Riding Coattails: When Co-Branding Helps versus Hurts Less-Known Brands

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New brands often partner with well-known brands under the assumption that they will benefit from the awareness and positive associations that well-known brands yield. However, this associations-transfer explanation may not predict co-branding results when the expected benefits of the co-branded product are presented simultaneously with the co-branding information. In this case, the results of co-branding instead follow the predictions of adaptive-learning theory which posits that consumers may differentially associate each brand with the outcome as a result of cue interaction effects. Three experiments show that the presence of a well-known brand can weaken or strengthen the association between the less-known brand and the co-branding outcome depending on the timing of the presentation of product benefit information. When this information was presented simultaneously with co-branding information (at a delay after co-branding information), the presence of a well-known brand weakened (strengthened) the association of the less-known brand with the outcome and thereby lowered (improved) evaluation of the less-known brand.

New brands face many obstacles including the need to generate awareness in an often crowded marketplace and to build unique brand associations that can help meaningfully differentiate the brand. To jumpstart the creation of these associations, new brands often leverage external entities (other brands, events, causes, countries, people, etc.) that already possess valued associations in the hope that these desired associations will transfer to the new brand (Keller 2003). The widely accepted explanation for why such secondary associations would transfer to the new brand is derived from associative network models of memory that propose that concepts linked in memory form both direct connections with one another and indirect secondary connections with other shared associations (Anderson and Bower 1973; Keller 1993). These associative network models of memory (hereafter referred to as human associative memory [HAM] models) are also quite consistent with other prominent approaches to branding such as McCracken's (1989) meaning-transfer model.

One particular entity that is often leveraged to help build associations with a new brand is an established brand with which the new brand can partner. Such co-branding arrangements facilitate the transfer of associations to the new brand, whether they be positive (James 2005; Park, Jun, and Shocker 1996; Park, Milberg, and Lawson 1991) or negative (Votolato and Unnava 2006). Moreover, associational transfer between entities does not appear to require in-depth deliberation given that propositional beliefs and affect can transfer between entities just by observing the co-occurrence of the entities (Dimofte and Yalch 2011; Galli and Gorn 2011; Lee and Labroo 2004; Perkins and Forehand 2012). Conventional wisdom holds that partnerships between brands disproportionately affect the less-known brand since it is relatively devoid of associated content and is therefore a blank slate ready to receive associations from an established brand (Aaker and Keller 1990; Boush and Loken 1991; Broniarczyk and Alba 1994; Levin and Levin 2000). Provided that the established brand possesses primarily pos-

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itive associations, the net effect of this partnership should be positive for the less-known brand.

Whereas there is an inherent logic behind the belief that a less-known brand will benefit from co-branding with an established brand possessing positive associations, we propose that the net effect of co-branding on the less-known brand will depend on whether the co-branding arrangement is presented with or without immediate performance outcome information. When consumers simply learn that the brands are working together but receive little or no information about the performance of the co-branded product, the established brand's positive associations should transfer freely to the less-known brand both nonconsciously and through deliberative inference. However, when the consumer learns not only of the existence of a partnership but also about the expected benefits stemming from the partnership, consumers may not only link the brands in memory as HAM models argue but may also engage in a learning process during which they assess how much of the eventual performance is attributable to each of the component brands. Supporting this contention, past research has found that when consumers use component inputs to predict future performance (as opposed to passively integrating information from the inputs), the net effects of these paired inputs can deviate from the predictions of the HAM model and instead follow the predictions of what was termed adaptive learning (van Osselaer and Janiszewski 2001). Adaptive learning is largely equivalent to a host of learning models from cognitive psychology including predictive learning, signal learning, and expectancy learning (DeHouwer, Thomas, and Baeyens 2001). Given that these various terms are largely synonymous with one another, this process of evaluating the contribution of various inputs to an outcome will hereafter be referred to as "adaptive learning" to maintain consistency with the marketing literature.

When consumers are given outcome information about co-branding relationships, adaptive learning models propose that each predictive cue (the component co-brands) may influence the degree to which the other component co-brand is seen as responsible for the outcome (e.g., the benefit the new co-branded product delivers). The large majority of research in adaptive learning has observed *competitive* cue interaction effects in which a target cue becomes weakly associated with the outcome when trained in presence of another cue of greater salience or in the presence of a cue for which associations already exist (Kruschke 2001; Pearce and Hall 1980; Rescorla and Wagner 1972). Within marketing, competitive cue interaction effects have been shown to bias consumers' expectations about which product features predict product performance for a given brand (Cunha, Janiszewski, and Laran 2008; Cunha and Laran 2009; van Osselaer and Alba 2000). In co-branding arrangements, competitive cue interaction could ironically cause the dominant established brand to undermine the benefits of co-branding for the less-known brand.

Although the literature in adaptive learning has generally demonstrated competitive cue interaction effects, we propose that facilitative cue interaction effects are also possible. When facilitative cue interaction occurs, a more salient cue strengthens response to a less salient cue (Batson and Batsell 2000). In contrast with cue competition effects, facilitative cue interaction effects would actually enhance the strength of association between a less-known brand and the outcome and thereby benefit the less-known brand.

Given the opposing direction of the effects predicted by cue competition and cue facilitation on new brands entering a co-branded relationship, it is critical to identify factors that determine when each cue interaction effect is more likely. One potential such factor under marketer control is the timing of the outcome information. Building from Urcelay and Miller's (2009) work on animal learning, we propose that the addition of a brief time delay between the presentation of cues (brands) and outcomes (product features/benefits) can shift processing from cue competition to cue facilitation by influencing the degree to which learning is generalized to novel situations. In other words, as it will be detailed later, we propose that whether cues compete or facilitate adaptive learning depends on the extent to which one responds to the less-known brand in a similar fashion to the way one responds to the co-branding arrangement. In our theorizing, we propose that presentation of co-branding arrangements followed by immediate presentation of the outcome information draws attention to the most prominent cue predicting the outcome. The resultant cue competition leads to narrow generalization of learning and a net negative effect for the new brand. However, when there is a brief delay between presentation of co-branding arrangements and outcome information, both brands are processed as a unitary combination, encouraging broader generalization. In this situation, cue facilitation should occur in which the new brand is perceived as more predictive of the outcome, making the co-branding arrangement advantageous to the new brand.

The goals of this research are thus threefold. First, we will assess whether the simultaneous presentation of outcome information with new co-branding arrangements can prompt cue competition and thereby produce negative consequences for less-known brands in co-branding arrangements. Second, we will test whether a delay between co-branding presentation and outcome information can shift response from cue competition to cue facilitation, an effect that would provide evidence for a stimulus generalization process (and which would not be predicted by HAM models). Third, we will determine whether any favorable cue facilitation effects toward the new brand persist in situations in which HAM-based inference processes should have no effect, thereby providing additional support for the proposed adaptive learning process.

CONCEPTUAL DEVELOPMENT

Co-Branding: A HAM Perspective

A broad body of research has investigated the effects of co-branding. Within the domain of brand alliances, researchers have investigated the effect of constituent brand positions

in co-branded product offerings (Park et al. 1996), the issues associated with co-branding across international borders (Lee, Lee, and Lee 2013), the influence of consistency and congruity across component brands within a partnership (Lanseng 2012; Walchli 2007), and whether brand alliances dilute brand equity (Loken and John 2010). In addition, the consequences of co-branding have been studied extensively in the areas of brand extensions (Estes et al. 2012), product systems (Rahinel and Redden 2013), embedded premium promotions and cause marketing (Henderson and Arora 2010), ingredient and component branding (Erevelles et al. 2008; Ghosh and John 2009), and event sponsorship (Carrillat, Harris, and Lafferty 2010; Ruth and Simonin 2003).

