

# Retrieval Disruption in Collaborative Groups due to Brand Cues

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This research examines the effect of brand cues on retrieval of target brands by individuals in collaborative (vs. noncollaborative) settings. We examine two theories, salience of the brand cue and retrieval-strategy disruption, as potential explanations. Two experiments show that brand cues lead to greater inhibition of target brands in a collaborative versus a noncollaborative setting. The theoretical contribution is the exposition of a double-cueing effect of brand cues such that both (a) cue salience and (b) cue-induced retrieval-strategy disruption are greater for individuals in a collaborative setting. The discussion highlights additional theoretical implications of this research.

Consider the following scenario: some friends get together to watch a movie and decide to order takeout. Just prior to discussing their options, they see two food-related TV ads, one for a national pizza brand and another for a well-established Chinese franchise. They then proceed to list options within the food categories of Italian, Chinese, Indian, and American.

The above example illustrates that brand retrieval often takes place in collaborative contexts either during or immediately after such groups have been exposed to brand cues. Yet, memory research in marketing has focused solely on the effects of brand cues on retrieval of target brands for individuals in noncollaborative settings (e.g., Alba and Chattopadhyay 1985, 1986). While research has examined collaborative retrieval (e.g., Weldon and Bellinger 1997), effects of external cues have not been examined. By studying the effect of brand cues on recall of other target brands during collaborative retrieval, two critical theoretical insights can be gained.

First, whether brand cues have a greater or lesser inhibitory effect on target brand retrieval for individuals in collaborative (vs. noncollaborative) contexts is not known. We

focus on the potential inhibitory (vs. facilitative) effect of brand cues, given that memory inhibition and its related processes in a group setting have only recently started to receive attention (e.g., Basden et al. 1997; Weldon and Bellinger 1997). Second, by highlighting the different processes at work when individuals in collaborative (vs. noncollaborative) settings are exposed to brand cues, the theoretical mechanisms for any cue-induced differences in retrieval can be noted. Thus, the current research is motivated by a desire to find answers to two basic questions. First, do brand cues lead to greater/lesser memory inhibition of brand targets in a collaborative retrieval context? Second, what theories provide the most compelling explanations for collaborative inhibition from brand cues? We begin with an overview of collaborative retrieval.

## COLLABORATIVE RETRIEVAL

Collaborative recall involves the retrieval of previously studied information by individuals working together (Basden et al. 1997). Research directly comparing the recall of individuals in collaborative settings versus in isolation is sparse (see Clark and Stephenson [1989] for a review). Not surprisingly, early experiments found group recall to be superior to individual recall. However, a more equitable test is to compare the output of interacting individuals, a collaborative group, with the nonredundant output of an equal number of participants tested individually, a nominal group (Diehl and Stroebe 1991). Recent experiments using this comparison have shown that collaborative group recall is lower than nominal group recall (Basden et al. 1997; Diehl and Stroebe 1991).

A variety of intra- and interpersonal factors have been cited as being responsible for this result. According to

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Steiner (1966), group productivity is equal to potential output minus losses from suboptimal processes. Some processes cited as responsible for a loss in productivity relating to retrieval in collaborative settings include social loafing/diffusion of responsibility (Weldon and Bellinger 1997), production blocking (e.g., having to wait to speak; Diehl and Stroebe 1991), and retrieval-strategy disruption (e.g., retrieval disruption from hearing the preferred responses of others; Basden et al. 1997). However, research to date has not assessed the differential impact of brand cues on collaborative (vs. noncollaborative) recall. This is a noteworthy omission, given the myriad of contexts where consumers collaborate to discuss options. We turn to cueing theory as a first step in developing a framework for determining the impact of brand cues on recall in collaborative (vs. noncollaborative) settings.

