The Effects of Ad Context and Gender on the Identification of Visually Incongruent Products

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Evidence from three experiments shows that due to superior visuo-spatial elaboration, females (relative to males) have a heightened ability to identify visually incongruent products that are promoted among competing products. Females discriminate relational information among competing advertisements and use this information to identify incongruent products that would otherwise go unidentified. Consequently, they evaluate the products more favorably. Consistent with predictions of a limited capacity in working memory, we find this performance for females coincides with a reduction in ad claim recognition. Close inspection reveals the trade-off between product identification and ad recognition is the result of involuntary resource allocation from verbal processing to visuo-spatial processing. Hence, females may be able to use the advertising context to identify an extremely incongruent product, but this performance is not without a cost. Our results have important implications for research on product incongruity, gender, and advertising context.

The ability of females to absorb the details of visual objects has been documented since the 1940s (Wesman 1949). The most consistent finding is that females differ from males in how they process groups of visual objects. In general, males have what is referred to as superior visuo-spatial orientation and navigation. Hence, men outperform women in mental rotation and spatial navigation tasks (Linn and Peterson 1985). When it comes to groups of objects, however, females are better at judging visual characteristics (McKelvie 1987), at recalling location and identity (Eals and Silverman 1994), at noticing when new objects are added (Silverman and Eals 1992), and at identifying commonalities between objects (James and Kimura 1997). A common explanation is that females have a heightened ability to maintain groups of visual objects in memory (Barkley and Gabriel 2007; Eals and Silverman 1994). For the sake of simplicity, we refer to these groupings as object arrays, and this heightened ability as visuo-spatial elaboration.

In general, there are two types of object arrays: competing objects (e.g., three different soft drinks) and unrelated objects (e.g., a soft drink, a stapler, a bicycle, and a toaster). People are better able to identify the source of visual incongruity when a novel object is compared to competing objects as opposed to unrelated objects (Gerlach 2009). The conventional explanation is that people selectively attend to the context to explain the incongruity. Extant literature has explored the effects of the advertising context in terms of unrelated or competing products (Malaviya 2007; Malaviya, Kisielius, and Sternthal 1996). The literature has yet to dis-
tinguish, however, whether different ad contexts are subject to gender differences in visuo-spatial elaboration. Considering that females excel at visuo-spatial elaboration, they may be able to use the advertising context to process levels of incongruity that would otherwise be irresolvable (i.e., extreme incongruity). What complicates the issue, however, is the belief that there is a limited capacity for selective attention (Cowan 2001). Thus, something would have to be given up to achieve this performance. This belief has led to the idea that “one should be able to show interference between, for example, visuo-spatial and verbal working memory” (Morey and Cowan 2004, 296). Research has yet to confirm unequivocally whether interference exists, and if so, whether it would be more pronounced for women than for men. This raises a potential paradox for marketers. Females may be better than males at identifying visually incongruent products within a context promoting competing goods, but this performance may come at the cost to ad claim recognition. The goal of this research is to test this trade-off.

Our results contribute to extant theory in three ways. First, we demonstrate that females, as compared to males, can better utilize an ad context promoting competing goods to identify visually incongruent products that would otherwise not be identified (study 1). Second, we show that this performance coincides with increased product evaluations but comes at a cost to ad claim recognition (study 2). Finally, we demonstrate that this trade-off for females is a result of asymmetric resource allocation that occurs involuntarily between visual and verbal processing (study 3). It is important to note that we find that this is not a naturally occurring difference between males and females but is brought on only when a visually incongruent product is presented in a context promoting competing products. We make several conceptual advances in our work, as well as offer a rigorous assessment of the mechanism underlying the visual-verbal trade-off.

**CONCEPTUAL BACKGROUND**

Despite visual appeal being one of the driving factors in new product design, and despite widespread use of visual imagery in advertising and marketing research, the marketing literature has been rather silent on the role visual processing plays in schema-based evaluation. Although a schema can be loosely defined as a cognitive framework or concept, the term is not reserved exclusively for conceptual properties. In fact, subsequent to George Mandler’s (1982) schema congruity hypothesis, Jean Mandler (2000) advocated for what she referred to as image schemas, whereby meaning is formed through a redescription of perceptual inputs. Hence, image schemas can be incongruent if perceptual inputs (what we see) do not align with expectations (what we expected to see). This is different from conceptual incongruity, where a product concept defies a normative standard (e.g., “hot cola,” “cotton camera”). Hence, where perceptual incongruity can inhibit categorization judgment, conceptual incongruity tends to confuse it.

Consistent with previous research, we define product incongruity as the degree of fit (or lack thereof) between a product and its respective product category (Campbell and Goodstein 2001; Meyers-Levy and Tybout 1989; Peracchio and Tybout 1996). A visual example might be a circular (rather than square) computer. Research has shown that product incongruity can influence the nature of information processing and thus alter consumers’ extremity of evaluation (Meyers-Levy and Tybout 1989; Peracchio and Tybout 1996; Stayman, Alden, and Smith 1992). The key is that the incongruity must be moderate enough that the consumer can figure out what the product is supposed to be. This increase in evaluations for moderately incongruent goods has come to be coined the schema congruity effect (Meyers-Levy and Tybout 1989).

The Schema Congruity Effect

Mandler (1982) cautioned that enhanced evaluations occur only when individuals can process an incongruent object and fit it into an existing schema held in memory. He referred to this as accommodation. When incongruity levels rise past a certain threshold (extreme incongruity), the ability to accommodate the object diminishes exponentially (Meyers-Levy and Tybout 1989). The task often becomes too taxing, resulting in negative evaluations. This nonmonotonic relationship between product evaluation and perceived level of congruity has proven robust when the motivation to accommodate the incongruent product is high (Meyers-Levy and Tybout 1989; Peracchio and Tybout 1996; Srull, Lichtenstein, and Rothbart 1985; Stayman et al. 1992). The relationship is attenuated, however, when contextual factors, such as social risk, prior knowledge, or thematic processing, shift motivation away from the accommodation process (Aggarwal and McGill 2007; Campbell and Goodstein 2001; Noseworthy, Finlay, and Islam 2010; Peracchio and Tybout 1996).

While the schema congruity effect has been extended to predict consumers’ processing of anthropomorphized products (Aggarwal and McGill 2007), brand extensions (Meyers-Levy, Louie, and Curren 1994), taste (Stayman et al. 1992), advertisements (Goodstein 1993), and new product attributes (Meyers-Levy and Tybout 1989), the theory has yet to take into account the advertising context in which the incongruent product is perceived. This is important given that visual incongruity has been found to cause an expectancy violation that motivates contextual rehearsal (Hirschman, Whelley, and Pailj 1989; Michelon et al. 2003; Peracchio and Meyers-Levy 1994). Hence, when marketers promote visually incongruent products, consumers may explore the immediate context as a means of making sense of the incongruity. Thus, it seems plausible that the nature of the advertising context may affect how consumers process a visually incongruent product.
Advertising Context as Object Arrays

It is well documented that men and women process objects differently (Meyers-Levy and Maheswaran 1991; Meyers-Levy and Sternthal 1991). Males tend to process objects in terms of physical attributes, whereas females process objects in terms of interpretive concepts and structural interrelationships (Jausovec and Jausovec 2009). This distinction became the catalyst for the selectivity hypothesis, which maintains that women engage in more elaborative processing unless extrinsic motivational factors prompt men to elaborate (Meyers-Levy 1989; Meyers-Levy and Maheswaran 1991; Meyers-Levy and Sternthal 1991). A key prediction of the selectivity hypothesis is that females will process visual information more comprehensively than will males (Meyers-Levy 1989). This finding is particularly robust when it comes to visual object arrays (i.e., visuo-spatial elaboration; James and Kimura 1997).

