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What's in a name? The impact of subcategory salience on value perception and upgrade intention for multicategory products

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Abstract

Despite many convergence products rapidly approaching market saturation, academic research yet lags behind with the focus still on the primary demand in the introduction stage. The authors close this gap by focusing on how the labeling of convergence products may impact on value perception and upgrade intentions for these products. Convergence products, which combine multiple categories of products into a single device, create a unique naming dilemma for manufacturers and retailers: Whether to opt for (a) a subordinate label—a lower-level descriptor or name that embodies its subcategory elements (e.g., smartphone or Apple's iPhone) or (b) a superordinate label—a higher-level descriptor or name which transcends its subcategories (e.g., multifunctional device or Samsung's Galaxy). The authors investigate the effects of labeling choices (i.e., subordinate vs. superordinate) on consumer value perception and upgrade intention. Results of four studies demonstrate that the labeling options exert differential effects on perceived value and upgrade intention, while the use of subordinate (vs. superordinate) label lowers the present perceived value, it raises consumer's intention to upgrade to a newer-generation product.

Keywords

convergence product, intrinsic motivation, product replacement, subordinate label, superordinate label, willingness-to-pay, willingness-to-upgrade

1 INTRODUCTION

Recent industry reports note that smartphone ownership has exceeded 70% among U.S. consumers, and the market is fast approaching saturation (Poushter, 2016; Sullivan, 2016; Whitney, 2016). For consumers, the fast-growing appeal of convergence devices such as smartphones or portable gaming devices with multimedia features is in the evident benefit of utilizing one device to pursue multiple activities or goals (e.g., voice communication, email, gaming, and digital imaging, among others). In the preconvergence era, which was not so long ago, such tasks would have required a separate, dedicated product for each activity. In line with the surging popularity and increased ownership of convergence

products, academic scholars are also seeking an improved understanding of consumer responses to these new product options. For example, researchers have investigated the characteristics of functionalities and optimal ways to combine them (Gill, 2008), perceived performance and consumer preference with regard to converged versus dedicated forms (Han, Chung, & Sohn, 2009), and categorization of these ambiguous, hybrid products (e.g., Gregan-Paxton, Hoeffler, & Zhao, 2005; Lajos, Katona, Chattopadhyay, & Sarvary, 2009).

While earlier studies have yielded important insights pertinent to the primary demand for these products, the market has since moved on. We are now in the lifecycle stage where retailers and manufacturers are battling to maintain margins and searching for ways to persuade consumers to shorten their product upgrade cycles. In fact, branding and positioning strategies have taken on an even higher level of importance in the current market context. For example, Lenovo, the top smartphone manufacturer in the Chinese market in 2014, experienced a precipitous tumble from its pinnacle position, and the experts attribute Lenovo's downfall to their inattention to branding (Lee, 2016): "This put the company to a great disadvantage to Xiaomi and Huawei's strong branding efforts. Lenovo just could not adapt quickly enough." Such rapid changes in companies' fortunes driven by branding outcomes underscore the need for additional research on convergence, particularly with respect to the branding and positioning strategies in the impending maturity phase in the convergence product lifecycle.

The goal of this study is to address an issue that is of pertinent significance for retailers and manufacturers of convergence products: Namely, their decision governing category and brand labels. The multicategory nature of convergence products creates a unique naming dilemma for companies: Whether to opt for (a) a *subordinate* label—that is, a lower-level descriptor or name that embodies its subcategory elements (e.g., smartphone or Apple's iPhone) or (b) a *superordinate* label—that is, a higher-level descriptor or name which transcends its subcategories (e.g., multifunctional device or Samsung's Galaxy). In practice, while name applications of both kinds abound in present-day convergence products (e.g., LG's Digital Music Eye, which is an MP3 player with a digital camera vs. Philips's GoGear, which is an MP3 player with a video player plus FM recorder and tuner), the effects of such naming decisions on consumer responses (i.e., current preferences, value perceptions, and future upgrade intentions) merit a scrutiny not only from a pragmatic standpoint but also from a theoretical perspective as well. That is, the extant literature had adopted the view that consumers perceive convergence akin to the notion of combining concepts. However, we take the convergence notion beyond combining of concepts and onto merging of intrinsic motivations or activities for consumers, which has different theoretical underpinnings for psychological processes and responses.

In a series of four studies, we investigate how category and brand labels of convergence products impact consumer responses. We find that subordinate labels lead to lower perceived value as compared with superordinate labels. Building on previous literature in social cognition, we also examine the psychological mechanism underlying this process. Foremost, we contribute to the extant literature by conceptually delineating the consumer's usage of convergence products in line with managing intrinsic motivations. To this extent, we draw from the prior motivation research to relate theoretical implications of cueing mechanisms (i.e., brand/category labels) at different levels of abstraction that lead to corresponding levels of willingness-to-pay (WTP). The managerial implication is that manufacturers and retailers may benefit (suffer) from using a superordinate (subordinate) brand and category labels due to higher (lower) WTP. Moreover, extending the investigation of label effects to product upgrade context, subordinate labels make upgrading more salient in consumers than superordinate ones. We explain this phenomenon with Nosofsky's (1986, 1987) theory on selective attention for integral versus separable stimuli. That is, conceptually, a superordinate (subordinate) label will promote a holistic-(analytical-) style processing, which would make it less (more) conducive in making obsolescence determination in one of the convergence product's subcategories. Therefore, in willingness-to-upgrade (WTU) decisions, a

convergence product with a subordinate versus a superordinate label will have the advantage of shorter upgrade cycles. Finally, we conclude with both the strategic supply-side implications and demand-side policy discussions.