## CUEING THEORY

### Cue Salience

One theoretical approach to studying the effects of cues on retrieval is the part-category cueing paradigm (Alba and Chattopadhyay 1985; Karchmer and Winograd 1971). Part-category cueing refers to priming with a partial list of category instances and has been used to understand inhibition at the individual recall level. Alba and Chattopadhyay (1985, 1986) demonstrated the inhibitory effects of part-category brand cues and showed that inhibition can occur even when only a single brand cue is presented. A majority of studies have found inhibition for target brands, regardless of cue familiarity (Alba and Chattopadhyay 1986; Miniard, Unnava, and Bhatla 1989).<sup>1</sup>

The predominant explanation for this result is cue salience (Rundus 1973). As long as a cue is made salient in short-term memory, the probability of the cue being mentally recycled during recall is increased. This recycling interferes with retrieval and reduces the number of target brands recalled (e.g., Alba and Chattopadhyay 1986). For example, when an individual is exposed to a brand cue from a product category, say Hilton in the hotel category, the brand becomes accessible in short-term memory relative to other hotel category brands. Hence, the probability of resampling the brand during the recall process, relative to other category brands, is increased (Rundus 1973). Thus, recall of other brands within the category is reduced.

### Retrieval-Strategy Disruption

Another theory proposed to explain the effect of cues on memory is retrieval-strategy disruption (Basden and Basden 1995). Retrieval-strategy disruption occurs when an individual's idiosyncratic retrieval pattern is interfered with due to exposure to a cue (Basden, Basden, and Galloway 1977).

<sup>1</sup>Specialized knowledge (Alba and Chattopadhyay 1985) and less-familiar brand cues from minor categories have led to facilitation (see Neungadi 1990).

Specifically, in the area of noncollaborative recall, cues have been shown to disrupt the specific order in which a set of instances within a category are retrieved (Basden et al. 1977; Brown and Hall 1979).

Research on groups has identified a different type of retrieval-strategy disruption wherein the responses of group members disrupt others' retrieval across multiple categories (Basden et al. 1997). For example, a group of office workers may try to remember the names of different restaurants as a first step in deciding where to eat lunch. Each worker may have a different category preference, which manifests itself in the workers serial cueing one another by verbalizing brands from different categories during recall. Hence, clustering of brands by category is likely to be lower (vs. individual recall) due to a higher rate of category switching. Reduced clustering by category has been shown to lead to lower recall (Basden et al. 1997).

The effect that brand cues have on the level of (1) cue salience, (2) within-category disruption, and (3) across-category disruption when recall takes place in a collaborative (vs. noncollaborative) setting is not known. In the next section a framework is advanced for making both outcome and process predictions concerning the effect of brand cues on target brand retrieval.

## COLLABORATIVE VERSUS NONCOLLABORATIVE CUEING EFFECTS

### Retrieval: Collaborative versus Nominal Groups

To test the effect of brand cues on individuals in a collaborative versus a noncollaborative setting, we compare the output of interacting individuals, a collaborative group, with the nonredundant output of an equal number of participants tested individually, a nominal group. This is a more equitable test than directly comparing group versus individual recall (Diehl and Stroebe 1991). Tindale and Sheffey (2002) show that collaborative recall will decrease as the level of shared information increases. Given that cues increase the amount of shared information within a group, collaborative groups exposed to brand cues (vs. not exposed) should display reduced recall. However, previous findings show that recall is also inhibited when individuals in noncollaborative contexts are exposed to brand cues (Alba and Chattopadhyay 1986; Kent and Allen 1993; Miniard et al. 1989, 1991). Hence, should brand cues lead to greater, the same, or lesser inhibition of target brand retrieval for individuals in collaborative versus noncollaborative settings? We expect inhibition to be greater in collaborative settings due to double cueing.

Individuals in collaborative groups verbalize category instances during the retrieval process (Basden et al. 1997). We posit that exposure to brand cues should lead to a double-cueing effect for individuals in a collaborative setting. In other words, individuals in a collaborative context are not only initially exposed to the external cue from an outside source (e.g., TV, radio, etc.) but also hear these cues verbalized by other group members during retrieval. The pres-

ence of this double cueing is likely to inhibit target brand memory for collaborative (vs. nominal) groups.

