bed); (7) *first-person accounts* (e.g., I, me, myself); (8) *third-person accounts* (e.g., he, she, they); (9) *fine details* of the target, including colour, shape, size, and numerical quantifiers (e.g., the clock was *small*; the radio had a *round* shape); and (10) *peripheral details* that were not central to the target (e.g., the sun was shining into my bedroom).

The ten categories were modified from McIsaac and Eich's (2002) original 11 categories, splitting out affective reactions into whether they were towards the features or the experience, and excluding only *physical sensations* and *physical actions* because participants did not physically interact with the target like they did in the McIsaac and Eich study.

The total number of recollections in each category was calculated for each participant, and the resulting data were then averaged over participants. An analysis of participants' recollection protocols (the ten categories) as a function of target (sound positive vs. clock positive), category cue (radio vs. clock), and temporal distance (near future vs. distant future) yielded a significant multivariate main effect of temporal distance, $F(10, 222) = 16.82$, $p < .005$. Supplementary t tests were carried out using a Bonferroni-adjusted alpha of .005 (i.e., .05/10).

The results revealed that *near future recollections* contained more statements reflecting affective reactions towards the product's features ($M = 4.45$ vs. $M = 1.91$), $t(238) = 7.99$, $p < .001$, $d = 1.03$; psychological states ($M = 3.92$ vs. $M = 2.88$), $t(238) = 4.24$, $p < .001$, $d = .55$; and first-person accounts ($M = 4.88$ vs. $M = 3.67$), $t(238) = 3.76$, $p < .001$, $d = .48$. In contrast, *distant future recollections* contained more statements reflecting affective reactions towards the usage experience ($M = 1.07$ vs. $M = 2.17$), $t(238) = -5.93$, $p < .001$, $d = .76$; spatial relations ($M = 1.79$ vs. $M = 3.12$), $t(238) = -3.85$, $p < .001$, $d = .49$; peripheral details ($M = 1.41$ vs. $M = 2.11$), $t(238) = -3.26$, $p < .005$, $d = .42$, and a marginal effect on personal appearance ($M = .78$ vs. $M = 1.11$), $t(238) = -2.63$, $p = .009$, $d = .33$. The only dimensions along which near and distant recollections did not differ were third person accounts (not to be mistaken for third-person perspective; $M = 1.22$ vs. $M = 1.62$, $p = .20$), fine details ($M = 1.85$ vs. $M = 1.38$, $p = .14$), and associated thoughts ($M = 1.54$ vs. $M = 1.37$, $p = .33$). Hence, hypothesis 4.5 was partially supported. Nevertheless, the differences in participants' affective intentions were undeniable.

6.7 Discussion

Consider if you were about to move into a new apartment. Which would matter more to the broader context of your life: what it would take to physically move into the apartment (expenses, logistics, etc.) or what the apartment itself offers (e.g., space, utilities, etc.)? This example is taken directly from Kim et al. (2009; study 2). Despite a discussion about high-level and low-level features, the answer requires neither an understanding of construal level theory, nor an argument for valence-dependent time discounting. Not to denigrate the authors, but how can prospective judgments incorporate something that does not exist in prospect? In other words, if we imagine what it would be like to live in an apartment we have already consumed the act of moving in. It is a trade-off between a moment of transient utility to achieve a desired goal and fantasizing about the goal itself.

The results of this study offer some of the first empirical support for Libby and Eibach's (2011) contingency framework. Libby and Eibach made a poignant observation that "subjective feelings of distance may not always be determined by distance from sensory experience, even if the tendency to construe abstractly is" (p. 227). Hence, we have to be careful not to infer that an incident of abstract thinking is the result of some objective measure of distance. The irony should not escape us. Construal level theory is often paralleled with seeing the forest for the tree, yet many advocates of the theory suffer the analogy. As we know, a theory is not very useful if it explains everything.

Beyond linking imagery perspective with the level of construal, Libby and Eibach (2011) also (re)introduced the roles of emotion, the self, and the broader context of one's life. If we look at Table 5 there is one contrast left to discuss. Libby and Eibach argued

that when something negative influences the broader context of one's life, individuals can use third person imagery to mute the emotional impact of the event. If individuals were only considering sound quality, the simulation recall results make absolute sense. Individuals who simulated the distant future demonstrated a greater degree of affective responses towards the usage experience in the sound-positive condition rather than in the sound-negative condition. Even in this study's most base interpretation, arguments against valence-dependent time discounting do not hold.