2 BACKGROUND

Despite its relatively short history, the digital convergence wave has firmly taken root in the modern society—as evidenced by the level of consumer interest, product offerings, as well as household penetration of high-tech devices such as smartphones, tablets, wearables, and other multifunctional consumer electronics (Han et al., 2009; Shankar et al., 2016). While many convergence product categories are rapidly approaching market saturation, the academic research in this domain is lagging far behind. In extant studies, the focus is yet on primary demand and/or issues related to category membership. A closer inspection reveals two streams of literature on convergence products in marketing: (a) *Product focused* and (b) *process oriented*, which we review and briefly discuss in the following sections.

2.1 Product-focused perspective

For the most part, in the convergence research with a product-centric focus, scholars have typically sought after optimal combinations of features, functionalities, or performance to deliver an attractive product bundle to consumers. For instance, Gill's (2008) earlier work on convergence dichotomizes product features into a utilitarian versus hedonic typology to isolate the most attractive base/feature combination from the viewpoint of consumers. Other works on the topic include a study of product quality and the challenges of added functionalities; in that study, low (high) quality and (in) congruent combinations turned out to be the more desirable configurations (Gill & Lei, 2009). There are also studies investigating consumer preferences regarding product form comparing convergence products and corresponding standalone products. Han et al. (2009) and Chung, Han, and Sohn (2012) demonstrate dynamic evolution in preferences for product forms along the dimensions of time and product performance.

2.2 Process-oriented perspective

To understand the formation of consumer beliefs and attitudes toward hybrid products, we review extant research on the topic of convergence, which has been based on the categorization literature (e.g., Gregan-Paxton et al., 2005; Lajos et al., 2009; Rajagopal & Burnkrant, 2009). In particular, special attention has been paid to the inherently "ambiguous" nature of convergence products arising from the integration of features and functionalities from different product categories. With the underlying rationale that the characteristics of incumbent categories will govern beliefs and attitudes toward ambiguous stimuli (as has been robustly shown in previous categorization studies, e.g., Malt, Ross, & Murphy, 1995; Murphy & Ross, 1994; Ross & Murphy, 1996), marketing scholars have sought to apply and corroborate extant categorization theories to the context of convergence products.

In general, individuals apply a single-category strategy as the dominant heuristic (vis-à-vis multiple-category strategies) in evaluating ambiguous stimuli. This phenomenon has been consistently documented in studies in psychology (e.g., Malt et al., 1995; Murphy & Ross, 1994; Ross & Murphy, 1996) and marketing (e.g., Moreau, Markman, & Lehmann, 2001). For example, Moreau et al. (2001) demonstrate that consumers form beliefs about innovative new products (e.g., the digital camera) based on a single, pre-existing category (e.g., either the camera category or the scanner category, but not both). While

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Gregan-Paxton et al. (2005) and Murphy and Ross (2010) identify conditions where individuals may apply multiple-category strategies in evaluating convergence products or other ambiguous stimuli, these instances are largely exceptions.

Lajos et al. (2009) offer an alternative categorization strategy for convergence products. Instead of fitting an ambiguous target stimulus into a pre-existing category, Lajos et al. (2009) created new subcategories based on Taylor's (1981) subtyping model. According to Taylor (2009), individuals create subcategories within the context of more general categories when they cannot reconcile the inconsistencies of the target stimulus. Extending this theory, Lajos et al. (2009) demonstrate how consumers may create subcategories via subtyping to accommodate new convergence products.

Notwithstanding these *product-focused* or *process-based* approaches to understanding convergence products, we contend that more research in this area is needed. The current state of the electronics market has evolved well beyond building primary demand for convergence products. In fact, some industry analysts are predicting that markets for core convergence products such as smartphones may potentially reach the saturation point in the not-so-distant future (Sullivan, 2016). While our knowledge of how to establish selective brand-level demand remains scant, we assert that more research is warranted from both conceptual and practical points of view. To this end, we utilize relevant theories to describe the key underlying processes pertinent to brand-level, selective demand for these products.

3 CONCEPTUAL DEVELOPMENT

The notion of convergence, by definition, is "the occurrence of two or more things coming together" (Webster's 1913 Dictionary). At first glance, this definition seems to emanate from the traditional idea of product bundling (Stremersch & Tellis, 2002), in which functionalities from different product categories are specifically combined in the literal sense at the *product* level. The primary objective of our investigation, however, is to develop a *conceptual* framework to shed light on the cognitive processes underlying consumer valuation of convergence products.