Although many approaches have been taken to understand these various branding domains, perhaps the most dominant model for describing how brands are affected by outside partnerships is the network model of memory/human associative memory model (Anderson and Bower 1973). Keller (1993) initially presented this conceptualization in his ground-breaking investigation of brand equity, which documented the importance of strong, favorable, and unique associations in memory. This HAM-based model of brand equity has been successfully applied to a vast array of branding contexts, including brand extensions (Broniarczyk and Alba 1994), brand-performance inference making (Kardes, Provasec and Cronley 2004), brand-image communications (Sjödin and Törn 2006), and brand dilution (Pullig, Simmons, and Netemeyer 2006). Previous to Keller, meaning transfer was proposed as a process underlying the effects of celebrity endorsements on brands (McCracken 1989). Although the HAM model was not specifically mentioned as the driver of McCracken's meaning transfer, the process described meshes well with its basic tenets and has been validated by more recent research (Batra and Homer 2004; Miller and Allen 2012). In general, Keller's (1993) conceptualization of brand equity as a network of associations in memory has been the dominant paradigm in the branding literature and continues to receive empirical support (Morrin, Lee, and Allenby 2006; Teichert and Schöntag 2010).

Following the HAM model, co-branding is thought to be sound strategy for new or less-known brands (James 2005; Keller 2003; Park et al. 1991, 1996). Co-branding generally benefits these less-known brands since co-branding creates a direct association between the new brand and an established brand, allowing for the less-known brand to leverage positive secondary associations from the established brand. Provided that the established brand's preexisting associations are positive for the category in question, the net effect of co-branding on attitude toward the less-known brand should also be positive. It should be noted that the preexisting associations for an established brand are generally not universally positive or negative, as the degree of fit between the brand and category will be paramount. For example, the association of "nutrition" with a cereal brand would likely improve that brand's probability of success in a new food category such as baked goods but would be irrelevant in categories with little overlap with food (technology, clothing, etc.). The resulting transfer of associations between brands may not require deep deliberative processing of the information as the formation of these associative brand links has also been observed in low-involvement settings (Dimofte and Yalch 2011; Sengupta, Goodstein, and Boninger 1997). In sum, the HAM model has proven to be a successful strategy for understanding both the development of consumer associative networks in general, and networks of brand associations in particular.

Co-Branding: An Adaptive Learning Perspective

Although HAM models have a proven record in predicting consumer response to the transfer of associations between offerings, such as when a parent brand introduces a brand extension (Keller and Aaker 1992), it is less clear that the predictions of HAM will persist when consumers are also given information about the performance outcomes of these offerings. When the new offering includes two distinct (one well-known and one unknown) brands in a co-branding arrangement along with outcome information, adaptive learning processes may influence how consumers evaluate the heretofore unknown brand. Unlike HAM models, adaptive learning theory suggests that partnering with an established brand can actually be detrimental to less-known brands, even when the established brand is well regarded in the category. Central to this account is the idea of competitive cue interaction, a phenomenon in which the response to a target cue (the less-known brand) is weakened when trained in the presence of a second prominent cue (the established brand; Cunha and Laran 2009; Kruschke and Blair 2000; Mackintosh 1975). Marketing research has documented that competitive cue interaction biases predictions of attribute product-quality relationships (van Osselaer and Alba 2000), the learning of attribute-brand associations (Cunha and Laran 2009), and the learning of attribute-service performance (Cunha et al. 2008). If such cue-competition effects occur when product outcome information is provided with co-branding announcements, not only may co-branding not benefit less-known brands, but evaluations of these less-known brands may actually drop relative to situations in which they were presented in isolation. Importantly, these cue competition effects are argued to be fairly nondeliberative and occur in animals with very low levels of cognitive reasoning just by the simple observation of co-occurrences between stimuli (Batsell and Batson 1999; Batsell et al. 2001; Batson and Batsell 2000; Urcelay and Miller 2009). The nondeliberative nature of this learning is important as it suggests that the driving force behind the effects is not based on deliberative reasoning or attribution but rather on the acquisition of simple associations between cues and outcomes independent of deeper evaluation.

Relevant to this research is the finding that consumers can switch between adaptive learning and HAM processes as a function of their learning focus. Van Osselaer and Janiszewski (2001) showed that, when consumers learn to identify cake samples based on ingredient brand names, product evaluations tend to be consistent with cue-competition when

learning is more hedonically relevant (e.g., learning about chocolate flavor), whereas product evaluations tend to be consistent with HAM when learning is less hedonically relevant (e.g., learning about type of cocoa). This result is consistent with a dual-process account of learning in which competitive cue interaction/adaptive learning occurs when learning is relatively focused and directed toward future outcomes (forward looking), whereas HAM-based transfer of associations occurs when learning is relatively unfocused and directed at existing learned connections (backward looking).

It is possible, however, that a single-process adaptive-learning explanation can account for the intricate pattern of results in the co-branding literature, regardless of the hedonic motivation and degree of focus, if we relax the assumption that cue interactions can only be competitive in nature. Although conspicuously neglected relative to competitive cue interaction both in psychology and marketing, facilitative cue interaction effects have been demonstrated in the animal learning literature. For instance, Batsell and colleagues (Batsell and Batson 1999; Batsell et al. 2001; Batson and Batsell 2000) showed that rats responded more strongly to an odor target cue when it was trained in the presence of another cue that had been previously trained to predict the outcome/unconditioned stimulus. Similarly, rats tasked with predicting foot shocks became more responsive to a low salience auditory cue when it was presented together with a high salience auditory cue (Urcelay and Miller 2009). Similar cue facilitation effects have been found for humans when their cognitive resources are restricted (Vadillo and Matute 2010). All of these results suggest that the presence of salient cue can actually *increase* response to low salience cues, a cue facilitation effect.

Although there is preliminary evidence that cue interaction can be either competitive or facilitative, relatively little research has investigated the factors that moderate these responses. Within animal learning research, one factor that has been shown to increase the likelihood of facilitative cue-interaction effects is the time delay between the presentation of the cue and the presentation of the outcome, with cue competition occurring when there is no delay and cue facilitation occurring when there is a delay (Urcelay and Miller 2009). The mechanism driving this moderation, however, has not been well documented. In this research, we propose that time delay between cue and outcome presentation influences the degree to which initial learning focuses on each of the cues separately (elemental learning) or on the combination of the cues (configural learning).

Time Delay and Cue Interaction Effects

To better understand how cue interaction could be both competitive and facilitative as a function of time delay, we first examine the issue of stimulus generalization. Stimulus generalization refers to the extent to which one responds to a novel stimulus in the same way one responds to a stimulus that has previously been learned to predict a given outcome. This response is said to be a function of the perception of elements shared between the novel stimulus and the stimulus for which learning has previously occurred (Pearce and Bouton 2001), with breadth of generalization increasing as the number of shared elements increases. To illustrate, imagine that a consumer learns that a less-known brand and a well-known brand developed a co-branded product that delivers a desirable benefit. Now imagine that this same consumer later learns that the less-known brand also offers its own products (without co-branding). Would the consumer expect product benefits that are as desirable as the benefits learned from the co-branding arrangement? Because the consumer never learned about outcomes delivered by the less-known brand by itself, the answer depends on the extent to which the consumer perceives the less-known brand to share elements (i.e., the brand names) with the combined co-branded offering. Fewer perceived shared elements should lead to narrower generalization with consumers being less likely to expect the less-known brand to deliver the desirable benefit by itself relative to when it is paired with the well-known brand. Alternatively, more perceived shared elements should lead to broader generalization with consumers being more likely to expect the less-known brand to deliver the desirable benefit. Thus, the long-term effects of co-branding on the component brands will likely depend on whether stimulus generalization is narrow or broad (Pearce 2008; van Osselaer, Janiszewski, and Cunha 2004).