Although consumer researchers have yet to explore whether gender differences in visuo-spatial elaboration can enhance the understanding of an incongruent product, researchers have explored the relationship between gender and incongruity on elaboration. Meyers-Levy and Sternthal (1991) found that when cued to elaborate on an incongruent event, women were more deliberate and attentive in their processing than men, and Meyers-Levy and Maheswaran (1991) found that when a task became taxing, these differences were eliminated. Of particular interest in Meyers-Levy and Sternthal’s research was the observation that females perceived incongruent events to be less similar than a referent when their elaboration was enhanced. This finding is quite relevant to a discussion on visuo-spatial elaboration. If females are better than males at discriminating the similarity among objects (James and Kimura 1997), they may be better able to identify schematic inconsistencies of an incongruent object within a competing array.

In marketing, object arrays are analogous to the advertising context. We know 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 (an ad for a car alongside ads for a baseball glove, vacuum cleaner, and a cello) encourages item-specific elaboration, which emphasizes attribute information and involves associations to a particular product in isolation from other products (Malaviya 2007; Malaviya et al. 1996). A competing ad context (an ad for a car alongside ads for other cars) encourages relational elaboration, emphasizing shared themes among products and focusing consumers on the category in which the product holds membership (Kim and Meyers-Levy 2008; Malaviya et al. 1996). This dichotomy has been extended to gender. Putrevu (2001) speculated that men are generally more prone to item-specific elaboration, whereas women are more prone to relational elaboration. More recently, the concept of relational elaboration has been refined into two subtypes: (1) similarity-focused relational elaboration (identifying commonalities among objects) and (2) dissimilarity-focused relational elaboration (contrasting disparities between objects; Kim and Meyers-Levy 2008). Researchers have yet to distinguish whether females are more prone to one particular subtype. It seems reasonable, however, that the female tendency to seek structural interrelationships would be more in line with similarity-focused relational elaboration.

In sum, if relational information among visual objects is stored in a visuo-spatial configuration (Jiang, Olson, and Chun 2000), and if men and women differ in how they represent spatial information (Barkley and Gabriel 2007), men and women may differ in how they process a visually incongruent product in a competing ad context. Study 1 was designed to test this prediction and, in doing so, set the foundation going forward to test the consequences of the female superiority in visuo-spatial elaboration.

STUDY 1

Accommodation occurs when an individual is able to fit an incongruent object into its respective product category. This ability, according to Mandler (1982), can enhance an individual’s extremity of evaluation due to the cognitive arousal associated with successfully figuring out what the object is. Accommodation is demonstrated when an incongruent product is evaluated more favorably when the consumer can successfully make sense of it—hence, the common emphasis on moderate incongruity (Meyers-Levy and Tybout 1989). The difficulty with an extremely incongruent product is that it cannot be accommodated, because it is so incongruent that its respective product category remains elusive. The outcome is often negatively valenced evaluations. That is, people do not like products they do not understand.

Based on our integration of prior research, we predict that females, due to superior visuo-spatial elaboration, will evaluate an extremely incongruent product more favorably when it is introduced in an ad context promoting competing goods as opposed to unrelated goods. We believe this effect will coincide with greater relational elaboration and more accurate subcategorization judgments. Furthermore, due to the female tendency to seek structural interrelationships among objects (Jausovec and Jausovec 2009), we believe females will process a competing ad context by assimilating (similarity-focused relational elaboration) visual properties. As our predictions are derived from literature supporting the female superiority in visuo-spatial elaboration, males are not expected to demonstrate similar performance.

Method

Design and Procedure. In exchange for course credit, 184 undergraduate students (50% female) were randomly assigned to one of four ad manipulations, forming eight experimental conditions in a 2 (advertising context: unrelated vs. competing) × 2 (gender) × 2 (product congruity: congruent vs. extremely incongruent) between-subjects factorial design. Participants were instructed that they will review an excerpt from a magazine that consists of editorial content and advertisements, and once completed, they will respond to a questionnaire. Consistent with prior procedures,
four ads were randomly presented along with editorial material in the form of an eight-page booklet (Malaviya 2007; Malaviya et al. 1996). The four ads were shown separately and consisted of either a camera ad accompanied by three other camera ads (competing) or a camera ad accompanied by three disparate ads (unrelated: leather bag, beer, and calculator). Each product was given a fictitious brand name and was presented with ad copy promoting generic features while identifying the product at the superordinate level (consumer electronics). At no time was the product explicitly identified at the basic level (digital camera). Please see appendix A for the complete set of ads used in study 1. (Note: ads are displayed together in the appendixes, but were administered on separate pages in the magazine booklet.)

A within-subjects pretest using the congruent product and the other contextual ads (n = 40; 50% females) confirmed there were no discrepancies in comprehensiveness, informativeness, and familiarity among the ads (F’s < 1). Both ad context manipulations had identical copy and consistent visuals in terms of size, spacing, and positioning. The ad placements were randomized to control for order effects, and the color schemes and fonts were counterbalanced to control for preference. The target camera served as the product congruity manipulation in both ad contexts.

**Operationalization of Product Congruity.** Due to the relatively little work examining incongruent image schemas, it was imperative to make an a priori operationalization of the levels of visual incongruity. In line with past work, we adopt a categorization hierarchy (Meyers-Levy and Tybout 1989; Peracchio and Tybout 1996). Meyers-Levy and Tybout demonstrated that moderate incongruity can be resolved by navigating down a hierarchy of categorization from a superordinate representation (beverages) to a basic representation (soft drinks), or from a basic representation (soft drinks) to a subordinate representation (diet colas), whereas extreme incongruity is more complex because it spans multiple levels (beverages to diet colas). In keeping with this logic, this study follows a visual-based hierarchy that offers three analogous stages (Biederman et al. 1999).

The first stage is identifying a large change in the physical shape of the object (e.g., a round table vs. a square table). The second stage then refines the search to small viewpoint-invariant differences (e.g., a brand logo). If this does not yield successful identification, then a third stage identifies smaller metric differences such as curvature or aspect ratios (e.g., 1/4-inch drill bit vs. 3/4-inch drill bit). It is important to note that the level of difficulty increases with each successive stage (Biederman et al. 1999). We predict that a moderately incongruent image will be one that varies one aspect of the hierarchy, such as the physical shape of the object, whereas an extremely incongruent image will be one that varies more than one aspect (e.g., physical shape and metric properties). Given the product is identified at the superordinate level, compounding multiple stages of the visual hierarchy should inhibit subcategorization at the basic level.

To test the operationalization, a pretest (n = 85; 51% females) was conducted using three select photographs of digital cameras, which varied in accordance with the visual hierarchy (e.g., shape and metric properties). Participants viewed one of the cameras and then responded to a questionnaire. To assess the nonmonotonic relationship between product evaluations and product congruity, measures of product evaluations and perceived typicality were taken. Product evaluation was measured by four 7-point items (bad/good, unlikable/likable, low/high performance product, lacks/offers important benefits; α = .81), and perceived typicality was measured by three 7-point items (not at all unique/very unique, very unlikely/very likely, and [matches expectations] not at all well/very well; α = .76; Campbell and Goodstein 2001). Please refer to appendix D for the pretest results.