3.1 Psycholinguistic concepts

In the marketing literature, researchers have traditionally adopted a psycholinguistics approach when deconstructing the notion of convergence from the consumer's perspective (Gill & Dube, 2007; Rajagopal & Burnkrant, 2009). Specifically, based on Wisniewski and Love's (1998) seminal work on strategies for interpreting novel combinations, Gill and Dube (2007) focus on how individuals are likely to improve comprehension of new product concepts by examining modifier-and-header combinations via two processes. One is *property mapping*, where property or trait (e.g., shape or function) is transferred from the header to the modifier (e.g., shape: Notebook computer or function: clock radio). The other is *relation linking*, where the header and modifier are linked thematically (e.g., desktop computer). Analogous to this is the work of Rajagopal and Burnkrant (2009), who also adopt these two interpretive strategies to examine the roles of modifier and header, that studies product beliefs/attitudes at the category level. These studies have in common that convergence is characterized as the integration of concepts from a psycholinguistic point-of-view.

It is our contention, however, that the notion of convergence goes beyond combining concepts; it entails combining intrinsic motivations or activities for consumers. According to 2016 GfK study, smartphone users engage in activities across 14 categories: Texting (22%), phone calls (22%), email (10%), social media (10%), web surfing (6%), games (6%), watching content (2%), shopping (1%), reading (1%), and

others (13%; MarketingCharts.com, 2016). In that study, the subcategories comprising convergence products are essentially representations of activities that have been combined in one device from the user's standpoint. If convergence products are indeed construed by consumers as the embodiment of combined intrinsic motivations, then the theoretical and practical implications of this strategy warrant investigation. Theories in social psychology, particularly those governing engagement in and motivations for activities, provide a good starting point.

3.2 Activity engagement theory

We start with Higgins and Trope's (1990) seminal theory governing people's engagement in activities—referred to as *activity engagement theory*. Higgins and Trope (1990) contend that before engaging in any activity, individuals make inferences regarding the input associated with such engagement. They also describe an undermining effect arising from combining motivations. For example, offering an award (e.g., money or other extrinsic motivation) to a child to engage in a particular activity (e.g., reading a book, which requires an intrinsic motivation) has been shown to undermine the child's interest in the specific activity thereafter. The child concludes that interest in the intrinsic activity must have been motivated by the extrinsic award, which in turn, leads to the inference that the intrinsic activity is not inherently interesting or worth engaging in.

Higgins, Lee, Kwon, & Trope (1995) extended activity engagement theory to explain what may happen when two intrinsic motivations are combined—a more relevant scenario for the convergence product context. Higgins et al. (1995) posit that when two intrinsic activities are combined and considered simultaneously, consumers' interest in both activities wanes as compared to when the activities are separate. The rationale is that when people abandon one activity to begin another, they may infer that the first activity was less interesting than the second. Using the category of *picture book* as an example for the combining of coloring and reading activities, Higgins et al. (1995) find that children's interests toward these activities decrease according to the aforementioned reasoning.

Higgins (2006) further developed this theory to address the phenomenon of repeated switching among combined activities:

Compared to the successive condition in which participants can concentrate on one activity at a time, the constant switching back and forth between activities in the simultaneous condition is disruptive and thus is likely to decrease engagement strength. This decrease in engagement strength should decrease the attractiveness of the two liked activities… (Higgins, 2006; p. 455).

That is, Higgins (2006) predicts that the very act of constant switching back and forth between activities in itself decreases engagement strength, which in turn decreases the attractiveness of all activities involved. In addition, Higgins (2006) postulates a conceptual framework wherein engagement strength directly influences the perceived value of all activities. With convergence products, the constant switching among apps is a commonly observed behavior. For instance, in a study tracking smartphone usage for 2 weeks, Andrews, Ellis, Shaw, & Piwek (2015) report that an average smartphone owner uses the smartphone 85 times a day, engaged in a variety of activities such as checking the time, messaging, checking social media, making phone call, and playing music. Moreover, smartphone use was typically compressed into short bursts, more than 50% of uses lasting 30 seconds or less, with frequent switching behavior taking place among apps and functions.

For possible insights into the undermining process in the convergence context, we revisit the principles underlying activity engagement theory. According to the theory, activities have typically been considered as distinct alternatives and competing alternatives in the individual's mind. This competition lowers the

degree of engagement. Typically, convergence products have been labeled in terms of their subordinate categories (e.g., smartphone or audio–video player), which makes the competing alternatives very salient and hence underscores the undermining effect. However, when convergence products are labeled at a superordinate category level, the competitive element may be masked, thereby increasing engagement strength. Thus, we predict an attenuation of the undermining effect on engagement in convergence products with a superordinate label. Accordingly, we expect to see higher valuation judgments for convergence products for which identification takes place at the superordinate versus subordinate level.

4 STUDY 1

The goal of this study is to investigate whether the drop in valuation caused by the combination of functionalities is attenuated by the use of superordinate category labeling (e.g., Baker, 2003; K. Kim & Ahn, 2017; Murphy & Brownell, 1985; Rosch, Mervis, Gray, Johnson, & Boyes-Braem, 1976; Viswanathan, Johnson, & Sudman, 1999; Wänke, Herrmann, & Schaffner, 2007). The literature in cognitive psychology defines a subordinate category as concrete and specific and the superordinate category as more abstract and general (Johnson & Fornell, 1987; Shocker & Srinivasan, 1979; Xu, Jiang, & Dhar, 2013). Following this convention, we define superordinate category labels as abstract and inclusive labels that subsume and transcend multiple functions. In contrast, subordinate category labels are concrete labels that refer to an individual, specific features.