With that said, one may argue that despite the content analysis of experience thoughts, the proposition that sound quality has a greater emotional impact on the usage experience than clock quality suffers the exact same problem that Kim et al. (2009) suffered. It is difficult to make an inference about the nature of the features when the manipulation compounds both valence and category. What is less opaque, however, is what the observed results imply about current interpretations for goal dependent construals. Not only did the product's intended goal not influence evaluations over time, but participants' mental representation of the temporally near and temporally distant scenarios corresponded to predictable changes in how people represent the product versus the product's usage experience.

When simulating the distant future, participants envisioned themselves as actors engaging in consumption [third person], they conjured a scenario where the consumption took place [experiential consumption], they concerned themselves with regrets of inaction [missed opportunities], and they subsequently recalled more affective and characteristic reactions towards the experience. Conversely, when simulating the near future, participant envisioned the product through their own eyes [first person], they

conjured more thoughts about the product's features [material consumption], they concerned themselves with regrets of action [buyer's remorse], and they subsequently recalled more affective and characteristic reactions towards the product itself. Hence, what occurs between near and distant musing is much more than a mere shift in construal. In fact, a shift in construal may very well be the result, not of temporal frame, but of the unique human capacity to extract, recombine and reassemble elements in memory into imaginary events that have yet to occur (Schacter et al., 2007).

Chapter 7

7 Contribution & General Discussion

At the heart of this thesis is the idea that context influences category activation. Although this may seem rather obvious, it is rarely considered. The emerging interest in how category activation can bias consumer judgments when categorization is ambiguous (i.e., the single category belief problem) has yet to account for how context plays a role in category activation. The current thesis illustrates that novel hybrid devices encourage contextual rehearsal. That is, people try to make sense of an ambiguous product by exploring its immediate or broader context. This observation suggests that context predicts which category will come to mind. This is important because it would explain why certain categories tend to dominate consumer inferences for products with functions that span multiple categories.

The aggregate value of the four propositions (P1 to P4) comes from their implications for management. Context is at least somewhat under the marketer's control. Thus, marketers could use this information to strategically alter category activation. The applications are as vast as the implications. A marketer could use this information to better align with, alter, or exploit consumers' functional expectations (*study 1*), attribute preference (*study 2*), perceptions of proto-typicality (*study 3*), and attitude stability (*study 4*). Indeed, these four areas were not arbitrarily chosen. Each represents a domain that has struggled with contextual variability in one way or another. However, instead of trying to

circumvent the issue of contextual variability, this thesis embraced it as yet another tool in the marketer's toolbox.

From a broad theoretical perspective, the inclusion of thematic processing offers a slant on category activation that does not require the assumption of perceptual similarity—a perspective that currently dominates in marketing (re: prototype and exemplar theory; Nosofsky, 1986; Smith & Medin, 1981). Likewise, the inclusion of schema congruity theory offers some insight into how certain activation strategies can be used to enhance product evaluations, particularly if they better fit the context. Although the substantive and theoretical merits of each study have been acknowledged in depth in each of the respective discussions, this thesis would not be complete without remarking on how the findings impact current practice and future research. Hence, I offer a short commentary on each study.

To begin with, study 1 showed us that brands are inextricably linked not only to their category membership, but also to their normative context. For example, rarely do we stop and consider the adjustment required of consumers to accept the iPad was relatively small, considering Apple already occupied the space with their Macbook (the laptop category), and occupied the functional transition with their iPhone (touch screen). Contrast this with the leap required of consumers to accept Apple Television (what would have been called iTV, if not for the rights being held by a UK broadcast company). From a strategic standpoint, the iPad and iTV equally leverage Apple's core competencies. Both are tech-based. Both run off similar software platforms. Indeed, our televisions may soon "have an app for that." However, Apple does not currently occupy the television category or the broadcast space. Hence, the novelty of Apple television was compounded

by violating not only the product category, but also the normative context. This left Apple in a rather unfamiliar position—they failed. They have since relegated their ambitions for the iTV to a 'hobby,' a work in progress.[4] The point is that Apple did not only fail the category, they failed the context. Effort to establish category membership is futile if you do not establish the contextual norm. In a sense, Apple may have missed a great opportunity to bring internet to television as opposed to television to internet.