Breadth of generalization thus provides a basis for understanding why time delay should influence whether cue competition is competitive or facilitative. Although learning about the partnership of multiple brands and the resulting performance of the partnership, consumers can associate the outcome with each brand individually or with the brand pairing as a single unitary compound (i.e., elemental vs. configural learning; Pearce 2008; Pearce and Bouton 2001; Wagner 2008). Given that simultaneous presentation of the brand cues and outcome information encourages consumers to quickly focus on identifying which brand best predicts the outcome, consumers are likely to perceive fewer shared elements between the less-known brand and the combined co-branding arrangement (or with the established brand). As a result, consumers are less likely to generalize what was learned about the co-branding arrangement to a product offered solely by the less-known brand. This decrement in generalization is a standard prediction when cues create individual associations with the outcome (Wagner 2008) and is often associated with cue competition effects.

Alternatively, time delay prior to the presentation of outcome information may allow for consumers to process the two brands more holistically because brand information is the only information initially available for processing. In this case, rather than each brand independently competing for association with the outcome, the two brands form a unitary configuration that then acquires its own association with the outcome. When cues develop such a unitary configuration, it is often observed that the shared elements between each component cue and the combined unitary configuration (or between the two component cues) increase, leading to broader generalization (Pearce, Aydin, and Red-

head 1997). In a co-branding context, this would lead consumers to expect a greater likelihood that a less-known brand in partnership with a well-known brand could independently deliver benefits similar to those of a co-branded offer. This greater likelihood that a less-known brand could independently deliver benefits similar to those of a co-branded offer is an effect consistent with cue facilitation.

EXPERIMENT 1

Overview

Experiment 1 was designed to assess whether time delay between cue and outcome presentation moderates the degree to which co-branded outcomes are generalized to the less-known brand. If immediate presentation of outcome information after cue exposure produces narrow generalization as expected, then competitive cue interaction should follow. In contrast, the presence of a time delay between cue and outcome presentation should broaden generalization, thereby producing facilitative cue interaction. We therefore hypothesize that co-branding should lower evaluations of less-known brands when outcome feedback is present immediately after the presentation of the co-branding information (cue competition effect) and improve evaluations of less-known brands when delayed outcome feedback is provided (cue facilitation effect).

To test this hypothesis, participants learned about new co-branded cereals. In this paradigm, the component brands served as the cues and the amount of dietary fiber the new cereals delivered served as the outcome. In the no-delay condition, participants learned about the co-branding arrangement (or lack thereof) and then immediately received feedback regarding the amount of fiber each cereal delivered. In the delay condition, a 5-second delay was introduced between the presentation of the co-branding arrangement and the dietary fiber feedback. After these learning trials, participants then reported their intention to try a product offered independently by the less-known brand. Evidence for cue-competition will exist if consumers believe the less-known brand is *less* likely to deliver the outcome after co-branding than after individual presentation. Evidence for cue-facilitation will exist if consumers believe the less-known brand is *more* likely to deliver the outcome after co-branding than after individual presentation. Our hypothesis suggests that cue competition should occur when immediate feedback is present, and cue facilitation should occur when delayed feedback is present. Although it is not our goal to pit our theory against HAM models, we briefly compare the current predictions to those of HAM given the popularity of HAM models in the marketing literature. To that end, HAM models would argue that co-branding should improve evaluation of the less-known brand (provided that the well-known brand is positively regarded in the focal domain) and that this positive effect would not be influenced by the presence/absence of a brief delay between cue presentation and outcome presentation.

Method

Participants. One hundred fifty-nine undergraduate business school students at the University of Washington participated in the experiment in exchange for course credit.

Procedure and Stimuli. The experiment took place in a dedicated behavioral lab at the University of Washington. Participants were randomly assigned to a condition within the two levels of feedback delay (no delay vs. delay) by two levels of co-branding (no co-branding vs. co-branding) between-subjects design. In the no co-branding conditions, the new cereal manufacturer was a single fictitious brand (Prime Foods). In the co-branding conditions, this fictitious brand was paired with a well-known brand with expertise in the cereal category (Kellogg's). Kellogg's was selected because a pretest revealed that participants possessed strong positive attitudes toward Kellogg's. A sample of 160 participants from the same population used in the main experiment rated Kellogg's as significantly more positive than the midpoint on a 7-point measure of positivity ($M = 5.29$; $t(159) = 19.60$, $p < .001$). Given the overall positive evaluation of Kellogg's, any negative effect of co-branding with Kellogg's on the Prime Foods brand would not logically follow from a HAM-based association transfer process.

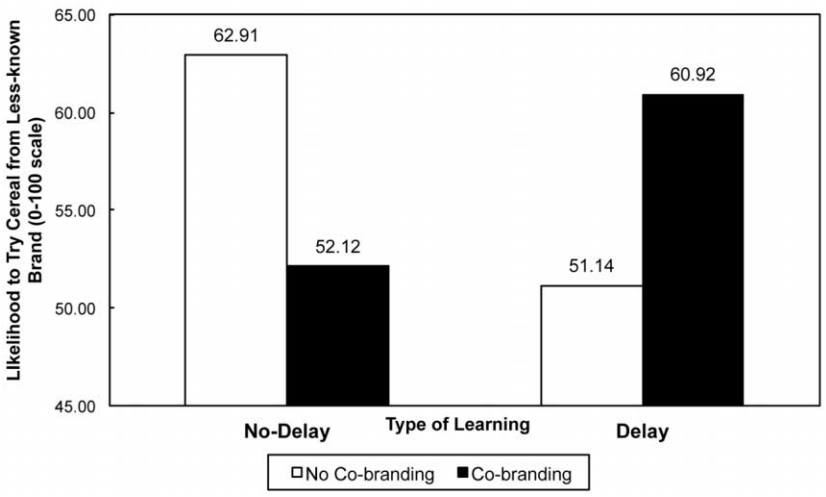
The cover story informed participants about recent FDA recommendations for daily dietary fiber intake for young adults. Dietary fiber was selected as a product benefit after a pretest demonstrated that participants found dietary fiber to be a desirable product benefit in this food category (measured relative to the midpoint of a 101-point sliding scale ranging from 0 [very undesirable] to 100 [very desirable]; $M = 74.10$; $t(86) = 11.75$, $p < .001$). The cover story told participants that dietary fiber "helps one to experience a much healthier life" and that people should strive to consume at least the minimum FDA-recommended daily allowance of 18 grams of fiber. The cover story then stated that several new high-fiber breakfast cereals were being introduced to the market and that many of these new cereals were developed by one or more cereal manufacturers. Participants viewed three such new cereals one at a time and were then asked to estimate their likelihood of trying a new cereal.

During the cereal-fiber learning trials, each cereal was identified by a number (cereal 1, 2, and 3) and was presented on the screen with the name(s) of the cereal manufacturer(s) at the center of the screen. After clicking on "continue," the cereal manufacturer information disappeared from the screen. In the delay condition, after the brand information disappeared, a screen showing the word "loading" and an hourglass indicating the passage of time were visible for 5 seconds prior to the presentation of the amount of dietary fiber content of the cereal. A 5-second delay was used because it has been shown to generate cue facilitation effects in the animal learning literature (Urcelay and Miller 2009). In the no-delay condition, feedback appeared immediately after the participants clicked on the button to proceed.