4.1 Methods

Sixty-eight undergraduate students in a Singaporean university participated in the experiment for course credit (35 males and 33 females). The participants completed a questionnaire containing information about a convergence device: The smartwatch. The dependent variable was participants' WTP for the convergence device.

In line with the definition above, we conceptualize the superordinate label as a general label that does not specifically refer or allude to a particular subcategory of the functions available in the convergence product. In contrast, we consider the subordinate label to be any label that specifically refers or alludes to one or more of the subcategory functions available in the convergence product. For our study, we used a *wearable high-tech device* and *smartwatch* as superordinate and subordinate labels, respectively. While the superordinate label of "wearable high-tech device" does not make any specific reference to any of the subcategory functions, the subordinate label of "smartwatch" refers to the specific "watch" function in the device.

These labels were pretested with 53 undergraduate business students (28 males and 25 females). The pretest participants were first given the description of the multifunctional product without the labels. In specific, the product was described as "a high-tech device you can wear on your wrist. It is equipped with multiple functions, including mobile phone, email, messaging, media player, and many others." Then the participants were asked to assess the two labels (i.e., wearable high-tech device and smartwatch) along two dimensions: Favorability (i.e., whether the labels are good: $1 = very\ bad$, $5 = very\ good$) and appropriateness (i.e., whether the labels are appropriate for the device described: $1 = very\ inappropriate$, $5 = very\ appropriate$). The two labels were rated to be on par with each other on both favorability ($M_{wearable\ high-tech\ devices} = 3.6$, $M_{smartwatch} = 3.8$; $p > 0.10$) and appropriateness ($M_{wearable\ high-tech\ devices} = 4.1$, $M_{smartwatch} = 4.0$; $p > 0.10$).

In the main study, the participants first read the description of the convergence product. For the participants in the superordinate label condition, the convergence product was labeled as a "wearable high-tech device" with multiple functions, including mobile phone, email and messaging, media player, and many others. For those in the subordinate label condition, the same product was labeled as a "smartwatch" with an identical product description. They were then asked to specify the amount they would be willing to pay for the product (WTP) based on the description they read earlier.

4.2 Results

We predicted that WTP would be higher for convergence products identified at the superordinate category level, in contrast to the subordinate category level. In support of this expectation, the results demonstrated that WTP was significantly higher when the product was described at the superordinate category level as a wearable high-tech device ($M = 444$), compared with when it was described at the subordinate category level as a smartwatch ($M = 196$; $t = 4.58$; $p < 0.05$).

4.3 Discussion

In line with our prediction, WTP value for convergence products is significantly higher for the product identified at the superordinate category level. Evidently, the use of a subordinate category label undermines the perceived value of the convergence product as it makes salient the competing nature of the alternative functionalities. Raising the identification to a higher, superordinate level increases the perceived value of the product, masking the competition among the subcategories. Conceivably, the superordinate label subsumes the distinctive aspects of the component subfunctions, eliminating the undermining of the perceived value observed with the subordinate label. In contrast, the use of a subordinate label makes salient the distinctiveness of the alternative subfunctions. In the next study, we conduct mediation analyses to examine the specific processes through which labeling at different levels (i.e., superordinate vs. subordinate) influences value perception.

5 STUDY 2

According to activity engagement theory, the undermining of attractiveness and valuation occurs when multiple activities are considered simultaneously as distinctive alternatives, competing with each other (Higgins, 2006; Higgins et al., 1995). In our next study, we investigate whether the undermining effect under the subordinate condition is indeed due to the perceived distinctiveness of the alternative subcomponents in the convergence product. To this end, we use relational-processing manipulation (Meyers-Levy, 1991), in which participants deliberate on how the multiple components in the convergence product are interrelated with each other, and also function with each other in a synergistic way. It is expected that, by encouraging consumers to focus on the interrelatedness (vs. distinctiveness) of the multiple functions, the relational processing will attenuate the undermining of perceived value, which occurs with subordinate labeling.

5.1 Methods

One hundred and fourteen undergraduate students in a Singaporean university participated in the experiment. The experiment consisted of 2 (category label: superordinate vs. subordinate label) × 2 (relational task: relational processing vs. control) factorial design. The dependent measure was the WTP for the convergence product.