Unlike study 1, the contributions of study 2 were a bit more pragmatic. Study 2 offered unique insight into how context influences choice. From a methodological perspective, prior work has focused predominantly on the choice composition as a means of eliciting context effects (Dhar, Nowlis, & Sherman, 2000). Researchers have yet to consider the external context, where choice is embedded. Study 2 extends this work by showing how the external environment can influence how consumers trade-off the strengths and weaknesses of different product attributes. Consider the implications. All current studies exploring attribute preference when categorization is ambiguous have done so in the absence of context. The results of study 2 illustrate the power of context in predicting category membership above and beyond even the product's label (one of the strongest category cues). Hence, it would not be a stretch to question the reliability of past results.

Beyond the obvious implications of going against the fundamental prediction of the single category belief problem, study 2 also offers the unique approach of embedding conjoint techniques, like DCE, within a broader experimental paradigm. This mixed-

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[4] http://www.macworld.com/article/164978/2012/01/apple_tv_hobby_nets_1_4m_quarterly_sales.html

method approach could be used in the future to generate important insight into moderators for alignable and nonalignable preference (see Markman & Lowenstein, 2010). Furthermore, because conjoint techniques are just as prevalent in practice and they are in academia, observing that the external context can influence the technique is something that manufacturers should not ignore. It is in this respect that study 2 answered recent calls for greater realism and relevance (Reibstein, Day, & Wind, 2009), by testing emerging theory within a more realistic context, and by eliciting preference as opposed to relying on self-report inferences—answering a major criticism in the single category belief literature (Hayes & Newell, 2009).

This brings us to study 3. Beyond the obvious implications that flow from the finding that thematically cued advertisements can alter the typicality of an ambiguous product, the finding that people can bind disparate products together under a normative context has considerable implications for researchers exploring the influence of the advertising context (i.e., the ad composition). To date, researchers exploring the effects of ad context have only documented relational elaboration within an advertising array of competing goods (within-category); when exploring disparate products (between-category) researchers have only documented item-specific elaboration (Malaviya, 2007; Malaviya et al., 1996; Noseworthy et al., 2011). Study 3 extends this literature by demonstrating that a strong contextual cue can thematically unite disparate products through conventional association, and this not only encourages relational elaboration, but it enhances product evaluations (consistent with the fit conditions in studies 1 and 2), and most importantly, it tends to persist even when the contextual cue is no longer present.

Where study 3 makes a significant departure from the other studies, is in revealing a cost to the fit hypothesis. Recent evidence suggests that certain consumers—females in particular—who utilize the advertising context to make sense of an extremely incongruent product tend to show a reduction in ad claim recognition (i.e., they have a hard time recalling the actual claims that were made in the ad; Noseworthy et al., 2011). In a similar vein, study 3 confirmed that most consumers, regardless of gender, use the context to varying degrees to make sense of product ambiguity, and because of this, they tend to suffer a similar deficit in ad claim recognition. Hence, the results of study 3 afford a cautionary note for marketers who may want to employ the fit hypothesis. From an even more pragmatic perspective, it could be argued that researchers exploring ad recognition without accounting for context may be inflating their results.

Finally, the results of study 4 represent some of the more fascinating effects observed in this thesis. We have all bought something only to later regret it. A recent study commissioned by Kodak in the UK revealed that British consumers will regret wasting more than £49,000 in their lifetime. The biggest contributors to post-purchase regret: clothing (32%), technology products (18%), and shoes (14%).[5] It should be no surprise then that in an unrelated survey of 1,694 British consumers, who recently had purchased the iPhone, revealed that 22% (one in five) regretted their purchase.[6] Of the reasons given, 43% said that they were jealous of rival cell phones. Indeed, this would

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[5] http://newslite.tv/2010/12/09/brits-regret-49000-of-pointles.html

[6] http://www.computerandvideogames.com/326765/22-of-iphone-buyers-regret-purchase-survey-says/

bode well for iPhone's number one rival, Android. Unfortunately, the return rate for most Android phones is purportedly as high as 40%.[7]

So who's holding all the chips? Who wins in this exchange? Study 4 suggests that we all lose—consumer and manufacturer alike. Consumers often purchase products in anticipation of what the usage experience will be. As a result, the product is consumed in prospect. The problem with this is that prospective judgments are biased by affect. So when we imagine interacting with the Blackberry Torch, for example, we do not imagine it being heavy or cumbersome. In the end, we are often left disappointed because the true usage experience seldom lives up to an idealized expectation. Unfortunately, this often cues us to reconsider the alternatives, and thus we do the entire dance again. Hence, it should not be surprising that near and distant preferences are inconsistent, rather it would be shocking if they were consistent.