Further, highly familiar cues may have a more developed schema with stronger links between the product class and brand (Hutchinson and Zenor 1986), and consumers may selectively process information and allocate differential attention to more- versus less-known brands (Kent and Allen 1994). Hence, individuals in a collaborative retrieval context should be more likely to repeat a highly familiar (vs. a less familiar) brand cue to which they are exposed. In essence, they should be more likely to verbalize a highly familiar cue at different times during the recall process, causing greater inhibition of target brands. Thus:

**H1:** The presence of brand cues will result in lower recall for collaborative groups compared to nominal groups, while the absence of brand cues will not.

**H2:** When highly familiar brand cues are provided, recall will be significantly lower for collaborative groups compared to when moderately familiar brand cues are provided, while familiarity will have no differential effect on nominal groups.

### Process: Collaborative versus Nominal Groups

We posit two underlying mechanisms by which this double-cueing effect leads to greater target brand inhibition for individuals in collaborative settings. First, the verbalization of brand cues by individuals in a collaborative context will result in the brand cues achieving greater salience than in individual retrieval. Each time a brand cue is verbalized by another member of the group during retrieval, the brand should become more salient and stand a greater chance of being mentally recycled by other group members (Alba and Chattopadhyay 1986). Brand cue salience should be reflected in a higher number of brand cue intrusions, that is, the number of times during target brand recall that a brand cue is accidentally verbalized. According to the salience hypothesis (Rundus 1973), this should result in reduced recall.

Second, verbalization of brand cues by individuals in a collaborative context will result in (a) fewer brands recalled in their original place order within a product category and (b) greater category switching (e.g., lower clustering of brands by category) than in individual retrieval. Given idiosyncratic category preferences, individuals in collaborative groups may tend to verbalize brands from different product categories during retrieval. Such verbalization disrupts collaborative retrieval by causing the group to jump around more, both within and across categories, resulting in a lower percentage of brands recalled in the original place order within a category and a lower percentage of same-category brands recalled together. According to retrieval-strategy-disruption theory, this should lead to reduced recall (Basden and Basden 1995).

Further, highly familiar brands enjoy strong product category linkages and differential processing (Hutchinson and Zenor 1986; Kent and Allen 1994). Hence, highly familiar (vs. less familiar) brand cues may be verbalized more often during retrieval, resulting in increased cue salience and retrieval-strategy disruption. As previously stated, greater cue salience should lead to more brand cue intrusions, whereas greater retrieval-strategy disruption should result in lower within-category place value scores and lower across-category clustering scores.

**H3:** The presence of brand cues will result in (a) higher brand cue intrusions, (b) lower within-category place value scores, and (c) lower across-category clustering scores for collaborative groups compared to nominal groups, while the absence of brand cues will not.

**H4:** Highly familiar brand cues will result in (a) higher brand cue intrusions, (b) lower within-category place value scores, and (c) lower across-category clustering scores for collaborative groups compared to moderately familiar brand cues, while familiarity will have no differential effect on nominal groups.