Participants first read the description of the convergence product. The labels (wearable high-tech device vs. smartwatch) and the descriptions remained the same as those used in Study 1. They were then given a "relational processing" task (Meyers-Levy, 1991), which is adapted from the procedure used in Zhang, Fishbach, and Kruglanski (2007) study. Participants were asked to come up with possible taglines to be used in print advertisements for three fictitious products. For participants in the relational processing condition, one of the three taglines highlighted the relatedness between two features in a convergence product (wearable high-tech device/smartwatch). In specific, participants were asked to write down an advertising tagline that highlights the fact that the daily calendar function in a convergence device (wearable high-tech device/smartwatch) can enhance the use of the pedometer in the device. The aim of this task was to encourage participants to view the convergence device as a unitary whole, not as a collection of distinct, competing functions. The other two taglines were neutral (a tagline for the low-calorie snack bar and a tagline for the energy-efficient refrigerator). For the control group, all three taglines were neutral (low-calorie snack bar, energy-efficient refrigerator, ultra-light notebook computer). The order of presentation of the taglines was randomized in each condition.

They were then given the description of the convergence product (wearable high-tech device/smartwatch) again and asked to indicate the amount they would pay for the product if it were available for purchase. At the end of the questionnaire, there was a measure that assessed the perceived relatedness of subfunctions in the device: "How closely related are the multiple functions in the wearable device/smartwatch?" ($1 = $ *definitely unrelated* and $7 = $ *definitely unrelated*).

5.2 Results

5.2.1 Main analysis

A 2 (category label) $\times$ 2 (relational task) analysis of variance (ANOVA) on WTP revealed a significant main effect of category label ($F = 9.29$; $p < 0.01$), replicating the results of Study 1. As seen in Figure 1, the WTP was significantly higher in the superordinate-label condition ($M = 364.02$) than in the subordinate condition ($M = 279.94$). The main effect of relational task was also significant ($F = 12.528$, $p < 0.01$). The participants in the relational task condition reported higher WTP ($M = 370.79$) than those in the control condition ($M = 273.16$). The interaction between category label and relational task did not reach significance ($F = 2.05$, $p > 0.05$). Results of contrast analysis, however, were consistent with the expectation. Among the participants in the superordinate-label condition, the relational task had no influence on WTP ($F = 1.61$, $p > 0.10$). More important, the relational task had a significant impact on WTP for the participants in the subordinate condition ($F = 19.367$, $p < 0.01$). Among these participants, the reported WTP was significantly higher in the relational-task condition ($M = 348.52$) compared with the control condition ($M = 211.36$).
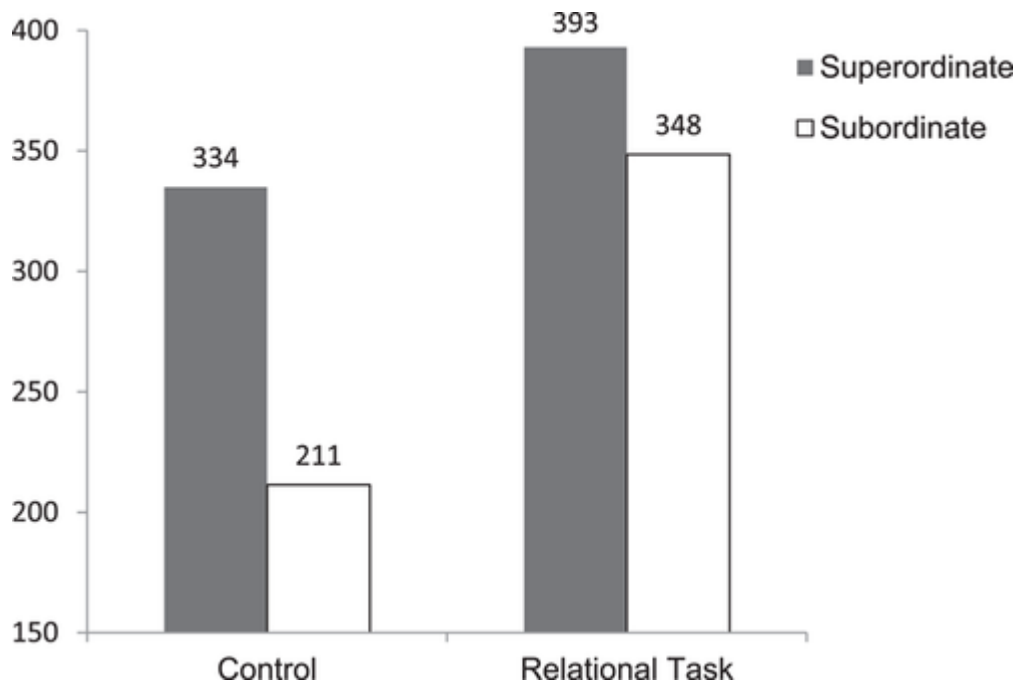
Figure 1 : Study 2: Effects of category labeling level on willingness-to-pay

We then performed a 2 (category label) × 2 (relational task) ANOVA on perceived relatedness. This analysis revealed a significant main effect of category label ($F = 6.915$, $p = 0.01$). The perceived relatedness was significantly higher in the superordinate-label condition ($M = 4.63$) than in the subordinate condition ($M = 3.85$). The main effect of relational task was also significant ($F = 7.935$, $p < 0.01$). The perceived relatedness was higher for the participants in the relational task condition ($M = 4.66$) than those in the control condition ($M = 3.82$).