It is important to note that this work focused specifically on initial exposure (e.g., when someone first sees a new hybrid product in an advertisement or an in-store display). This work did not take into account the *usage context* (Ratneshwar & Shocker, 1991), which is no less important when discussing schematic structures and schematic inconsistency. Researchers have shown that usage substitutability can frame similarity judgments, whereas usage versatility can alter protoypicality estimates (Ratneshwar & Shocker, 1991). This is quite meaningful because it supports the general observation that many successful hybrid combinations succeed after being subtyped into their own category (i.e., tablets). Hence, one of the limitations of this work is that it defines context

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[7] http://techcrunch.com/2011/07/26/androids-dirty-secret-shipping-numbers-are-strong-but-returns-are-30-40/

at the categorical level, when we know that schematic structures extend well beyond competing prototypes to include the product's usage occasion and valence.

With that said, the point of this work was to capture the initial moment when consumers make sense of a new hybrid product using existing knowledge. Although researchers have shown that expert and novice consumers differ when using existing knowledge to estimate multi-functional preference (Moreau et al., 2001a), this work extends these findings by illustrating that context can in some cases serve the same function as expertise. For example, after observing that consumers who were low in camera knowledge yet high in computer knowledge were most likely to purchase a digital camera, whereas those high in camera knowledge and low in computer knowledge were least likely, Moreau, Lehmann and Markman (2001a, p. 27) concluded that "advertising the digital camera in PC Magazine would likely be more effective than advertising it in Popular Photography." The results of this thesis support this finding but caution that the effect may have more to do with schematic activation than domain-specific knowledge. Indeed, when it comes to hybrid products, high expertise in one specific category may serve the same function as a contextual cue in that it sets the base referent. Hence, as observed in study 2, supplementary features would then contribute greater utility because they ultimately augment the base. Nevertheless, given the stimuli used in this thesis consolidated rather common and well-established categories, it would be interesting to see if the observed effects hold with a less familiar artifact combination.

Implicit in this thesis is a fundamental question of relevancy (Reibstein et al., 2009). Context is integral to consumption. How many times have you purchased a piece of furniture only to bring it home and question its appeal? We forget that the piece of

furniture was staged by a professional within a context that augments its qualities—be they colour, size, or texture. The context of your living room rarely is decorated with such purpose. For the most part, all products are staged, whether in print, on a shelf, or on television screen. Why then do we test product categorization, inferences, and evaluations in isolation from context? The answer is because context is messy. This is the paradigm problem that is plaguing marketing. If we adopt our principles from cognitive psychology, and forgo context in an effort to secure internal validity, we are relegated to findings that lend themselves to cognitive psychology, not to marketing. The strength of internal validity is not that it makes an observation true, but that it makes an explanation for the observation viable. Hence, we risk being left with incredible explanations for observation that no one can use. This thesis argues that context can be incorporated in most designs with little cost to internal validity. Indeed, cognitive psychology has championed and almost perfected the art of control and elegance in design by removing context. Marketers may be better served, however, from something a little less tidy.

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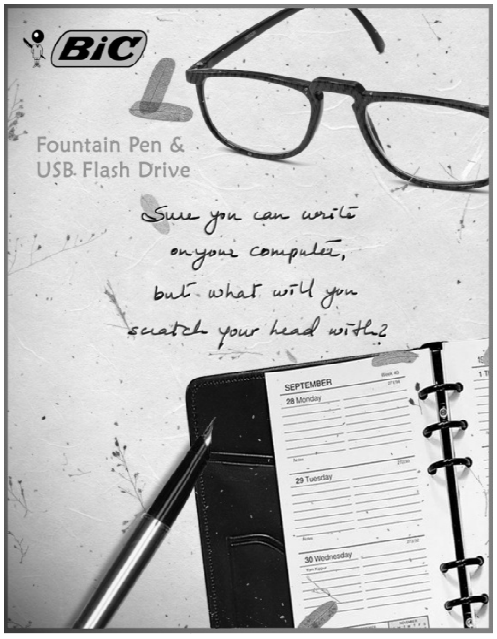
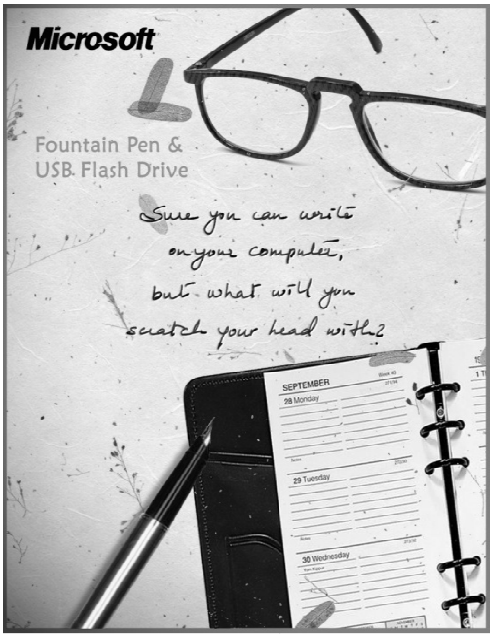
Appendix A: Study 1 Stimuli [8]