The goal of this research was to examine whether females, due to superior visuo-spatial elaboration, can utilize a competing ad context to accommodate a visually incongruent product that would otherwise not be accommodated. Thus, our focus is specifically on Mandler’s (1982) conceptualization of extreme incongruity. The reason we pretested the nonmonotonic relationship between product evaluations and product congruity across the three levels was (1) to confirm the visual operationalization worked as intended, (2) to be sure that the extremely incongruent and congruent products were conceptually appropriate (relative to the other levels), and (3) to establish that there were no differences in gender prior to the context manipulation. Given the pretest results, the congruent (control) and extremely incongruent products were subsequently carried forward into the actual studies.

**Dependent Measures.** After examining the four ads, participants evaluated the target camera on the same four items discussed in the pretest. In line with prior procedures, participants were then asked to list as many thoughts as they could about the target product (Malaviya et al. 1996). Participants’ thoughts were coded by two judges who were unaware of the research hypotheses. The judges were instructed to rate thoughts that relate to the target product as item-specific (e.g., “I like the flash on the Minox”), and thoughts that relate to the product category (e.g., “Digital cameras are more stylish than other cameras”) or usage (e.g., “It’s good to take on vacation”) as relational. In addition to coding item-specific and relational thoughts, the two judges coded whether respondents were dissimilarity-focused (emphasizing differences between the ads; e.g., “The Minox was shaped like a triangle whereas the other camera was square”) or similarity-focused (emphasizing commonalities among the ads; e.g., “All of the cameras had LCD screens”; Kim and Meyers-Levy 2008). Finally, the same two judges went back to the thought tasks and coded whether participants explicitly identified the object at the basic level (digital camera) or superordinate level (consumer electronics). Overall, the two coders’ results were consistent (r = .91). All outstanding disagreements were resolved through discussion.
Results

Categorization. Two unaffiliated judges coded participants’ thoughts for level of categorization. The coders were instructed to assign a value of 0 if participants identified the target product at the basic level (digital camera) and a value of 1 if participants identified the target product at the superordinate level (consumer electronics). If participants did not identify the products, the coders assigned a system missing value (only seven participants failed to indicate some form of category reference). Consistent with the operationalization of visual incongruity, a binary logistic regression revealed that participants were more accurate at subcategorizing the congruent camera (100%) than the extremely incongruent camera (23%; $B = -5.19, SE = .81, p < .001$). This effect was qualified by a significant three-way interaction among the predictors (Wald Z = 14.73, $p < .001$). The nature of the interaction was such that females (62%) were more likely than males (19%) to identify the extremely incongruent product as a digital camera in the competing ad context ($B = 2.95, SE = 1.03, p < .005$). This difference did not manifest in the unrelated ad context ($p > .30$). No other significant effects were recorded ($p$’s > .05). Table 1 reports treatment means for the core dependent measures for study 1.

Target Evaluation. The four evaluation items loaded on one factor ($\alpha = .83$). There was a significant three-way interaction among advertising context, product congruity, and gender ($F(1, 176) = 16.18, p < .001, \omega^2 = .05$). Simple effects revealed that when the target camera was promoted alongside unrelated products, males and females did not differ in evaluations ($M_{\text{Males}} = 3.16$ vs. $M_{\text{Females}} = 3.34; F < 1$). However, when the target camera was promoted alongside competing products, the extremely incongruent camera was evaluated more favorably by females ($M = 4.36$) than males ($M = 2.58$; $F(1, 176) = 38.80, p < .001, \omega^2 = .27$). It is important to note that this difference did not extend to the congruent camera ($M_{\text{Males}} = 3.98$ vs. $M_{\text{Females}} = 3.93; F < 1$). As indication of accommodation in the competing ad context, a planned contrast revealed that females evaluated the extremely incongruent camera more favorably ($M = 4.36$) than the congruent camera ($M = 3.93; F(1, 176) = 3.16, p = .073, \omega^2 = .008$).

Elaborative Processing. Consistent with prior research, an elaboration index was constructed by taking the difference between the number of item-specific thoughts and relational thoughts, divided by total number of thoughts (Malaviya 2007; Malaviya et al. 1996). Zero indicates an equal number of item-specific and relational thoughts, a positive number indicates more item-specific thoughts, and a negative number indicates more relational thoughts.

An ANOVA revealed a three-way interaction among advertising context, product congruity, and gender on elaborative processing ($F(1, 176) = 5.90, p < .05, \omega^2 = .03$). As predicted, when the extremely incongruent camera was promoted alongside competing products, females engaged in more relational elaboration ($M = -.14$), and males engaged in more item-specific elaboration ($M = .06; F(1, 176) = 5.54, p < .001, \omega^2 = .02$). There were no differences in elaboration between males and females when the extremely incongruent camera was promoted alongside unrelated products ($M_{\text{Males}} = .06$ vs. $M_{\text{Females}} = .03; F < 1$).

Relational Focus. Building on the elaboration index, a relational focus index was created by subtracting the number of similarity-focused thoughts from the number of dissimilarity-focused thoughts, divided by total relational thoughts. Zero indicates an equal number of similarity and dissimilarity thoughts; a positive number indicates more dissimilarity-focused thoughts and a negative number more similarity-focused thoughts. A marginally significant three-way interaction among ad context, product congruity, and gender emerged ($F(1, 176) = 3.15, p = .07, \omega^2 = .02$). Despite predicting an assimilation effect for females in the competing ad context, simple effects revealed the opposite. When viewing the extremely incongruent camera in the competing ad context, females engaged in more dissimilarity-focused elaboration ($M = .21$), whereas males engaged in more similarity-focused elaboration ($M = -.20; F(1, 176) = 9.33, p < .01, \omega^2 = .03$). This difference did not

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*Reflects percent of basic-level identification.
Discussion

In this experiment, we support prior claims that advertising context influences elaboration (Malaviya 2007; Malaviya et al. 1996) and that there are gender differences in elaboration (Meyers-Levy and Maheswaran 1991). In line with our predictions, females used the competing ad context to identify an extremely incongruent product within its appropriate product category (basic-level category), and in doing so, they evaluated the product more favorably. It is interesting to note that females did not do this by assimilating structural interrelationships but by contrasting structural inconsistencies (i.e., dissimilarity-focused relational elaboration). The only time they engaged in similarity-focused relational elaboration was when the product was congruent. Although surprising when considering the common view that categorization is a function of perceptual similarity (Nosofsky 1986) and that females tend to seek structural interrelationships (Jausovec and Jausovec 2009), the finding is not without support when it comes to visual processing.

There is evidence to suggest that visual context can result in shape contrast effects, whereby an incongruent shape is contrasted with its surround (van der Kooij and Pas 2009). A similar phenomenon has been observed in categorization judgments when a visual object is substantially different from a group of sequentially (as opposed to simultaneously) presented objects (Hampton, Estes, and Simmons 2005). Given we manipulated visual form (particularly shape), and given we introduced extreme incongruity within a sequential ad context, the increase in dissimilarity-focused relational elaboration makes sense.