Across the three learning trials, the feedback screens in-

FIGURE 1

DELAY MODERATES EFFECT OF CO-BRANDING: EXPERIMENT 1



dicated that the cereals possessed 20, 25, or 30 mg of dietary fiber content. The order of presentation of these dietary fiber totals was randomized per participant. Because the order of fiber content could be of increasing (20, 25, 30 mg), decreasing (30, 25, 20 mg), or nonmonotonic (e.g., 20, 30, 25 mg) magnitude, we recorded the randomization information for each participant so that we could control for presentation order. Immediately following the presentation of information about the three cereals, participants were asked to indicate the likelihood that they would try a new cereal produced independently by the less-known brand (Prime Foods). This intention was measured using a 100-point sliding scale (ranging from "definitely WILL NOT try" to "definitely WILL try"). In sum, all participants received three learning trials (with the less-known brand either paired with an established co-brand or presented individually and with the outcome information presented either immediately or after a 5-second delay) and then reported their intention to try a new product from the less-known brand. After assigning their willingness to try the new cereal ratings, participants were debriefed, thanked, and dismissed.

Our core hypothesis predicts that a delay between cue and outcome presentation will influence the degree to which the presented outcomes are generalized to the less-known brand. When there is no delay, generalization should be narrow. This will produce a cue-competition effect in which intentions to try the less-known brand drop when the less-known brand was previously co-branded with an established brand (compared to when the less-known brand was presented independently). With delay, generalization should broaden. This will produce a cue-facilitation effect in which intentions to purchase the less-known brand improve when the less-known brand was previously co-branded with an established brand (compared to when the less-known brand was presented independently). In short, evidence for an adaptive learning process will exist if time delay moderates the effect of co-branding with an established brand on intentions to try the less-known brand in the future.

Results

An ANCOVA on the intent-to-try ratings with outcome presentation order included as a control for order effects showed a statistically significant interaction between the co-branding and feedback delay factors ($F(1, 154) = 11.22$, $p < .01$). The interpretation and significance levels of the analyses reported hereafter do not change when the same analysis is run without the control variable (e.g., interaction = $F(1, 155) = 11.91$, $p < .01$). However, since the order control variable was marginally significant ($p = .06$), we report the analyses of the model including the control effect. Simple-effect analyses (fig. 1) showed that, within the no-delay feedback conditions, participants were less likely to try a new cereal from Prime Foods when it had been previously co-branded with Kellogg's ($M_{\text{co-branding}} = 52.12$) than when it had not been co-branded ($M_{\text{no co-branding}} = 62.91$; $F(1, 154) = 6.43$, $p = .01$). This result is consistent with the standard cue-competition view of adaptive learning. In contrast, participants in the delay-feedback condition were more likely to try a new cereal by Prime Foods when it co-branded with Kellogg's ($M_{\text{co-branding}} = 60.92$) than when it did not ($M_{\text{no co-branding}} = 51.14$; $F(1, 154) = 4.88$, $p < .05$). This result constitutes an adaptive learning facilitative-cue interaction effect. Means and standard deviations for the dependent measure for all experiments that apply are reported in the appendix.

It is also noteworthy to report that there was a statistically significant difference between the no-delay condition ($M_{\text{no-delay}} =$

62.91) and the delay condition ($M_{delay} = 51.14$; $F(1, 154) = 7.24$, $p < .01$) when the less-known brand was presented independent of any co-brand. Importantly, the direction of this effect is in line with standard adaptive learning theories that predict that response to a stimulus should decay as time delay between presentation of cues and outcomes increases (trace conditioning; Pearce and Bouton 2001). This is expected because, in the absence of multiple cues, configural processing does not take place. As a result, delay should weaken the strength of association between the cue and the outcome as the co-occurrence of their presentation becomes less apparent. Consequently, response to the cue should be diminished. This pattern, however, is reversed in the co-branding condition ($M_{no\text{-}delay} = 52.12$, $M_{delay} = 60.92$; $F(1, 154) = 4.19$, $p < .05$), where cue facilitation is predicted.

Experiment 1 Supplement

Although the experiment 1 results are entirely consistent with the proposed adaptive-learning model, the cue competition results in the no-delay conditions could also be explained through a simple dilution process. This dilution account argues that the lower evaluation of Prime Foods in the co-branded condition arises simply because it shares cue prediction with a second cue during co-branding. When Prime Foods is presented in isolation, Prime Foods is clearly responsible for the resulting fiber content. When Prime Foods is presented with Kellogg's it shares predictive value, and the overall evaluation of Prime Foods therefore suffers. Although this dilution process should also occur after delay, the main results of Experiment 1 cannot fully refute this alternative.

To assess whether the cue competition effects observed in the no-delay condition could stem from the described dilution process, we collected additional data. Participants in the supplemental data collection were either presented with Prime Foods in isolation, Kellogg's in isolation, or the co-branded condition with Prime Foods and Kellogg's. The participants in the Kellogg's in isolation condition were drawn from the same participant population as the rest of the experiment 1 participants but participated in a separate data collection. Given this separate data collection, baseline attitudes toward Kellogg's were assessed in these two participant groups, and no difference between the groups was observed ($M_{no\ co\text{-}branding} = 5.29$, $M_{co\text{-}branding} = 5.62$; $t(28) = .66$, $p > .40$). Moreover, both groups' baseline evaluation of Kellogg's were statistically significantly higher than the middle point of the scale ($t(28) = 7.11$, $p < .01$). In light of these commonalities, the Kellogg's in isolation participants were directly compared to the co-branding condition.

Given that the cue competition effects in experiment 1 were only observed after no delay, all participants in this supplemental data analysis were presented with identical outcome information after no delay. Since a dilution account does not hinge on the prominence of the two brand cues, dilution would predict that adding Kellogg's to the Prime Foods offering would dilute the predictive value of Prime Foods on outcome performance and that adding Prime Foods to Kellogg's would similarly dilute the predictive value of Kellogg's on outcome performance. As a result, observing that evaluations of Kellogg's and Prime Foods both drop in the co-branding condition (relative to presentation in isolation) would provide evidence for a dilution effect. Observing that evaluations of Prime Foods drop in the co-brand condition but that evaluations of Kellogg's remain unchanged would provide evidence that the prominence of the two cues is critical and thus support the proposed competitive cue account.

Replicating our main finding from experiment 1, we observed a cue-competition effect on the evaluations of Prime Foods ($M_{no\ co\text{-}branding} = 61.00$, $M_{co\text{-}branding} = 36.08$; $F(1, 28) = 7.06$, $p = .01$) but no cue competition effect on the evaluations of Kellogg's ($M_{no\ co\text{-}branding} = 65.65$, $M_{co\text{-}branding} = 64.85$; $F(1, 28) < 1$, $p > .70$). The evaluations of Kellogg's in the Kellogg's only condition also did not differ from the evaluations of Kellogg's when only Prime Foods was presented ($M_{no\ co\text{-}branding} = 67.14$, $p > .80$). Overall, the presence of a negative co-branding effect on only the less prominent brand (Prime Foods) supports the proposed cue competition process versus a more generalized dilution process.

Discussion

Experiment 1 demonstrates that both competitive and facilitative cue interaction effects are possible when consumers learn about co-branding. When a less-known brand is paired with a well-known brand and outcome information is provided, there is a danger that the presence of the well-known brand may prevent the less-known brand from acquiring a stronger association with the outcome, a finding consistent with cue competition. However, this effect was reversed by adding a delay between the brand exposure and feedback about a product feature. In the delay conditions, willingness to try the less-known brand was actually greater when it was presented in tandem with the well-known brand, a finding consistent with cue facilitation. Overall, these findings are consistent with the hypothesis that time delay broadens generalization, thereby increasing the extent to which one generalizes knowledge from the co-branding arrangement to the less-known brand.