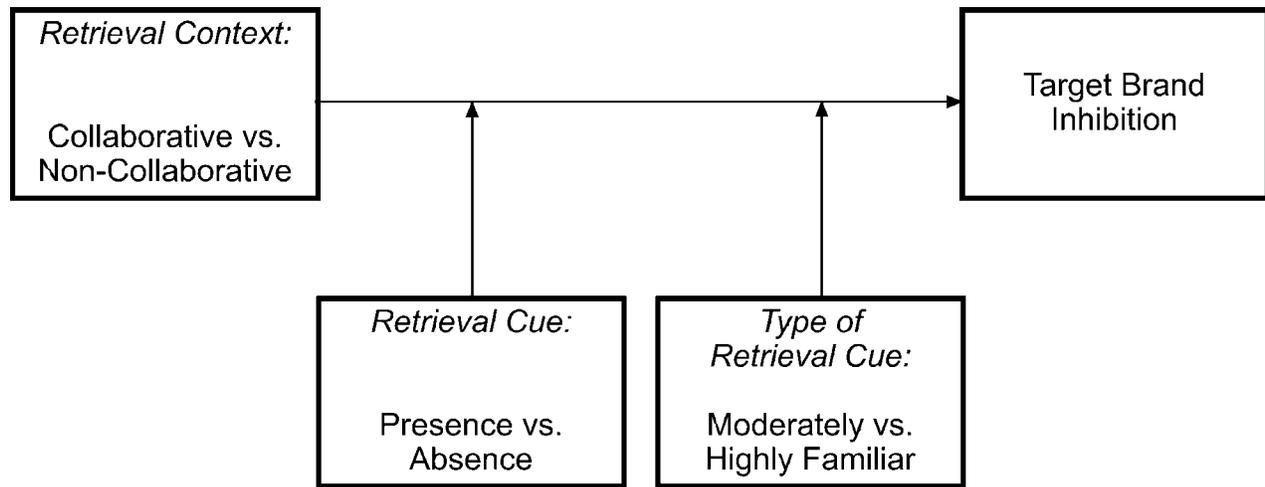
Figure 1 summarizes the conceptual model. Two experiments test our predictions in a simulated shopping scenario. Specifically, experiment 1 tests the effects of brand cues on collaborative versus noncollaborative retrieval for highly familiar target brands with small product categories ( $\leq 6$  instances per category; Basden et al. 1997). Experiment 2 explores the effect of brand cues on retrieval with large product categories.

## EXPERIMENT 1

### Design

A lab experiment with a 2 (memory testing: nominal vs. collaborative group)  $\times$  3 (brand cues: no cue vs. moderately familiar vs. highly familiar) between-subjects factorial design was used. The nominal group is not a separate group but a baseline control composed of the nonredundant responses of individuals tested separately (e.g., Basden et al. 1997; Weldon and Bellinger 1997). A random number seed was used to form nominal groups of three from individual responses, with each individual assigned to a single group. Collaborative groups consisted of triads, which are an appropriate size for small groups (Weldon and Bellinger 1997). Target brands consisted of 25 highly familiar beverage brands in five product categories: soda, water, juice, iced tea, and coffee. Each group or individual in the cueing condition was exposed to four either moderately or highly familiar brand cues at retrieval—two each from the soda and water categories—that were not part of the list of 25 target brands. Participants in the no-cue condition were not exposed to these cues at retrieval.

FIGURE 1  
CONCEPTUAL FRAMEWORK



### Stimuli

A series of pretests was conducted with a different sample to select the stimuli for the experiment. Given that inhibition effects have been shown to prevail if cues are from a dominant category (Nedungadi 1990), it was important to identify the dominant beverage categories for participants in the experiment. Thirty-five undergraduate students at Indiana University were asked to list their beverage expenditures as a percentage of their total weekly beverage budget across five categories. Results indicated that soda and water were the dominant beverage categories in terms of the amount spent per week.

Next, it was necessary to identify brand stimuli within these product categories that could be used as targets and cues. Forty undergraduate students at Indiana University were asked to list as many brands as possible across all five beverage categories. Highly familiar target brands were identified as a set of five brands in each product category that was recalled by greater than 80% of the students surveyed. Familiarity of brand targets did not differ across the five categories ( $p > .1$ ). Based on this pretest, four moderately familiar (IBC, Crush, Crystal Mountain, and Mountain Valley) and four highly familiar (Coca-Cola, Pepsi, Evian, and Aquafina) brand cues were chosen. The manipulation of familiarity showed significant differences between the highly and moderately familiar brand cues (recalled by less than 50% of the students surveyed): soda ( $M_{hi\text{fam}} = .92$ ,  $M_{mod\text{fam}} = .46$ ;  $p < .01$ ) and water ( $M_{hi\text{fam}} = .87$ ,  $M_{mod\text{fam}} = .41$ ;  $p < .01$ ). Familiarity did not differ between highly familiar brand cues versus brand targets ( $p > .1$ ).