5.2.2 Mediation analysis

A mediation analysis was performed to assess whether perceived relatedness mediated the influence of category label on WTP (Baron & Kenny, 1986). First, category label was a significant predictor of WTP (standardized $\beta = -0.26$, $t = -3.01$, $p < 0.01$). Second, category label was a significant predictor of perceived relatedness (standardized $\beta = -0.23$, $t = -2.60$, $p = 0.01$). Third, when WTP was regressed on category label and perceived relatedness, the coefficient for category label became nonsignificant (standardized $\beta = -0.12$, $t = -1.63$, $p > 0.10$), and the coefficient for perceived relatedness was significant (standardized $\beta = 0.60$, $t = 7.91$, $p < 0.01$). Thus, the effect of category label on WTP was mediated by the perceived relatedness. A Sobel (1982) test revealed that the mediating effect of relatedness on WTP was significant ($z = -2.39$, $p < 0.05$). Hence, relatedness fully mediated the influence of category label on WTP.

In sum, Study 2 demonstrated that the use of a subordinate category label, by highlighting a distinctive, subcategory function, reduces the perceived relatedness among the functions in the convergence product, thereby undermining its overall perceived value. The superordinate label masks the distinctive aspects of alternative functionalities, and thus, mitigates the undermining of value associated with a subordinate label. The relational-processing manipulation, by accentuating the interrelatedness among the features in the convergence product, mitigates the undermining of valuation observed in the subordinate condition.

6 STUDY 3

Both Studies 1 and 2 examined the level of labeling abstraction (i.e., superordinate vs. subordinate) at the category level. Study 3 extends the results of Study 1 to the brand level. The objective of Study 3 is to investigate joint effects of level of abstraction (i.e., superordinate vs. subordinate) at both the category and the brand-name level. This is particularly pertinent to retail situations. Retailers make decisions about the category label used in store aisles or advertisements; however, the task of naming the brand belongs to the manufacturer. Coordination of these respective decisions is essential to avoid situations in which the levels of identification (i.e., subordinate vs. superordinate) for the category label and the brand label are incongruent. In relation to this, Soderberg, Callahan, Kochersberger, Amit, & Ledgerwood (2015) recently suggested the need to examine the consequences of combining high- and low-level information. Unfortunately, this study question has remained unanswered to date. In Study 3, we explore the consequences of the incongruent combinations that may result when the retailer and the manufacturer adopt different levels of information for category labeling and brand labeling, respectively.

6.1 Methods

One hundred and forty undergraduate students in a Korean university participated in this study. Both the category label and the brand label were manipulated at two levels (superordinate and subordinate). Thus, the experiment consisted of a 2 (category label: superordinate vs. subordinate) × 2 (brand label: superordinate vs. subordinate) factorial design. As in Studies 1 and 2, we used wearable high-tech device and smartwatch as superordinate and subordinate category labels, respectively. For the brand names, we used Moto Stellar and Moto Watch as superordinate and subordinate brand names, respectively. While the superordinate brand name Moto Stellar makes no reference to any function of the device, the subordinate brand name Moto Watch mentions the specific "watch" function. These brand names were pretested with 58 undergraduate students (30 females and 28 males), The pretest participants rated the two brand names, Moto Stellar and Moto Watch, on favorability (1 = *very bad*, 5 = *very good*), likability (1 = *dislike very much*, 5 = *like very much*), and appropriateness (1 = *very inappropriate*, 5 = *very appropriate*). The two brand names were rated on par with each other on all three measures: Favorability ($M_{\text{Moto Stellar}} = 3.8$, $M_{\text{Moto Watch}} = 4.1$, $p > 0.10$), likability ($M_{\text{Moto Stellar}} = 4.2$, $M_{\text{Moto Watch}} = 4.1$, $p > 0.10$), and appropriateness ($M_{\text{Moto Stellar}} = 3.8$, $M_{\text{Moto Watch}} = 3.9$, $p > 0.10$).

In each of the four conditions, participants first read a retailer's advertising flier for a new product headlining the category label information (i.e., New Arrival in wearable high-tech/smartwatch) coupled with the manufacturer's brand label (e.g., Moto Watch/Moto Stellar), followed by product descriptions. Product descriptions remained the same as those used in Studies 1 and 2. They were then asked to indicate the amount they would be willing to pay (WTP) for the advertised product.

6.2 Results

The results of the ANOVA revealed a marginally significant main effect of the brand label ($p < 0.10$) and a nonsignificant main effect of the category label ($p > 0.10$). More important, there was a significant interaction between the category label and the brand label ($p < 0.05$). As seen in Figure 2, the lowering of the valuation was mitigated only when both the category label and the manufacturer's brand label were at the superordinate level (WTP = 388). The WTPs in all other conditions did not differ from each other, although they were significantly lower than those for the condition in which both the category and brand label were at the superordinate level ($p < 0.05$) (Figure 3).
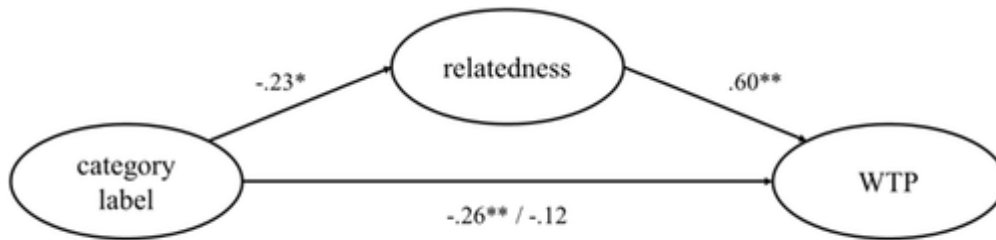
* significant at $p < .05$; ** significant at $p < .01$