Although the full pattern of results from experiment 1 support the hypothesized cue-interaction process, the component cue competition effect observed after no delay and the component cue facilitation effect observed after delay could each be explained by alternative theories (although neither of these theories can explain the full pattern of effects across the two delay conditions). One could argue that the competitive cue effect could be explained by an attribution process in which consumers engage in deliberative causal reasoning to determine how much credit the less-known brand should receive for the eventual outcome. When presented with an established brand with expertise in the category, consumers would logically conclude that the less-known brand deserves less credit, thereby producing the observed negative effect of co-branding with no delay. Moreover, the addendum to experiment 1 that rules out a

simple dilution process cannot completely rule out attribution because an attribution explanation would readily accept that the established brand should affect the less-known brand more than vice versa. Although attribution seems similar to adaptive learning on the surface, it fundamentally differs in its focus on higher level causal reasoning. Unlike attribution, adaptive learning occurs through a fairly automatic process in which cues and outcomes become associated as a result of their observed co-occurrences, as evidenced by its extensive applicability to the animal learning literature where reasoning-based attribution is quite unlikely.

Whereas attribution might explain the cue competition effect, a HAM-based association transfer process might explain the cue facilitation effect. It is possible that simultaneous presentation of brand and outcome information elicits an adaptive learning cue competition process and that such a process simply does not occur with delay, perhaps because the delay interferes with the brand-outcome learning essential for adaptive learning models. Absent this outcome-based learning, it is possible that a broader HAM-based process is triggered in which consumers simply transfer their beliefs about the well-known brand's expertise and credibility to the less-known brand as has been often observed in the co-branding literature.

Although neither of these two alternative processes easily explains the full pattern of observed results in experiment 1, the evidence for adaptive learning would be strengthened by directly testing these alternative processes within the current paradigm. To test the likelihood of these two alternative processes, a second experiment was developed that manipulated the established brand's expertise in the product category since expertise should moderate the effects of each alternative process. First, established brand expertise should moderate attribution in the no-delay condition by influencing the degree to which the less-known brand is discredited for the co-branded outcome. Specifically, if the negative effect of co-branding on the less-known brand with no delay is due to attribution, then the magnitude of this effect should increase as the expertise of the established brand increases. Second, established brand expertise should also moderate HAM-based associated transfer in the delay condition by influencing the number and positivity of associations available for transfer. If the positive effect of co-branding on the less-known brand at delay is due to HAM-based association transfer, then the magnitude of this effect should increase as the expertise of established brand increases. In contrast, cue competition and cue facilitation should be less sensitive to changes in the established brand's expertise but still be sensitive to the overall salience of the established brand.

EXPERIMENT 2

Overview

Experiment 2 was designed with two goals in mind. First, we wished to further test the claim that the observed effects of co-branding on the less-known brand with no delay and with delay both more likely stem from the proposed adaptive learning process than from an attribution process or a HAM-based association transfer process, respectively. As stated earlier, both an attribution process and a HAM-based transfer process should be sensitive to whether the established brand possesses expertise in the category. For instance, it makes more sense for a new brand of cereal to co-brand with Kellogg's than with Lay's given Kellogg's expertise in the cereal category. As a result, consumers would likely give the new brand less credit for a positive cereal outcome when the partnered with Kellogg's compared to when partnered with Lay's. On the flip side, HAM-based models would argue that the magnitude of the positive effects of co-branding after delay should increase when the well-known brand is recognized as a leader in that product category and decrease when the well-known brand does not have expertise in that category. The second goal of the present experiment is to provide further support for stimulus generalization as the mechanism of the adaptive learning processes. To that end, we changed the task so participants would report their intent to try a product from the less-known brand that was in a slightly different product category than the category used in the initial co-branding learning trials (i.e., a learning transfer task). For example, after learning about new co-branded cereals, we might ask participants to evaluate muffins made by the less-known brand. If the results hold for judgments of a product in a slightly different product category, it follows that generalization processes must be involved in the co-branding context studied because participants would be generalizing knowledge about brands from one type of product to another.

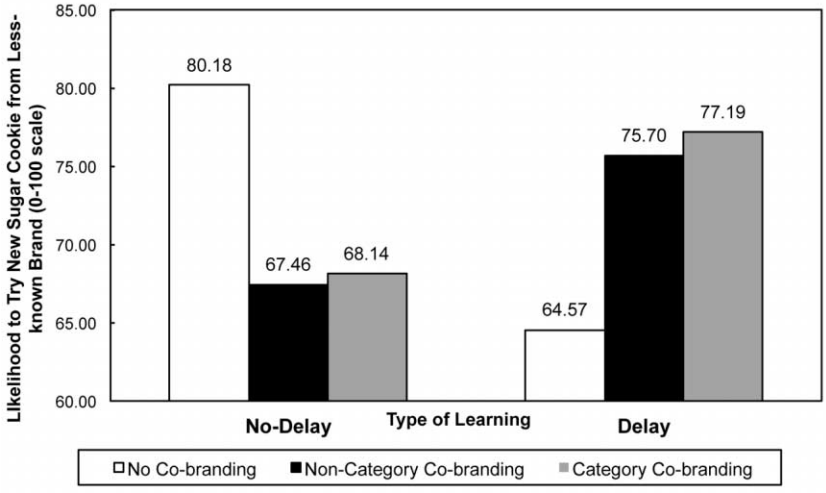
Method

Participants. One hundred forty-nine undergraduate business school students at the University of Washington participated in the experiment in exchange for course credit.

Procedure and Stimuli. The experiment took place in a dedicated behavioral lab at the University of Washington. Participants were randomly assigned to a condition within the two levels of feedback delay (no delay vs. delay) by three levels of co-branding (no co-branding vs. noncategory co-branding vs. category co-branding) between-subjects design. Three key changes were made to the procedures and stimuli relative to experiment 1. First, different brands and product categories were used in the initial co-brand learning task (chocolate brownies) and subsequent less-known brand evaluation task (sugar cookies). Second, the outcome information was shifted from fiber content to percentage of cocoa. This shift was made so the outcome information was relevant to the initial co-brand category but not to the new product category (sugar cookies contain no cocoa). Third, when the less-known brand engaged in co-branding initially, it was either partnered with an established brand that is not well known for making products in the core brownie and cookie categories (P&G) or with an established brand that is well known for making products in these categories (Ghirardelli). A sample from the same population of the main

FIGURE 2

DELAY MODERATES EFFECT OF CO-BRANDING: EXPERIMENT 2



experiment confirmed that these brands had similar levels of salience but varied in their relevance to the product category. Participants ($n = 18$) in this pretest used 100-point sliding scales to answer four questions. Two of the questions (How familiar are you with brand *x*? How well-known is brand *x*?) were averaged to form a salience score (Cronbach's alpha = .79), and the other two questions (Within the chocolate category, how much do you like brand *x*? Within the chocolate category, how favorable is brand *x*?) were averaged to form the positivity score (Cronbach's alpha = .93). Although P&G and Ghirardelli were rated equally in terms of salience ($M_{P\&G} = 65.52$, $M_{Ghirardelli} = 69.79$; $p > .10$), Ghirardelli was viewed significantly more positively in the focal category ($M_{P\&G} = 61.11$, $M_{Ghirardelli} = 73.34$; $p < .05$). Furthermore, a post-test was conducted to assess differences in expertise within the chocolate category. Using 100-point sliding scales participants ($n = 19$) rated Ghirardelli as having significantly greater expertise within the chocolate category than P&G ($M_{P\&G} = 13.37$, $M_{Ghirardelli} = 81.84$; $p < .01$).