### Procedure

Participants were 831 undergraduate students at Indiana University taking part in the experiment for course credit,

which translated into 145 collaborative and 132 nominal groups. An episodic memory paradigm was used (e.g., Alba and Chattopadhyay 1985) in which participants were first exposed to the brand stimuli and subsequently completed a memory test.

To begin, participants in the collaborative group conditions were placed in groups of three in a separate room and were provided an experimental booklet with the words "shopping simulation" on the cover. The cover story stated that they should take a close look at the brands because the brands would be available for future purchase. Given that our interest was in collaborative retrieval and not learning, participants were first exposed to the target brands with category labels provided (5 minutes) and then completed a 10 minute memory-clearing task on an unrelated set of questions individually (e.g., they were given separate booklets, were seated facing away from one another, and were told to work on their own). Next, participants were told to face one another and were provided with a sheet of paper with the words "shopping scenario" at the top. They were asked to imagine that they were on their way home from work and needed to stop at the store to pick up some beverages for a gathering of friends coming over in the next couple of days. They were told that they did not have much time and should try to recall as many of the previously viewed brands as possible (as a group), in order to have their options ready beforehand. Participants in the cueing condition were then shown the names of the four brand cues and asked to imagine that they saw (e.g., billboards) or heard (e.g., radio) ads for these brands along the way. In the no-cue condition, these four brand cues were not provided. One person was selected by the group to record the group's brand responses in the order communicated (the recorder was also eligible to participate in the recall task) with no procedural instructions for settling disputes. This free-for-all procedure (based on Weldon and Bellinger 1997) was expected to reduce

production blocking because participants do not have to take turns to speak (Basden et al. 1997). After the recall task, participants individually answered questions pertaining to their knowledge of the brands and categories used in the experiment.

The procedure was exactly the same for participants in the nominal group conditions, except that individuals were tested separately, and their nonredundant target brand responses were combined to form nominal groups of three. Participants were tested either in small groups of around 15–20 students (individual recall) or in clusters of from three to five triads (in separate breakout rooms) for collaborative recall. At the end of the experiment, all participants were asked to guess the purpose of the experiment and debriefed.

## Measures

The main dependent measure was the number of target brands recalled from the five categories. The number of brand cue intrusions was indicated by the number of times any of the four brand cues was mistakenly included as a target brand during retrieval in any condition. This implies that brand cue intrusions can exist even in the no-cue condition when real brands serve as cues because such brands may be retrieved and listed in recall. Within-category place value scores measure the degree to which participants recalled brands in their original order within a category (0 = none in their original place; 1 = all brands recalled were in their original place). Adjusted ratio of clustering (ARC) scores (Basden et al. 1997; Roenker, Thompson, and Brown 1971) measure the degree to which participants cluster brand responses by category when retrieving a set of brands across multiple product categories (1 = maximum clustering; 0 = minimum clustering). A score close to one would indicate that participants list many brands within a category and then move to the next category. A score close to zero would indicate that participant responses tend to skip between categories. Finally, covariates included gender and self-reported knowledge of the brands/product categories (Alba and Chattopadhyay 1985).

## Results

All responses were verified by two independent coders ( $\alpha = .96$ ) who subsequently met to resolve any disagreements. The data were analyzed as an unbalanced ANOVA design to test the effects of the manipulated factors, followed by cell mean comparisons (see table 1).

**Covariates.** Category and brand knowledge did not have a significant effect on recall or interact with either independent variable ( $F < 1$ ) and were dropped from subsequent analyses.