Observing a contrast effect in elaboration is particularly relevant to the idea that there is a capacity limit in working memory (Morey and Cowan 2004). Contrasting information requires more cognitive resources than assimilating information (Stapel and Marx 2006). Pelham and Wachsmuth (1995, 825) put it nicely, “Whenever people lack the motivation or cognitive resources required to make explicit comparisons between two stimuli, assimilation processes will serve as a default processing strategy.” Thus, dissimilarity-focused elaboration may occur at a threshold where it becomes a resource constraint. If dissimilarity-focused elaboration is how females process incongruity within a visuo-spatial array, and doing so is resource intensive, females may be more prone than males to interference between visuo-spatial and verbal memory (the visual-verbal trade-off; Morey and Cowan 2004). This is important in a marketing context where the verbal content is advertising claims. Hence, the female superiority in visuo-spatial elaboration may not necessarily be a good thing for advertisers. Study 2 was designed to test this.

STUDY 2

Method

Participants \( n = 168 \); 50% females) were recruited through newspaper advertisements and public posters, and paid $10 for participating in the study. The stimuli and dependent measures were administered electronically in a behavioral lab. Testing was done in groups of 10–15 individuals. The design and procedures remained consistent with study 1 except for the following. First, the magazine booklets were replaced with a Web-based application that resembled an online newspaper. Hence, the instructions and randomized ad placements remained the same as in study 1, but now participants used a mouse to turn the pages. Furthermore, the questionnaire remained the same; however, the target evaluation measure was expanded from four to eight items to include more general affect and evaluative dimensions (bad/good, likable/unlikable, low/high performance product, lacks/offers important benefits, undesirable/desirable, unappealing/appealing, uninterested/interested in trial, poor/good quality).

Second, the product category was switched from digital cameras to soft drinks—a common stimulus in the congruity literature (Campbell and Goodstein 2001; Meyers-Levy and Tybout 1989; Stayman et al. 1992), and new categories (stapler, bicycle, and toaster) were chosen to represent the unrelated and competing conditions, all products were manipulated in the same way: they had a visual image of the product accompanied by a description. No additional pictures or colors were introduced into the ads.

Third, as participants were not told that the target item was a soft drink (basic level), but only given an indication of the beverage category (superordinate level), an explicit categorization task (asking participants to list the product category) replaced the coding procedures in study 1.

Fourth, instead of general ad claims, the ads were designed to match the visual product with a verbal description. Consistent with Campbell and Goodstein’s (2001) manipulation of the soft drink schema, participants saw the same product description used by Meyers-Levy and Tybout (1989, 44–45), except that the last line in the description specifically referenced the visual congruity manipulation. In both the unrelated and competing conditions, all products were manipulated in the same way: they had a visual image of the product accompanied by a description. No additional pictures or colors were introduced into the ads.

Finally, to separate visual accommodation from verbal recognition, participants responded to a cued recall task, followed by a memory recognition task. In the cued recall task, participants were given the fictitious brand name of the target soft drink, and they were asked to list as many features as they could remember. In the recognition task, participants were given the same brand name accompanied by 10 ad claims. They then indicated which of the claims actually appeared in the ad. Four correct statements and six foils made up the 10 claims. Three of the foils referenced...
features that were true for the other soft drinks in the competing ad context (ad claim intrusions), and the other three foils referenced inaccurate features of the target soft drink. Thus, the ad claim task contained both true and false claims, but also claims that were made in the accompanying ads.

Results

Categorization. Consistent with the operationalization of visual incongruity, a binary logistic regression revealed that participants were more accurate at subcategorizing the congruent soft drink (95%) than the extremely incongruent soft drink (38%; $B = -4.49$, SE = .71, $p < .001$). This effect was qualified by three-way interaction among product congruity, advertising context, and gender (Wald $Z = 25.64$, $p < .001$). The interaction was such that, once again, females (86%) were far more likely than males (33%) to identify the extremely incongruent product at the basic level (soft drink) in the competing ad context ($B = 2.92$, SE = 1.12, $p < .01$). Again, this difference did not manifest in the unrelated ad context ($p > .30$). As evidence that females were accommodating the extremely incongruent soft drink, the only model to fit the expected cell counts across the two levels of product congruity was females in the competing ad context ($B = 2.92$, SE = 1.12, $p < .01$). Again, this difference did not manifest in the unrelated ad context ($p > .30$).

Target Evaluation. The eight evaluation items loaded on one factor ($\alpha = .89$). Once again, there was a three-way interaction among advertising context, product congruity, and gender ($F(1, 160) = 10.83$, $p < .001$, $\omega^2 = .04$). Simple effects revealed that when the target soft drink was promoted alongside competing products, the extremely incongruent soft drink was evaluated more favorably by females ($M = 4.44$) than males ($M = 2.87$; $F(1, 160) = 42.29$, $p < .001$, $\omega^2 = .27$). Again, this difference did not extend to the congruent soft drink ($M_{\text{Males}} = 2.97$ vs. $M_{\text{Females}} = 2.78$; $F < 1$). Consistent with the notion of accommodation, when the target soft drink was promoted alongside competing products, females evaluated the extremely incongruent soft drink more favorably ($M = 4.44$) than the congruent soft drink ($M = 3.96$; $F(1, 160) = 3.89$, $p < .05$, $\omega^2 = .01$).

Elaborative Processing. Prior research has shown that the clustering of similar ad claims during a recall task is indication that participants are using relational rather than item-specific elaboration (Kim and Meyers-Levy 2008; Meyers-Levy 1991). We predicted that this alternate measure of elaborative processing would replicate the results from study 1. Two unaffiliated coders ($r = .94$) assessed the ad repetitions (i.e., the number of pairs of ad claims recalled in successive order for each set of advertisements).

Clustering was assessed using an adjusted ratio of clustering (ARC; Roenker, Thompson, and Brown 1971). An ARC score represents the proportion of actual category repetitions above chance to the total possible category repetitions. ARC scores were calculated such that chance clustering was set to 0 and perfect clustering was set to 1. Consistent with the elaborative processing results in study 1, there was a significant three-way interaction among advertising context, product congruity, and gender ($F(1, 160) = 4.36$, $p < .05$, $\omega^2 = .01$). When recalling the extremely incongruent soft drink in the competing ad context, females engaged in more elaborative processing (ad clustering; $M = .61$) than did males ($M = .37$; $F(1, 160) = 21.35$, $p < .001$, $\omega^2 = .05$). There was no difference in elaborative processing between males and females when recalling the extremely incongruent soft drink in the unrelated ad context ($M_{\text{Males}} = .38$ vs. $M_{\text{Females}} = .42$; $F < 1$). There was also no difference between genders when processing the congruent soft drink.

### Table 2: Treatment Means and Cell Counts for Study 2: Soft Drink Schema

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<tr>
<th></th>
<th>Congruent</th>
<th>Extremely Incongruent</th>
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<tr>
<td></td>
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</tr>
<tr>
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</tr>
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<td>Discriminating A'</td>
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</tr>
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<td>(0.09)</td>
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<td>.19</td>
</tr>
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<td>(0.29)</td>
<td>(0.29)</td>
</tr>
<tr>
<td>Cell size</td>
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<td>21</td>
</tr>
</tbody>
</table>

*Reflects percent of basic-level identification.

Note: Standard deviations are reported in parentheses.
regardless of context ($F$'s < 1). Having replicated study 1, we now turn to the trade-off between verbal and visual processing, the ultimate focus of this study.

Ad Recognition. We conducted a recognition task to assess participants' ability to recall verbal ad claims. Given our limited understanding of the shape and distribution of recognition indices, we undertook a nonparametric signal detection analysis (Snodgrass and 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, hit and false alarm rates were corrected using a log-linear transformation to account for undefined z-scores of 0 and 1 (Snodgrass and Corwin 1988).