BRAND #1 (Perceptual Match)

BRAND #2 (Perceptual Mismatch)

PERCEPTUAL CONTEXT

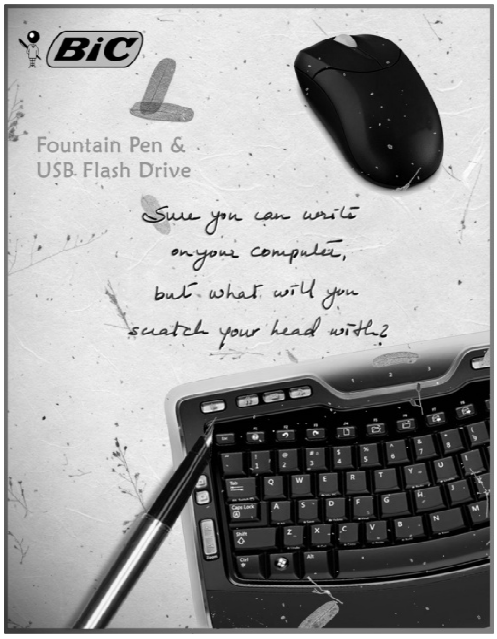


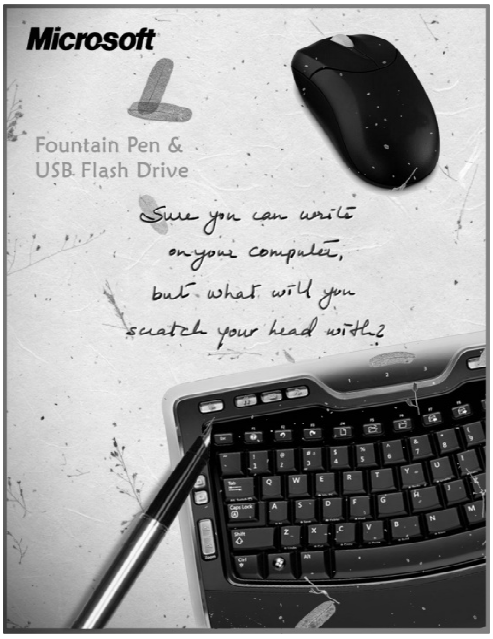


BRAND #1 (Perceptual Match)

BRAND #2 (Perceptual Mismatch)

CONCEPTUAL CONTEXT





[8] Note.—Match vs. Mismatch refers to whether the brand fit the target product (PEN).

Appendix B: Study 2 Stimuli [9]

Cellular Display

Headphone Display

Ambiguous Display

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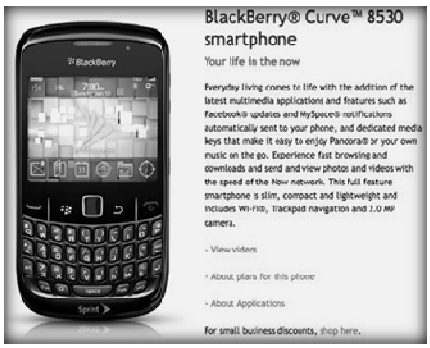
[9] Note.—Location photos were blurred, muted, and minimized under the guise that the target product was somewhere in the photo. Stimuli used in Noseworthy, Wang, and Islam (forthcoming).

Appendix C: Study 3 Stimuli

Electronics Array



Fashion Array

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	AMA-Sheth Consortium Fellow, 2011
	Ontario Graduate Scholarships, 2008-2009
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