The experiment began with a cover story about baking chocolate quality. Participants were told that a key factor for determining the quality of baking chocolate is the percentage of raw cocoa the chocolate contains. Baking chocolates were considered high quality if they contained 70% or more raw cocoa. Following this information, participants were told they would be learning about new brownie products that were being introduced to the market by either individual brands or a combination of multiple brands.

In the no co-branding conditions, the less-known brand (Mary's) was presented in isolation in three separate learning trials that indicated percentage of cocoa. In the co-branding conditions, participants viewed the Mary's brand paired with either the well-known, confection-relevant brand (Ghirardelli) or the well-known, confection-irrelevant brand (P&G) in a similar three-trial fashion. In the no-delay conditions, brand presentation was followed immediately by the feedback screen indicating cocoa percentage. In the delay conditions, the word "loading" and an hourglass appeared for 5 seconds before the feedback screen appeared. The feedback information consisted of the percentage of raw cocoa contained in the brownie. In all cases, this percentage exceeded 70%, the established threshold for high-quality chocolate. The cocoa percentages used were 73, 74, and 75, randomized across the three learning trials. Following the learning trials, participants were asked the likelihood they would try a new sugar cookie (a product in a different product category in which cocoa levels are irrelevant) offered by the less-known brand (Mary's). Since this evaluation involved a distinct product category from that used in learning, it is effectively a learning transfer task that assesses the extent to which participants generalize learning about the less-known brand. After indicating their likelihood of trying the sugar cookie, participants were debriefed, thanked, and dismissed.

Results

An ANCOVA on the intent-to-try ratings with feedback presentation order included as a control for order effects showed a statistically significant interaction between the co-branding and feedback factors ($F(1, 142) = 6.67$, $p < .01$). The control variable reached statistical significance ($p < .01$), thus we retain this model to control for order effects (the interaction remains significant at $p = .01$ without the control variable in the model). Simple-effect analyses (fig. 2) showed that, within the no-delay feedback conditions, participants were less likely to try a sugar cookie from

Mary's when it had previously produced co-branded brownies either with Ghirardelli ($M = 68.14$; $F(1, 142) = 5.21$, $p < .05$) or with P&G ($M = 67.46$; $F(1, 142) = 6.15$, $p < .05$) compared to when Mary's had previously produced brownies independently ($M = 80.18$). This result replicates the cue-competition effect observed in experiment 1 when there was no delay between the presentation of the co-branding and feedback information.

In contrast, participants in the delay-feedback condition were more likely to try a sugar cookie from Mary's when it had previously produced co-branded brownies either with Ghirardelli ($M = 77.19$; $F(1, 142) = 5.25$, $p < .05$) or with P&G ($M = 75.70$; $F(1, 142) = 3.79$, $p = .05$) compared to when Mary's had previously produced brownies independently ($M = 64.57$). This result is consistent with the cue-facilitation effect as predicted and found in the delay-feedback conditions of experiment 1. Importantly, there was no difference for the intent-to-try ratings depending on whether Mary's co-branded with Ghirardelli or P&G (both $F(1, 142) < 1$, NS) in either of the feedback conditions. This improved response to the less-known brand after partnership with a well-known brand even when the well-known brand possessed no product category expertise is particularly suggestive of a facilitative cue interaction effect within adaptive learning and not an HAM-based association transfer process.

As in experiment 1, there was a statistically significant difference between the no-delay condition ($M_{\text{no-delay}} = 80.18$) and the delay condition ($M_{\text{delay}} = 64.57$; $F(1, 144) = 8.70$, $p < .01$) in the no co-branding condition with the direction of the effect being once again in line with the predictions of standard adaptive-learning theories (i.e., decay in strength of response to a cue as time delay between cues and outcomes increases). In the co-branding condition (co-branding conditions collapsed given that they did not statistically significantly differ) this pattern of results was again reversed ($M_{\text{no-delay}} = 67.77$, $M_{\text{delay}} = 76.51$; $F(1, 144) = 4.98$, $p < .05$). This latter result is consistent with the predicted cue-facilitation effect.

Discussion

Experiment 2 replicates the findings of experiment 1 and demonstrates that these effects generalize to categories outside of the category in which the learning took place. Importantly, these effects also proved invariant across different levels of category expertise for the established brand. This invariance is consistent with adaptive learning since adaptive learning is influenced by the relative salience of the predictive cues (as opposed to the higher order beliefs connected to those cues) and driven by a low-order process geared at simply observing co-occurrences of stimuli. Given that the established brand with little category expertise (P&G) is still more salient than the fictional brand (Mary's), adaptive learning would suggest that cue competition should still occur with no delay and that cue facilitation should still occur with a brief delay.

The invariance of the effects across different levels of established brand expertise is also inconsistent with both an attribution account of the cue competition effect and a HAM-based association transfer account of the cue facilitation effect. As discussed earlier, attribution would argue that the less-known brand should receive reduced credit for the outcome as the established brand's expertise increases. This suggested increase in the negative effect of co-branding at no delay was not observed. More importantly, an attribution process would also predict a negative effect of co-branding with a delay. This runs in direct opposition to the observed positive effect of co-branding after a brief delay. Similarly, a HAM-based associative transfer process suggests that the benefit of co-branding with an established brand should increase as the established brand's expertise increases, an effect that was also not observed.

In summary, experiment 2 supports an adaptive learning explanation of the observed results in three critical ways. First, unlike both attribution and HAM-based association transfer, it is able to explain the full reversal of response across delay. Second, the invariance of the results across established brand expertise level is consistent with adaptive learning and inconsistent with both attribution and HAM-based association transfer. Third, it provided additional evidence for a generalization process by demonstrating that the core effects can extend outside of the product category in which initial learning took place into categories that are slightly different. In short, the adaptive learning account more parsimoniously explains the full pattern of effects across all conditions.

EXPERIMENT 3

Overview

To assess whether perceived similarity drives the core generalization effects from experiments 1 and 2 as hypothesized, experiment 3 again manipulated delay and also incorporated both a manipulation of component brand similarity and direct measures of component brand similarity. The current theorizing suggests that outcome presentation delay allows for the component brands of the co-branding arrangement to be processed as a single, unitary entity and that this leads to an increase in the number of shared elements between the co-branded arrangement and the less-known brand. This increase in shared elements should create increases in two forms of similarity—similarity between the two component brands and similarity between the less-known brand and the combined co-branded offering. In sum, outcome presentation delay is expected to increase both forms of perceived similarity and thereby broaden generalization of learning.

We assessed the role of similarity in two ways. First, we manipulated whether the two component brands shared visual characteristics with the belief that the lesser known brand would be seen as more similar to the full co-branded offering when there was more visual element overlap between the component brands. Second, we measured the perceived similarity between the component brands and be-

tween the less-known brand and the combined co-branded offering. This measurement allows us to test both the predicted effect of delay on evaluation and the proposed similarity/generalization mechanism in a single design. A final goal of this experiment was to test the robustness of the effect by presenting the brands in a different order than that used in the previous experiments and by changing the magnitude of the time delays.

Method

Participants. One hundred seventeen paid participants (45.3% male, average age = 35.8) were recruited from Amazon's Mechanical Turk panel (MTurk) and participated in the experiment in exchange for monetary compensation.

Procedure and Stimuli. Participants were randomly assigned to a condition within the two levels of feedback delay (0.1 or 4 second delay) by two levels of visual similarity (low vs. high) between-subjects design. The 0.1 second delay was used to ensure that there was a minimal time delay in both delay conditions and to allow the word "loading" to be presented prior to the outcome in both delay conditions. We manipulated visual similarity by varying the font type of the less-known brand. In the high visual similarity condition both brands featured the red color of the brand Kellogg's and had the same font used by Kellogg's (using the custom font Ballpark Weiner: http://www.dafont.com/ballpark-weiner.font). In the low visual similarity condition the less-known brand was presented using a blue Arial font type.