The recognition index ($A'$) varied from .5 to 1, with .5 indicating no ad claim recognition and 1 indicating perfect ad claim recognition. Consistent with the prediction of the visual-verbal trade-off, there was a marginally significant three-way interaction among ad context, product congruity, and gender ($F(1, 160) = 3.05, p = .08, \omega^2 = .01$). The nature of the interaction was such that a discrepancy in ad recognition between males and females only occurred when participants viewed the extremely incongruent soft drink in the competing ad context ($M_{\text{males}} = .76$ vs. $M_{\text{females}} = .66$; $F(1, 160) = 6.37$, $p < .05, \omega^2 = .02$). It did not manifest when participants viewed the congruent soft drink in the competing ad context ($M_{\text{males}} = .78$ vs. $M_{\text{females}} = .74$; $F < 1$). No other effects were recorded ($F$'s < 1). Thus, although female participants demonstrated superior accommodation and increased evaluations for the extremely incongruent soft drink, they were less capable of recognizing specific ad claims when the soft drink was promoted alongside competing products.

Given the observed trade-off, we probed participants' false alarms for additional insight. What we found was rather interesting. When specifically exploring ad claim intrusions (FA), a significant three-way interaction among ad context, product congruity, and gender ($F(1, 160) = 4.24, p < .05, \omega^2 = .01$). Simple effects revealed that only when viewing the extremely incongruent product in the competing ad context were females more likely ($M = .43$) than males ($M = .28$) to mistakenly recognize ad claims from other products ($F(1, 160) = 7.66$, $p < .01, \omega^2 = .02$). It is important to note that no other significant differences were recorded ($p$'s > .30). We then went a step further. 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 toward the affirmative (yea-saying) and a negative number indicating a bias toward the negative (nay-saying). The results revealed that females were no more biased when recalling the ad claims for the extremely incongruent product promoted alongside competing products than unrelated products ($M_{\text{comp}} = .06$ vs. $M_{\text{unrel}} = .01$; $F < 1$). Thus, the ad claim intrusions could not be attributed to a propensity to respond in the affirmative.

Discussion

This study replicated study 1 while examining whether the competing ad context differentially affects visual and verbal processing. Prior research suggests that we should be able to see interference between visuo-spatial and verbal working memory (Morey and Cowan 2004, 2005). In our work, this only occurred for females. Females had a heightened ability to utilize the competing ad context to enhance product identification, but this led to worse ad claim recognition. In particular, females made more ad claim intrusions (errors of composition) when they viewed the extremely incongruent soft drink in the competing ad context. It is important to note that this pattern of effects could not be explained in terms of a bias toward the affirmative.

A prevailing explanation for the results of study 2 is that females were deliberately focusing on visual information, and because of a capacity limit for selective attention, verbal information suffered. Although plausible, considering the differences in visual accommodation between men and women, there is reason to question this assumption. The ARC analysis revealed that both genders were quite adept at recalling ad claims in successive order. However, men outperformed women in the ad recognition task due to the female tendency to identify ad claims from other products. Hence, females encoded the claims correctly, but confused which claim went with which product. This does not infer a lack of attention to verbal content, but a failure to integrate (Baddeley 2003). This observation fits with the idea that interference should occur at memory maintenance (Morey and Cowan 2005). Nevertheless, the question is, why did this only occur for females?

Females made ad claim intrusions in study 2 in the same condition where they engaged in dissimilarity-focused relational elaboration in study 1 (i.e., only when accommodating the extremely incongruent product in the competing ad context). Is it that females deliberately attend to violations within a visuo-spatial array, or is it that because of superior visuo-spatial elaboration, the observed trade-off occurs involuntarily? That is, it occurs below a level of awareness. The former assumes the convention that selective attention is deliberate, whereas the latter does not. However, the latter would explain the prevalence of ad claim intrusions, given the ads were contrasted relationally and thus the claims melded in memory. We predict that if resources are being automatically allocated, females should trade off verbal performance for visuo-spatial performance even when explicitly instructed to attend to verbal content. If, however, selective attention is deliberate, females should do the opposite because the directed verbal content should take attentional priority. Study 3 was designed to explore these predictions.

STUDY 3

The ability to process relational information among visual objects is believed to be dependent on working memory resources (Jiang et al. 2000). There is evidence to suggest that individuals require sufficient resources to process in-
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consonants (Houston, Childers, and Heckler 1987; Srull et al. 1985). Thus, it would seem that the female capacity to accommodate an extremely incongruent product in a competing ad context would be resource intensive. Does this mean that resources are allocated automatically? To test this, we make unique use of a verbal working memory constraint (Allen, Baddeley, and Hitch 2006). Unlike the common practice of predicting that a constraint will inhibit cognitive processing, our focus is on the constraint itself, and in particular, what happens when participants recall random consonants at the end of the task. If the visual-verbal trade-off is the result of uncontrolled resource allocation, females should perform just as well as they do if unconstrained, but be particularly poor at remembering the consonants (i.e., visual processing should interfere with verbal processing). However, if the findings from study 2 were a result of deliberate attention, females should trade off superior visuospatial performance to retain the random consonants given they are explicitly directed to attend to them.

Method

Undergraduate students (n = 208; 50% females) were randomly assigned to view one of four ad manipulations, with half of the participants being subjected to a verbal constraint. This made for 16 experimental conditions in a 2(ad context: unrelated vs. competing) × 2(gender) × 2(product congruity: congruent vs. extremely incongruent) × 2(product congruity: congruent vs. extremely incongruent) between-subjects factorial design. The procedures were similar to study 2, with several important adjustments.

First, the product category was switched from soft drinks to cars, and new categories (baseball glove, vacuum cleaner, and cello) were chosen to represent the unrelated ad context. Instead of using fictitious brands, real European automotive brands represented the competing ad context (Opel, Peugeot, Skoda, and Vauxhall, with Peugeot being the target brand). Participants were told these brands are responsible for a variety of vehicles. A pretest (n = 40) revealed that participants’ level of familiarity did not significantly differ across the four brands (F’s < 1.25). Consistent with studies 1 and 2, the three levels of congruity were pretested (n = 75; 48% females; see appendix D), and the congruent and extremely incongruent cars were subsequently chosen for study. Please see appendix C for the complete set of ads.

Second, the manipulation of working memory followed a procedure that has proven useful for testing resource demands in a wide variety of cognitive tasks (Allen et al. 2006). Prior to viewing the ads, half of the participants were required to fixate on a blank screen with the word “Ready” displayed in the center for 750 milliseconds. Five random consonants (e.g., “B W S K Z”) then were displayed for 5000 milliseconds. Participants were told that they would be tested on their ability to recall the five consonants at the end of the experiment, and that they would be assigned a performance score that ranks them among their peers. These instructions were communicated to increase participants’ motivation to retain the consonants for the duration of the task. In addition to administering the working memory constraint, the use of an electronic instrument allowed response latencies to be taken from each participant during the explicit categorization task. This gave insight into the participants’ level of deliberation and confidence.

Finally, research has shown that the memory superiority for incongruent information disappears when processing resources are limited (Srull et al. 1985). This suggests that the differences in accommodation between men and women would be erased if working memory was constrained. The literature on gender-related elaboration would support this prediction (Meyers-Levy and Maheswaran 1991). However, we predict that if females automatically allocate resources from verbal to visual processing, then differences in visual accommodation will persist even if the memory superiority of incongruent information disappears. To validate the working memory constraint, an ad recall task was added to the questionnaire requiring participants to list which of the four products (by brand name) was the most memorable. If working as intended, the constraint should erase the memory superiority for incongruent information (Houston et al. 1987; Srull et al. 1985). The recall task preceded the study instrument so as not to be biased by questions emphasizing the target product.