**Collaborative Group versus Nominal Group Recall.** A significant interaction was found ( $F(2, 271) = 4.88, p < .01$ ), such that recall was lower for collaborative (vs. nominal) groups when brand cues were present for highly familiar

**TABLE 1**  
EXPERIMENT 1: CELL MEANS

	Collaborative groups	Nominal groups
<b>Recall:</b>		
No cue	18.95 <sub>A</sub>	18.89
Moderately familiar cue	16.50 <sub>B,b</sub>	18.13 <sub>C</sub>
Highly familiar cue	14.80 <sub>C,c</sub>	17.72 <sub>D</sub>
<b>Brand cue intrusions:</b>		
No cue	.84 <sub>A</sub>	1.04
Moderately familiar cue	1.90 <sub>B,b</sub>	1.33 <sub>C</sub>
Highly familiar cue	2.60 <sub>C,c</sub>	1.52 <sub>D</sub>
<b>Within-category place value scores:</b>		
No cue	.37 <sub>A</sub>	.43 <sub>A</sub>
Moderately familiar cue	.17 <sub>B,b</sub>	.28 <sub>B,c</sub>
Highly familiar cue	.07 <sub>B,c</sub>	.27 <sub>B,d</sub>
<b>Across-category ARC scores:</b>		
No cue	.47 <sub>A</sub>	.56
Moderately familiar cue	.31 <sub>B,b</sub>	.48 <sub>C</sub>
Highly familiar cue	.16 <sub>C,c</sub>	.50 <sub>D</sub>

NOTE.—ARC = adjusted ratio of clustering. Capital letters that are different represent column comparisons that are significantly different at the .05 level or less. Lowercase letters that are different represent row comparisons that are significantly different at the .05 level or less. Cell sizes range from 42 to 55.

( $F(1, 271) = 18.02, p < .001$ ) and moderately familiar cues ( $F(1, 271) = 4.81, p < .05$ ), whereas no difference was observed when brand cues were absent ( $F(1, 271) = .006, p > .1$ ). In addition, Scheffe post hoc analyses showed that highly familiar (vs. moderately familiar) brand cues led to greater inhibition in collaborative groups ( $p < .001$ ), whereas no difference was observed in nominal groups ( $p > .1$ ). As predicted, brand cues result in lower recall for target brands in a collaborative (vs. noncollaborative) context. In addition, highly familiar (vs. moderately familiar) brand cues lead to greater recall inhibition of target brands in collaborative groups. Hence, hypotheses 1 and 2 are supported.

**Individual Recall.** One-way ANOVA analyses showed that brand cues had a marginally significant effect on individual recall for highly familiar brand targets ( $M_{hi\text{fam}} = 9.58, M_{mod\text{fam}} = 9.61, M_{no\text{cue}} = 10.75; F(2, 404) = 2.83, p = .06$ ). Tukey post hoc analyses showed no differences between (a) highly and moderately familiar brand cues ( $p > .8$ ), (b) highly familiar brand cues and the no-cue condition ( $p = .102$ ), and (c) moderately familiar brand cues and the no-cue condition ( $p = .106$ ).

**Process.** First, a significant interaction was found for brand cue intrusions ( $F(2, 271) = 6.06, p < .01$ ), such that intrusions were higher for collaborative (vs. nominal) groups when brand cues were present for highly familiar cues ( $F(1, 264) = 15.31, p < .001$ ) and moderately familiar cues ( $F(1, 264) = 4.24, p < .05$ ), whereas no difference existed between these groups when brand cues were absent ( $F(1, 264) = .663, p > .1$ ). In addition, Tukey post hoc analyses showed that highly familiar (vs. moderately familiar) brand cues led to higher brand cue intrusions in collaborative

groups ( $p < .001$ ), whereas a similar difference was not observed for nominal groups ( $p > .1$ ). As predicted, brand cues are mistaken for target brands more often in a collaborative setting, and highly familiar (vs. moderately familiar) brand cues are more likely to intrude on retrieval during collaborative recall. Hence, hypotheses 3a and 4a are supported.