To further test the robustness of the effect, we also changed the order the brands appeared on the screen relative to the previous experiments with the less-known brand appearing to the left of the well-known brand. The amounts of fiber used for training were the same as those in the previous experiments. Following the training phase, participants proceeded to complete an unrelated, 5-minute task with the goal of clearing their short-term memory. This change in the design allowed us to increase assurance that any effects observed would likely be a result of generalization processes rather than from variances stemming from the interplay of delay and the short-term memory system. This would also allow us to show that the effect is durable, given the absence of such filler tasks in experiments 1 and 2.

In the test phase, participants were asked to rate their likelihood to try a new cereal by three different brands. Two of these brands were decoys. One phonetically different from the target brand Kerry's (Prime) and one phonetically similar to the target brand (Mary's). The third brand was the target brand Kerry's. All brands were presented one at a time using a black Arial font.

Recall the prediction from our theorizing that time delay increases the proportion of shared elements between the less-known brand and the well-known brand due to the creation of a unitary representation of the brands. To test this prediction, we measured two forms of similarity—similarity between a cereal offered by Kerry's and a cereal offered by Kellogg's and similarity between a cereal by Kerry's and a cereal by a co-branding arrangement between Kellogg's and Kerry's. Both measures used a 101-point scale ranging from very dissimilar to very similar. Participants were also asked to rate the favorability of their thoughts and feelings toward the brand Kellogg's on a 7-point scale ranging from very unfavorable to very favorable. This overall procedure allows us to test the predicted effect of delay on subsequent purchase intention and to assess whether perceived similarity is the critical process driver within a single design.

Results

Participants' thoughts and feelings toward the brand Kellogg's were favorable (measured relative to the midpoint of the favorability scale ($M = 5.54$; $t(117) = 11.84$, $p < .001$). An ANOVA on the intent-to-try ratings for the brand Kerry's showed a statistically significant effect of delay with increased intention to try in the 4-second delay condition ($M = 57.77$) relative to the 0.1-second delay condition ($M = 46.56$; $F(1, 113) = 5.97$, $p = .02$), a result consistent with the theoretical predictions and the results of experiments 1 and 2. There was a trend of increased likelihood to try the cereal by Kerry's in the high visual similarity condition ($M = 55.47$) relative to the low visual similarity condition, but the difference failed to achieve significance ($M = 48.86$; $F(1, 113) = 2.08$, $p = .15$). Visual similarity also failed to moderate the effect of delay on intention to try as evidenced by the lack of statistical significance of the interaction term ($F(1, 113) = .03$, $p = .85$). As expected, none of the main effects nor the higher order interaction had a statistically significant effect on the likelihood-to-buy ratings for either of the decoy brands (Prime and Mary's; all $p > .10$). To rule out the possibility that the lack of effect of the visual similarity factor stemmed from a weak manipulation, we ran a post-test where we asked 20 participants from the same population of the main study to rate (on a 9-point scale) the visual similarity between Kerry's and Kellogg's using the same low/high brand similarity stimuli used in the main experiment. Participants were randomly assigned to rate the low or the high visual similarity pair of brands. The analysis showed that the visual similarity manipulation did not lack strength as the brands were perceived to be statistically significantly more similar in the high-similarity condition ($M = 6.29$) than in the low-similarity condition ($M = 2.37$; $F(1, 18) = 17.68$, $p < .01$).

Similarity Measures. An ANOVA on the similarity ratings showed greater perceived similarity between Kerry's and Kellogg's in the 4-second delay condition ($M = 63.55$) than in the 0.1-second delay condition ($M = 50.84$; $F(1, 113) = 7.84$, $p < .01$), a result that is consistent with the prediction of increased perception of shared elements between the brands with delay. Neither the visual similarity manipulation nor the interaction term had a statistically significant effect on perceived similarity (both $p > .80$). The same analysis on similarity ratings for Kerry's and the co-branding arrangement only showed a directional, nonreliable, difference

between the 4-second delay condition ($M = 58.58$) than in the 0.1-second delay condition ($M = 55.26$; $F(1, 113) = 1.16$, $p = .28$). Interestingly, the effect of visual similarity was marginally significant with participants judging Kerry's to be more similar to the co-branding arrangement in the high visual similarity condition ($M = 59.74$) than in the low visual similarity condition ($M = 54.10$; $F(1, 113) = 3.35$, $p = .07$). One possible reason for this result is that once participants were primed to think retrospectively about the co-branding arrangement, their memory for the resemblances of the brand typefaces trumped the similarity stemming from configural processing of the brands. The interaction term failed to achieve significance ($p = .60$) in this analysis. Taken in total, the manipulation of visual similarity had no significant effect on purchase intentions or either measure of similarity. As a result, this manipulation is not discussed further.

Mediation Analysis. Of perhaps greater importance to the proposed process is whether the effect of delay on subsequent purchase intention is mediated by perceived similarity. To assess this, we took a conservative approach in the selection of a mediator and created an indicator variable using the similarity measure between Kerry's and Kellogg's and the similarity measure between Kerry's and the co-branding arrangement (these two measures were positively correlated at $p = .02$).

Although from a methodological standpoint it would be preferable for a mediator to be measured prior to the dependent measure, we collected the similarity measures after the dependent measure to avoid creating a demand artifact in the measurement of intent to try the new cereal. We address this potential issue of reversed causality (i.e., *Y* causing *M*) in two ways. First, we have a strong theoretical basis for our proposed effects—we propose that time delay affects perceptions of similarity, leading to downstream effects associated with stimulus generalization. Second, we follow Judd and Kenny's (2010) recommendation to alleviate the reverse causality issue by estimating the model twice, once with the dependent measure as a mediator and once with the mediator as a dependent measure. Although reverse causality cannot be ruled out statistically, if the results of the reversed model do not look similar to those of the specified model, one can be more confident in the specified model.

Following the prescriptions of Zhao, Lynch, and Chen (2010) we used bootstrapping methodology to assess the indirect effect of delay (mediated through perceived similarity) on intent to try a new cereal from the less-known brand. Following the procedures outlined by Hayes (2013), the mediation model specified intent to try as the dependent measure (*Y*), the delay factor as the independent variable (*X*), and the perceived similarity indicator variable as the mediator (*M*). The visual similarity variable was not included in the analysis because it did not affect the results in the main analyses nor did it reach statistical significance in a moderated mediation analyses. The model produced a bootstrapped (10,000 resamples), 99% confidence interval ranging from .36 to 14.11 for the indirect effect of *X* on *Y*. Since this interval did not contain zero, we can conclude that mediation by the perceived similarity indicator variable was observed. As a check on the proposed causal mechanism, we performed an identical procedure with a reversed model: the perceived similarity indicator variable was specified as the dependent measure (*Y*), the delay factor as the independent variable (*X*), intent to try as the mediator (*M*). This model produced 99% confidence intervals for the effect of *X* on *M* and the indirect effect of *X* on *Y* of −1.02 to 22.96 and −.11 to 9.13, respectively). Since both of these intervals contained zero, the results of the reversed model do not match those of the specified model, reducing reverse causality concerns.