Results

Manipulation Check: Working Memory Constraint.

A multinomial logistic regression was conducted with ad recall as a four-level nominal dependent variable (the four brand names), and gender, working memory constraint, ad context, and product incongruity as the predictor variables. The antecedents in the model significantly predicted ad recall (χ²(12, N = 208) = 29.69, p < .005, pseudo R² = .13). In particular, the results revealed an interaction between product congruity and the working memory constraint (χ²(12, N = 208) = 33.21, p < .001). The nature of the interaction was such that product congruity predicted ad recall only when working memory was unconstrained (χ²(3, N = 104) = 10.44, p < .05). Specifically, in the unconstrained condition, when participants viewed the extremely incongruent Peugeot rather than the congruent Peugeot, they were 4.2 times (1/odds ratio [OR]) more likely to recall it over the Vauxhall (B = −1.44, p < .001, OR = .24), 3.1 times more likely to recall it over the Opel (B = −1.32, p < .001, OR = .32), and 3.7 times more likely to recall it over the Skoda (B = −1.32, p < .001, OR = .27). As expected, in the constrained condition, the superior recall for the extremely incongruent Peugeot failed to manifest (p’s > .30). Thus, we not only validated the memory superiority for incongruent information using a visual operationalization, but we also validated the working memory constraint by extinguishing the phenomenon (Houston et al. 1987).

Categorization Accuracy and Latencies. 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; analyses were conducted on the standardized data. A binary logistic regression on categorization accuracy (car: correct = 1, incorrect = 0) and an ANOVA on response latencies revealed main effects of the working memory constraint. Not surprisingly, participants were more accurate and made slower categorization judgments when working memory was unconstrained (75% accurate; $M_{\text{sec}} = 6.47$) than when constrained (58% accurate; $M_{\text{sec}} = 4.73$; $B = 1.41$, SE = .35, $p < .001$; and $F(1, 192) = 27.44$, $p < .001$). This main effect accompanied a three-way interaction among product congruity, advertising context, and gender (Wald $Z = 16.29$, $p < .001$). The nature of the interaction was such that females (58%) relative to males (31%) were more accurate at categorizing the extremely incongruent product as a car in a competing ad context ($B = 2.92$, SE = 1.12, $p < .01$). Females were only faster at doing so, however, when working memory was unconstrained ($M_{\text{comp}} = 5.94$ vs. $M_{\text{uncomp}} = 7.72$; $F(1, 192) = 4.64$, $p < .05$). No other significant effects were recorded ($p's > .20$). Table 3 reports treatment means for the core dependent measures for study 3.

**Target Evaluation.** Once again, there was a three-way interaction among advertising context, product congruity, and gender on target evaluation ($F(1, 192) = 16.84$, $p < .001$, $\omega^2 = .04$). As expected, simple effects revealed that when promoted alongside competing products, the extremely incongruent car was evaluated more favorably by females ($M = 4.95$) than males ($M = 3.22$; $F(1, 192) = 50.06$, $p < .001$, $\omega^2 = .26$). Again, this difference did not extend to the congruent car ($M_{\text{males}} = 4.54$ vs. $M_{\text{females}} = 4.45$; $F < 1$). As indication of accommodation in the competing ad context, females evaluated the extremely incongruent car more favorably ($M = 4.95$) than the congruent car ($M = 4.44$; $F(1, 192) = 4.31$, $p < .05$, $\omega^2 = .01$). It is important to note that this pattern of effects did not vary by working memory constraint.

**Elaborative Processing.** The analysis of elaborative processing followed the indexing technique from study 1. To increase the likelihood of capturing only the most accessible thoughts, a 2-minute time limit was imposed on the task (Cacioppo and Petty 1981). Overall, the two unaffiliated coders were consistent ($r = .87$). As with studies 1 and 2, there was a significant three-way interaction among advertising context, product congruity, and gender on elaborative processing ($F(1, 192) = 4.42$, $p < .05$, $\omega^2 = .01$). As predicted, when the extremely incongruent car was promoted alongside competing products, females engaged in more relational elaboration ($M = -.46$), and males engaged in more item-specific elaboration ($M = .27$; $F(1, 192) = 21.15$, $p < .001$, $\omega^2 = .10$). There was no difference in elaboration between males and females when the extremely incongruent car was promoted alongside unrelated products ($M_{\text{males}} = .77$, $M_{\text{females}} = .79$).

### Table 3

**TREATMENT MEANS AND CELL COUNTS FOR STUDY 3: CAR SCHEMA**

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<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
<th>Males</th>
<th>Females</th>
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</thead>
<tbody>
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<tr>
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<td>.10</td>
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<td>$R$ focus</td>
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<td>-.07</td>
<td>-.07</td>
<td>.05</td>
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<tr>
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<tr>
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<tr>
<td>Con. recall</td>
<td>92.3%</td>
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<td>100.0%</td>
</tr>
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</table>

*Note.*—Standard deviations are reported in parentheses; $R$ focus = relational focus; Con. recall = Percent accurate consonant recall.

*Reflects percent of basic-level identification.
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.29 vs. \( M_{\text{females}} = .22; F < 1 \). No other significant effects were recorded (\( \rho 's > .20 \)).

**Relational Focus.** The relational focus index was also calculated following the procedures in study 1. Consistent with study 1, there was a marginally significant three-way interaction among ad context, product congruity, and gender (\( F(1, 192) = 2.70, p = .09, \omega^2 = .01 \)). Again, a planned contrast confirmed that the only difference between males and females occurred when participants viewed the extremely incongruent car in the competing ad context; females engaged in more dissimilarity-focused elaboration (\( M = .35 \)), whereas males engaged in more similarity-focused elaboration (\( M = -.14; F(1, 192) = 8.84, p < .01, \omega^2 = .02 \)). This did not manifest when participants viewed the congruent car in the competing ad context (\( M_{\text{males}} = -.10 \) vs. \( M_{\text{females}} = -.05; F < 1 \)). No other significant effects were recorded (\( F's < 1 \)).

**Ad Recognition.** A recognition index (\( A' \)) was calculated as in study 2 (recall that .5 indicates no verbal recognition and 1 indicates perfect verbal recognition). There was a significant main effect of the working memory constraint on ad recognition; participants whose working memory was unconstrained had better recognition of ad claims (\( M = .77 \)) than participants whose working memory was constrained (\( M = .67; F(1, 192) = 29.88, p < .001, \omega^2 = .12 \)). Replicating study 2, there was a marginally significant three-way interaction among ad context, product congruity, and gender (\( F(1, 192) = 2.25, p = .11, \omega^2 = .008 \)). Once again, a planned contrast confirmed that when evaluating the extremely incongruent car in the competing ad context, females demonstrated poorer ad claim recognition (\( M = .64 \)) than males (\( M = .74; F(1, 192) = 6.70, p < .05, \omega^2 = .02 \)). This did not manifest when participants viewed the congruent car in the competing ad context (\( M_{\text{males}} = .72 \) vs. \( M_{\text{females}} = .71; F < 1 \)). No other significant effects were recorded (\( F's < 1 \)).