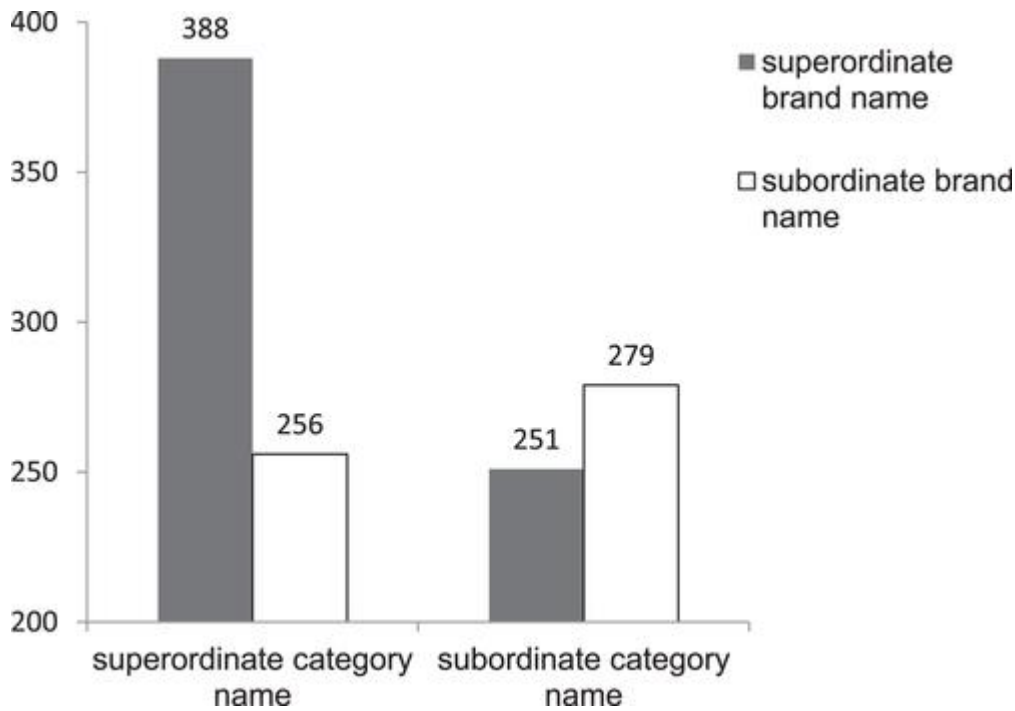**Figure 2** : Study 2: The mediating role of relatedness on willingness-to-pay (WTP)

Figure 3 : Study 3: Effects of category labeling and brand labeling levels on willingness-to-pay

6.3 Discussion

In an investigation into combined labeling scenarios, the congruent conditions yielded a pattern of results consistent with the single-label results in Studies 1 and 2. In the incongruent conditions, the lower valuation did not appear mitigated with the use of one superordinate label, either at the category level or the manufacturer's brand name. In other words, one of the labels that were subordinate seemed to dominate the activity identification process in the cognitive hierarchy for the individuals. A possible explanation may be that lower levels of abstraction are more concrete, which tend to be more vivid and easier to process than identification at higher levels of abstraction. This, in turn, may provide dominance of subordinate label effect for combined, incongruent settings.

7 STUDY 4

One of the key revenue streams for electronics retailers and manufacturers comes from customers replacing their old-generation models with the latest, state-of-the-art offerings; this holds true for both dedicated and convergence-product categories (Han et al., 2009; Kim, Chang, & Shocker, 2000). However, the unique aspect of convergence products is that the consumer judgment of (perceived) obsolescence may somewhat be ambiguous—as the obsolescence timing of each of the functionalities is not likely to occur in unison. An interesting question would be to find out how consumers make obsolescence judgments on convergence products, and in particular, whether framing at superordinate versus subordinate level can influence consumers' propensity to upgrade.

Nosofsky (1987, p. 89), based on Garner's (1974) work, outlines the processing distinctions between integral versus separable stimuli: "Integral dimensions are those that combine into relatively unanalyzable, unitary wholes, whereas separable dimensions are highly analyzable, remaining psychologically distinct when in combination." This theory maps nicely on to the superordinate versus subordinate findings on convergence labeling from our Studies 1 and 2. Nosofsky (1987) goes on to add that integral stimuli are processed holistically and separable ones are processed analytically. In fact, in an identification/classification task, he found that "whereas subjects are able to attend selectively to the relevant dimension and filter the irrelevant one for separable stimuli, they are unable to do so for integral stimuli."