GENERAL DISCUSSION

First and foremost, the results of three experiments and one supplemental experiment call into question the common belief that co-branding with a positively regarded, established brand will nearly always improve subsequent evaluations of a new or less-known brand. Although past research on co-branding has proposed that negative effects of co-branding are possible for the less-known brand, these accounts presume that those negatives would arise due to loss of control over product development, potential product failure, or the transfer of negative associations from the established brand (Keller 2003). In contrast, this research demonstrates that partnering with established brands can damage the evaluation of the less-known brand even when there is no loss of control, no product failure, and the attitude toward the established brand is overwhelmingly positive. Key to this potential effect is the inability of the new or less-known brand to establish strong association with the outcome when the co-branding relationship involves a very prominent brand. As a result, generalizations about the less-known brand become narrow when one encounters this brand by itself. However, following the adaptive learning process we hypothesize, this negative effect of co-branding fully reverses when the outcome information is presented after a delay. Our results show that in this case, greater similarity between the less-known brand and the co-branding arrangement is observed, and broader generalizations are made about the less-known brand.

Applied to practice, these results suggest that marketers should carefully manage the presence and timing of outcome information from co-branding partnerships. The manager of a new or less-known brand should try to avoid presenting new partnerships with established brands that immediately communicate information about the outcome of the arrangement to increase the probability that the new brand will be processed as a component of a unitary representation of the co-branding relationship. Fortunately for practice, it appears that even a brief delay shifts this cue competition effect to cue facilitation. Pragmatically, this means that the co-branded arrangement and relevant outcome information could both be presented in a single advertising spot as long as the outcome information is presented at the end of the advertisement. However, print executions announcing the

partnership and the outcome may be more likely to elicit cue competition and our research suggests that this communication format should be avoided when announcing co-branded outcomes.

Our research also provides important insights into the literature on adaptive learning. For instance, cue-competition effects are generally attributed to acquisition deficits. In other words, learners do not acquire the strength of association between cues and outcomes expected by the rational learning of cue-outcome relationships. Given that participants in experiments 1 and 2 had the opportunity to acquire the same co-branding information, an explanation based purely on acquisition-deficit may not be able to account for the results in these experiments. Additional assumptions would be necessary to explain the interplay between time delay and the learning-acquisition function given the ensuing cue facilitation effects observed. In our research, we find that the extent to which the brands involved in the co-branding arrangement are processed more individually versus more as a unitary combination plays a key role in the type of cue interaction observed.

Our research also contributes to the issue of the impact of time delay on the learning of affective/hedonic versus factual/utilitarian information. For instance, whereas in the domain of affect transfer Sweldens, van Osselaer, and Janiszewski (2010) show improved learning for simultaneous presentation of the learning cue and the affective outcome, we find the opposite when learning is about product-benefit associations. These complementary results may point to important differences that learning and time delay exert across the affective and cognitive systems.

Although the evidence provided is parsimoniously consistent with an adaptive learning account, we cannot unambiguously rule out the possibility that inferential processes may also play a role in the effects observed. Such a process indicates that when prompted with a transfer task to apply the learning acquired, learners assess the associations acquired and asymmetrically favor some associations at the expense of others. This form of retroactive mechanism is consistent with some recent theories in adaptive leaning proposing that cue interaction effects emerge from the assessment of the learned associations to generate a response rather than from deficits of acquisition. For example, the model Minerva-AL (Jamieson, Crump, and Hannah 2012) is an instance-based theory of memory and learning that predicts that cue interaction effects arise from cue recall (i.e., the response to a cue is a function of the weighed sum of the instances recalled by this cue). Alternatively, it has also been proposed that cue interaction effects may arise from retrospective inference whereby learners apply a probabilistic contrast model to estimate the likelihood of behavioral control once presented with a cue (De Houwer 2002; De Houwer, Baeyens, and Field 2005; De Houwer and Beckers 2002). A few pieces of evidence from our results, however, make us conservatively confident that the findings reported in this research arise from an adaptive learning process. First, the finding that time delay led to the decay of strength of response to the single brand training is consistent with classic adaptive learning theory (i.e., trace conditioning). Second, given that the exact same learning occurred across conditions in experiment 3 with the only difference being time delay, it may be implausible that strikingly different inferences about which brand is likely to deliver a given outcome arose from a retrospective and inferential process given that the evidence provided was identical. Nevertheless, we encourage researchers to further look into this possibility.

Another issue that deserves attention in future research is the potential influence of co-branding arrangement novelty on response. The situations we studied involved learning about both an outcome that was novel to some extent (e.g., suggested amount of dietary fiber consumption) and a co-branding arrangement that included an unknown brand. This lack of knowledge about the outcome and one of the cues may have triggered an active learning mind-set rather than a semantic association transfer mind-set as predicted by HAM. Thus, future research may investigate the extent that the novelty of the information about brands and outcomes moderates the acquisition of association. For instance, prior research has shown that successful transfer of performance (quality) associations between a core brand and a brand extension depends on the similarity between the product categories of the two brands (Keller and Aaker 1992). Perhaps lower similarity between the categories requires more active acquisition of associations and would therefore trigger adaptive learning processes similar to those observed here.

We would also add a cautionary note with respect to potential HAM-related explanations for our findings. Although we claim a single adaptive-learning process, it is not implausible that a HAM-like transfer occurred between the two brands in the delay conditions. Our confidence in the single adaptive learning process stems from our empirical results in experiment 2 (specifically designed to decrease the likelihood that HAM by itself could explain our results) and the greater parsimony of a single process account for the overall pattern of results. Nevertheless, future research should focus on deriving unique predictions from each of these competing models that could be empirically stress-tested.

There are also questions that may need to be further investigated with respect to the length of time delay. It is practically impossible to estimate the ideal delay given that the delay effects observed in our research likely depend on the level of complexity of learning. For example, to achieve the same facilitation results when one learns about larger number of cues, or about cues that may be more demanding in terms of visual processing, it may require longer delays for processing of cues. Thus, although we made a good faith effort to show that the cue facilitation effect can be observed for different time delays, we argue that the effect of length of delay is contingent on the complexity of learning.

Given the dynamic nature of most consumer learning, this research highlights the importance of integrating models of adaptive learning with traditional models of memory to as-

sess the boundary conditions of each. By integrating the insights of both perspectives, researchers and practitioners alike will be better prepared to direct consumer learning efficiently and effectively.

DATA COLLECTION INFORMATION

The third author supervised collection of data for experiments 1 and 2 by research assistants at the Michael G. Foster School of Business Behavioral Research Lab at the University of Washington during the fall of 2010 and winter of 2011, respectively. The first and third authors jointly analyzed the data for these experiments. The first author supervised collection and analysis of data for experiment 3 via Amazon's Mechanical Turk online panel during the spring of 2014.

APPENDIX

TABLE A1

MEANS AND STANDARD DEVIATIONS

	No delay			Delay		
	No co-branding	Co-branding		No co-branding	Co-branding	
Experiment 1: Less-known brand	62.91 (19.35)	52.12 (20.22)		51.14 (21.08)	60.92 (17.83)	
Experiment 1 supplement:	No co-branding (less-known brand only)	No co-branding (well-known brand only)	Co-branding			
Less-known brand	61.00 (21.33)	N/A	36.08 (30.10)			
Well-known brand	65.65 (24.20)	67.14 (20.26)	64.85 (22.80)			
Experiment 2: Less-known brand	No co-branding	Co-branding (noncategory)	Co-branding (category)	No co-branding	Co-branding (noncategory)	Co-branding (category)
	80.18 (16.05)	67.46 (25.72)	68.14 (23.42)	64.57 (17.70)	75.70 (13.71)	77.19 (13.39)
Experiment 3: Less-known brand	0.1-second delay			4-second delay		
	46.56 (24.02)			57.77 (25.50)		

NOTE.—All likelihood-to-try measures are shown on a 101-point sliding scale.

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