**Consonant Recall (Constrained Condition).** Given the above, it seems that although the superior memory for incongruity was suppressed, the verbal constraint did not inhibit females’ ability to accommodate the extremely incongruent product in the competing ad context. Our analysis of consonant recall offers some insight. As discussed, if the female capacity to accommodate an extremely incongruent product is the result of uncontrolled resource allocation from verbal to visual processing, then there should be observable discrepancies in consonant (verbal) recall. A binary logistic regression on consonant recall (correct = 1; incorrect = 0) revealed a significant three-way interaction among product congruity, advertising context, and gender (Wald Z = 4.12, \( p = .053 \)). The nature of the interaction was such that when viewing the extremely incongruent car in the competing ad context, females were far less capable of retaining the consonants (15.4%) than were males (84.6%; \( B = -4.19, SE = .81, p < .001 \)). The discrepancy did not manifest in the unrelated ad context or when viewing the congruent car (\( \rho 's > .50 \)). This finding illustrates that the female ability to accommodate the extremely incongruent car in the competing ad context came at the expense of consonant recall. It is interesting to note that a follow-up question asking participants to rate their effort and the level of importance attributed to retaining the random consonants did not differ across conditions (\( F's < 1 \)).

**Discussion**

This final study confirmed that people require sufficient resources to process incongruity (Srull et al. 1985). Once again, females were able to utilize the competing ad context to accommodate an extremely incongruent product. They did so using relational elaboration, and in particular, dissimilarity-focused relational elaboration. Consistent with the results of study 2, this performance once again came at a price; females traded off verbal recognition for visual accommodation. The purpose of this study, however, was to test if the visual-verbal trade-off occurs below the level of awareness. Using a consonant recall task, we were able to support the prediction that the visual-verbal trade-off for females is caused by uncontrolled resource allocation. When females accommodated the extremely incongruent product in the competing ad context, their ability to recite the random consonants declined dramatically. This did not occur for males. Furthermore, females reported equivalent perceived importance and effort when retaining the consonants across all conditions. We believe this is strong evidence that although visuo-spatial elaboration can augment the accommodation process, it comes at a cost to verbal processing, and importantly, this cost is not volitional.

**GENERAL DISCUSSION**

We make several theoretical advances in this research. We begin in study 1 by showing that women can identify an extremely incongruent product as long as it is promoted among competing products. We find that this performance leads to heightened product evaluations. Surprisingly, despite conventional views that females process structural interrelationships among objects, we find that the underlying process driving this performance is dissimilarity-focused relational elaboration (a contrast effect). Since more resources are required to contrast (as opposed to assimilate) information, we embarked on a novel prediction in study 2. Due to capacity limits in working memory, we predicted that women would trade off verbal processing for visuo-spatial processing (the visual-verbal trade-off; Morey and Cowan 2004, 2005). We did not expect this to occur for males. In support of this prediction, we found that the female ability to identify the extremely incongruent products came at the expense of ad claim recognition. Unique to this study, we show that this was due to a higher rate of ad claim intrusions. This raised a further question: whether the trade-off was the result of deliberate attention (as conventionally thought) or uncontrolled resource allocation. In study 3, evidence emerged to support the latter. Hence, although visuo-spatial
elaboration disrupted verbal processing, it only did so for females, and it was not volitional. As empirical support for interference between visuo-spatial and verbal memory has been rather elusive, this study establishes the importance of recognizing that males and females differ in how they process visuo-spatial information.

In addition to theoretical contributions concerning processing, this research has direct implications for consumer behavior. One important message is that if exploring the effects of the advertising context, we need to understand that there are dramatic differences in how males and females process contextual arrays. Furthermore, if exploring visual incongruity (incongruent form), we have to consider that the promotional context can influence how the product is perceived. Currently, the literature exploring incongruity has not examined the effects of ad context. The literature exploring the effects of advertising context (with a dominant use of competing versus unrelated products) has not considered that females and males process object arrays quite differently. Furthermore, although research has shown that females may be more sensitive to interrelationships among products, our findings are the first to show that this performance can come at a cost to ad claim recognition. This observation would be quite relevant to researchers exploring gender differences in advertising.

Recently, Milberg, Sinn, and Goodstein (2010) found that adding a competitive context was quite essential to understanding brand extension congruity. Although in a different domain, we support the differential effects of the competing context. Consider that the majority of consumer goods are neither chosen nor consumed in isolation. Rarely do we choose a soft drink that is not accompanied by several other brands or types of soft drinks. The same context that affords a consumer choice serves to facilitate membership. Thus, individuals—females in particular—may be able to facilitate greater levels of incongruity than traditionally thought.

While our findings provide novel insights into consumers’ ability to accommodate extremely incongruent goods, our discussion is limited to products with visual incongruity. Although in common marketing practice visual adjustments (e.g., a new shape for a soft drink bottle) are ubiquitous and seemingly superficial when compared to conceptual alterations (e.g., a change in what it means to be a soft drink), they need not be any less important. To the contrary, we argue they may be just as important because they are so common.

Visual adjustments affect categorization at the basic level. Basic level categories maximize within-category similarity (most soft drinks are similar) but minimize between-category similarity (a soft drink and milk are quite different). Basic level categories are important when it comes to new product design because they are the preferred category when identifying an object, they are the first categories we learn, they warrant the fastest reaction times, and importantly, they lend detailed inferences (Rosch et al. 1976). Where visual incongruity can inhibit basic level categorization, conceptual incongruity typically confuses it. Conceptual alterations rarely change the physical appearance of a product but instead add a feature or function that is not traditionally associated with the category. Given that marketers often use conceptual modifications to introduce novel products, an interesting extension of this research would be to examine contextual effects on conceptual incongruity. It could be that an unrelated ad context is better suited to accommodating conceptual alterations because disparate object arrays put more emphasis on verbal processing than visual processing.

This research examines only advertising context as the cue to facilitate visual processing. While we believe this is a very important cue, and ad context is a variable that is partially under the marketer’s control, it is likely that other contextual variables could affect processing. Future research could extend our work into areas like store-shelf placement, for one. Field experiments, rather than lab-based, could manipulate context in a very realistic consumption setting, enhancing the external validity of our findings. Based on our theorizing, females in a cell-phone store should be better able to use the related context to understand a radical new cell phone than would females in a broad electronics store. The question of how and why consumers may understand and accept extremely incongruent products is important both theoretically (further developing processing theories) and substantively (helping marketers communicate novel products to consumers); we certainly encourage more work in this domain.
APPENDIXES

APPENDIX A: STUDY 1 ADVERTISEMENTS

FIGURE A1
APPENDIX B: STUDY 2 ADVERTISEMENTS

FIGURE B1

Zija is a new beverage specially formulated for those people with a zest for life. The nonalcoholic drink is slightly sweet to the taste and tastes best when served at a cold temperature. The carbonation and tingle of the drink will perk up anyone's taste buds. Priced competitively, this high preservative beverage will stay fresh in your refrigerator. Zija (591ml) will be available in cans and bottles at a convenience store near you.

Nesblit's is a new beverage specially formulated for those people with a classic taste. Everyone—boys, girls, mothers and dads... will absolutely love the taste! You will be delighted with this full flavored, sparkling soft drink. It’s so refreshing, so satisfying to the taste and thirst. It also leaves an unforgettable after-taste. Nesblit's (591ml) is expected to be available in cans and bottles at a convenience store near you.