Extending Nosofsky's (1987) theory to the upgrade-decision task in convergence context, we predict a differential effect in superordinate versus subordinate labels. That is, the former label will cue the consumers to consider the product as a whole, and the overall obsolescence judgment may not be as clear—as compared with the latter label, which should prompt adopting of a more deconstructionist view (e.g., selectively attending to the "camera" subcategory i.e., ignoring other subcategories in the decision-making task). Accordingly, we expect the WTU to be higher for the convergence product with a subordinate category label than that with a superordinate one.

7.1 Methods

The procedure in Study 4 is largely similar to that used in Study 1, with two key differences. First, we measured the participants' WTU (vs. WTP in Study 1). Second, to extend the generalizability, we used a different product category; namely, smartphone. In Study 4, we used "smartphone" and "multifunctional device" as the subordinate and superordinate category labels, respectively.

Two hundred and ten undergraduate students in a Korean university participated in the experiment. The convergence product was described at either the subordinate level (i.e., smartphone) or the superordinate level (i.e., multifunctional device). The participants first read the description of a multifunctional device or a smartphone. Both were described as being equipped with equivalent functions (mobile phone, eight-megapixel camera, email, messaging, media player, and many others). The participants were then told that a new device was about to be introduced and that the new device would have a 13-megapixel camera (compared with the eight-megapixel one in the current device). They were asked whether they would be likely to purchase the new device on a five-point scale (1 = *very unlikely*, 5 = *very likely*). The dependent measure was the participants' WTU the device for enhanced camera function.

7.2 Results

Consistent with our expectation, the intention to upgrade was higher when the product was described with a subordinate category label compared with the superordinate label. The intention to upgrade was higher

when the device was described at the subordinate level as a smartphone than when it was described at the superordinate level as a multifunctional device ($M = 2.92$ vs. 2.38, $p < 0.05$).

7.3 Discussion

In line with our prediction, individuals exposed to the subordinate label expressed a higher intention to upgrade to the newer-generation product than participants exposed to the superordinate label. However, as our findings from Study 1 have demonstrated that superordinate versus subordinate labels commanded differential WTP, we ran another study to rule out the differential WTP effects on intention to upgrade by providing a fixed price level of $500 across conditions. The pattern of results remains the same, ruling out the valuation explanation. Hence, our findings lend support to the proposed postulate that labeling does prime processing styles (integral vs. separable). These processing styles, in turn, have consequential effects on the consumer's upgrade intentions.

8 GENERAL DISCUSSION

In this study, our objective was to investigate the theoretical implications of the notion of convergence beyond the traditional scope of combining functionalities at the product level or interpreting hybrid concepts from a psycholinguistics perspective. Instead, we took the approach that convergence products are also meaningful to consumers as representations of bundled activities. Based on the activity engagement theory, we explored activity integration and its theoretical underpinnings—in particular, its effects on consumers' perceptions of value and judgments of product obsolescence.

First, we found labeling differences (superordinate vs. subordinate) to bring about differential results in WTP among consumers. By raising the identification of activities to the superordinate level, consumers' assessment of WTP evidently follows suit. Based on the mediation analysis, we attribute the result to subordinate label directing attention to the distinct subfunctions, which in turn, compromises the perceived relatedness. As the results were robust across category and manufacturer labels, a follow-up research question led to examining what would happen when consumers were exposed to two-party labels in one setting. While congruent label combinations were consistent with the previous single-label cases, the incongruent label combinations yielded results dominated by the subordinate label—irrespective of the label belonging to the category or the manufacturer. In order for retailers and manufacturers to maximize consumers' WTP, it would be in the interests of both parties to pursue the superordinate label strategy. However, the caveat is that this strategy is recommended only when the majority of consumers are purchasing the target convergence product as first-time buyers. For next-generation upgraders, a different label combination may be warranted.

That is, not only does the choice of the superordinate versus subordinate label have implications on WTP, but on the consumer's WTU as well. As the labeling cues, the processing of the stimulus as integral versus separable, the ensuing judgment of obsolescence is contingent upon the initial label. From a theoretical standpoint, this study is the first to address product replacement decisions based on underlying processing styles. For retailers and manufacturers, going with the superordinate label is a double-edged sword: The present perceived value of the convergence product would be higher; however, the intention to replace with a newer-generation offering will be lower. From a public policy stance, it would be in the interest of the environment and consumer welfare to discourage excessively frequent replacement behavior on the part of the consumers. One strategy would be to design a public message to encourage consumers to evaluate the convergence product as a whole rather than focusing overtly on the obsolete subcategory.

9 LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

In this study, while we have brought the level of analysis from the primary category demand to the product level, the key limitation is the absence of competitive context. Future studies can incorporate competitive effects for a more robust setting. Secondly, future studies may identify variables that moderate the influence of labeling on consumer valuation. Variables that are worthy of future investigation include social dimensions. Thompson and Norton (2011) recently demonstrated that there are social utility implications to having multiple features within a technology product. Analogously, there may also be social implications to superordinate versus subordinate labels as well; we leave this question for future research. Finally, this study employs a series of controlled, laboratory experiments, with undergraduate students as participants. While the use of student samples may have reduced the error due to heterogeneity in the sample, replications of our findings in field studies may be warranted to verify the external validity of this study's findings to the general population.

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