Big Red is a new beverage specially formulated for those people with an adventurous taste. Filled with multiple mouth-bursting flavors, the Big Red has everyone buzzing in their taste buds! The fact is there is nothing to describe the unique delicious taste of the "Red". If you haven't tried it, you're missing out on a real treat. Big Red (591ml) is expected to be available in cans and bottles at a convenience store near you.

Lemon & Paeroa is a new beverage specially formulated for those people who need to kill the meanest thirst. This is a unique fizzy drink, with a distinct lemony taste. This drink is a perfect mix of bitter and sugar free sweetness. Try the only drink that is “world famous in New Zealand” in the comfort of your home today. L&P (591ml) will be available in cans and bottles at a convenience store near you.

Quantum is designed for people with a heavy duty style. This product delivers lots of power with little effort. It loads up to 200 staples in two different sizes and it can staple up to 150 sheets. Anti-jam feature virtually eliminates frustrating jams. Equipped with contemporary rubber grip for comfort. A handy tool to have on every desk. Quantum is expected to be available at a store near you.

The Tank Torino is specially designed for the daring individual. This is a newly designed 21-speed, full suspension mountain ride that will definitely get you moving. At only 22 pounds, the advanced aluminum frame of this masterpiece is incredibly light weight and equipped with everything you need to ride on or off road. Get up and get moving today! Tank Torino will be available near you.

Blazer X is designed for people who seek perfection. Owning this beauty is a must! It has 2-slice capacity, stainless steel exterior, reheat & defrost settings. It has two wide slots, great for thick bread and bagels. Slide-out crumb tray for easy cleaning. Auto safety shut-off. This machine is a “must have” in every home. Blazer X is expected to be available at a store near you.
APPENDIX C: STUDY 3 ADVERTISEMENTS

FIGURE C1

Introducing the most entertaining Peugeot ever. It’s a balance of
innovative design on the outside and advanced engine technology
on the inside. The all-new 1.6 V6 308 hp inline six cylinders,
boasts twin-turbo power and maximum fuel efficiency. Without
adding incremental weight, the new high tech steel body vehicle
impresses both handling and agility. We make sure to keep that line
in to become ultimate driving machines.

The Vauxhall Zafira is a model of a 5.94 hp 1.8 or 2.0 hp Vauxhall that
surpasses its aggressive stance. What stands out is a comfortable
interior with luxury and utilitarian features for you and your family. With
Orianne luxury comfort seats, central, and four door climate control, Vauxhall’s
sophisticated advanced interior truly makes the impossible possible.

The standard of luxury motoring has always been subtly Opel. A tradition
that has been built through a long line of vehicles that you can simply
admire. Now that you are ready to step up to a 5.94 hp Corsa, you’ll
appreciate the elegance of luxury. Opel’s Corsa offers the same
3.94 hp Corsa is to a more compact size, with advanced technology,
luxurious interior space and increased steering safety. Opel, makers of
the world’s finest.

The only thing that doesn’t come with a 5.94 hp prize tag. Introducing the all-
new Octavia from Skoda. Engineered with the same precision as the
award-winning Octavia sedan. Equipped with a 2.0 turbo or available 1.8 at
acceleration with 5-speed DSG, it offers more than just a car, it offers
safety with a heart. Perfect for the family.

The Alabama Pro is a lightweight model with big wheel web to give all
highlights a better feel. Designed from suggestions of around Major League
Players, the Alabama Pro provides a comfortable grip, lightweight and
quality and satisfaction. (name needs full page, brand name, adjustable-size
logo, and web link, with Alabama pitching gear tip)

Shakers show that traditional cleaning equipments can’t kill the
1.60 tsp of germs living in your cups. That’s why Shakers made the DCT,
the only 1.60 tsp of bacteria killing, airless, all-over-no-touch
cleaning solution. By adding some technology, we’ve eliminated
hospitals, DCT is simply a DCT for humans, being made, without the use
of harsh chemicals. Why just clean, when you can “Dyson it?”

You’ve never experienced much environmental support. Mentad 327 has a
rich, clean format mixed with an excellent, clean look. Its fine wages
meant that it is both environmentally friendly and cost-effective.
This superior environment includes highly filtered, multi-stage unpack
and filtering. TegraPack & pack. A flawless company committed to
who cares. Mentad, we’d rather let our strings play for themselves.
## APPENDIX D: PRODUCT STIMULI PRETEST RESULTS

### FIGURE D1

<table>
<thead>
<tr>
<th>Product Schema</th>
<th>Congruent</th>
<th>Moderately Incongruent</th>
<th>Extremely Incongruent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Digital Camera Schema</strong></td>
<td><img src="image" alt="Camera" /></td>
<td><img src="image" alt="Incongruent Camera" /></td>
<td><img src="image" alt="Incongruent Camera" /></td>
</tr>
<tr>
<td><strong>STUDY 1</strong></td>
<td>N = 85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males:</td>
<td>Evaluations: $M = 3.72$</td>
<td>$***$</td>
<td>$M = 4.74$</td>
</tr>
<tr>
<td></td>
<td>Typicality: $M = 6.20$</td>
<td>$***$</td>
<td>$M = 4.75$</td>
</tr>
<tr>
<td>Females:</td>
<td>Evaluations: $M = 3.94$</td>
<td>$***$</td>
<td>$M = 4.92$</td>
</tr>
<tr>
<td></td>
<td>Typicality: $M = 6.09$</td>
<td>$**$</td>
<td>$M = 4.94$</td>
</tr>
</tbody>
</table>

| **Soft Drink Schema**   | ![Soft Drink](image) | ![Incongruent Soft Drink](image) | ![Incongruent Soft Drink](image) |
| **STUDY 2**             | N = 72     |                        |                       |
| Males:                  | Evaluations: $M = 3.62$ | $***$ | $M = 4.77$ | $***^a$ | $M = 2.83$ |
|                         | Typicality: $M = 6.01$ | $***$ | $M = 3.93$ | $***$ | $M = 2.44$ |
| Females:                | Evaluations: $M = 3.99$ | $***$ | $M = 5.15$ | $***^a$ | $M = 2.59$ |
|                         | Typicality: $M = 5.77$ | $***$ | $M = 4.12$ | $***$ | $M = 2.01$ |

| **Car Schema**          | ![Car](image) | ![Incongruent Car](image) | ![Incongruent Car](image) |
| **STUDY 3**             | N = 75     |                        |                       |
| Males:                  | Evaluations: $M = 4.13$ | $***$ | $M = 5.42$ | $***^a$ | $M = 3.09$ |
|                         | Typicality: $M = 6.53$ | $***$ | $M = 4.33$ | $***$ | $M = 2.03$ |
| Females:                | Evaluations: $M = 4.53$ | $***$ | $M = 5.74$ | $***^a$ | $M = 3.01$ |
|                         | Typicality: $M = 6.36$ | $***$ | $M = 4.70$ | $***$ | $M = 1.82$ |

$M_{diff} =$ Mean Difference: * < .05; ** < .01; *** < .001  
$^a =$ mean difference for congruent vs. extreme.  
Note: There were no differences between genders on evaluation or perceived typicality ($F$s < 1).
REFERENCES


Tuesday Jan 11 2011 02:47 PM/JCR380205/2011/38/2/
QUERIES TO THE AUTHOR

q1. Au: JCR prefers to avoid the use of italics for emphasis. These have been changed throughout.

q2. Au: Superscripts longer than seven characters create typesetting problems, so we have shortened them here and throughout. Please let us know if you would prefer an alternate styling.

q3. Au: Putrevu 2001: Is 10 the volume number? Please provide an issue number or month, if available.