Next, a significant interaction was found for within-category place value scores ( $F(2, 258) = 3.08, p = .05$ ), such that scores were lower for collaborative (vs. nominal) groups when brand cues were present for highly familiar cues ( $F(1, 258) = 23.36, p < .001$ ) and moderately familiar cues ( $F(1, 258) = 5.12, p < .05$ ), whereas no difference existed between these groups when brand cues were absent ( $F(1, 258) = 2.21, p > .1$ ). In addition, Tukey post hoc analyses showed that highly familiar (vs. moderately familiar) brand cues led to marginally lower within-category place value scores in collaborative groups ( $p = .077$ ), whereas no difference was observed for nominal groups ( $p > .1$ ). As predicted, brand cues result in more within-category disruption in collaborative settings, and highly familiar cues are more disruptive in such settings than less well-known ones. Hence, hypotheses 3b and 4b are supported.

Finally, a significant interaction was found for across-category ARC scores ( $F(2, 258) = 4.70, p = .01$ ), such that scores were lower for collaborative (vs. nominal) groups exposed to highly familiar cues ( $F(1, 258) = 36.40, p < .001$ ) and moderately familiar cues ( $F(1, 258) = 7.77, p < .01$ ), whereas a marginal difference existed when brand cues were absent ( $F(1, 258) = 3.50, p < .1$ ). Further, Tukey post hoc analyses showed that highly familiar (vs. moderately familiar) brand cues led to lower across-category ARC scores in collaborative groups ( $p < .05$ ), whereas no difference was observed for nominal groups ( $p > .1$ ). Thus, brand cues cause more across-category disruption in collaborative settings, and highly familiar cues are more disruptive in such settings than less well-known ones. Hence, hypotheses 3c and 4c are supported.

*Posttest.* To test more directly the process prediction that brand cue intrusions are greater for collaborative groups exposed to cues, a posttest was conducted. A separate sample of 26 three-person groups (13 cue and 13 no cue) participated in the posttest that used highly familiar brand cues in a group retrieval task identical to that used in experiment 1. Participants' responses were recorded for subsequent analysis using an audiotape recorder. Of primary interest was the number of times that the brand cues were verbalized, even though they were not the targets. Independent *t*-tests showed that the brand cues were verbalized significantly more in the groups exposed to brand cues ( $M_{\text{no cue}} = 1.1$ ;  $M_{\text{hi fam}} = 3.61, t(24) = 2.57, p < .05$ ). This suggests that brand cues lead to increased verbalization during collaborative retrieval.

## Discussion

As predicted, results from experiment 1 suggest that brand cues have a greater inhibiting effect on recall for collaborative

(vs. noncollaborative) retrieval. Analysis of brand cue intrusions and within- and across-category clustering scores reveals that the likely source of this inhibition is double cueing resulting in (a) greater brand cue salience and (b) greater within- and across-category retrieval-strategy disruption due to exposure to retrieval cues. Further, highly familiar brand cues were shown to inhibit collaborative retrieval more than moderately familiar brand cues, due to greater cue salience and higher within- and across-category disruption.

Experiment 1 used small categories ( $\leq 6$  instances per category; Basden et al. 1997). Small categories have been shown to be more resistant to inhibition from retrieval disruption than large categories (Basden et al. 1997). The reason for this is that both individuals and groups rely less on category organization to aid in recall for small versus large categories (Basden et al. 1997; Basden and Draper 1973). Experiment 2 uses large categories ( $> 6$  instances per category) with the objectives of (1) replicating the effects of brand cues in collaborative (vs. noncollaborative) settings for large categories and (2) showing that target brand recall for individuals in collaborative (vs. noncollaborative) settings can suffer inhibition even when cues are absent—simply due to the amount of across-category retrieval-strategy disruption from different target brands being verbalized from different product categories during retrieval.

## EXPERIMENT 2

### Design and Stimuli

A lab experiment with a 2 (memory testing: nominal vs. collaborative group)  $\times$  2 (brand cues: no cue vs. moderately familiar) between-subjects factorial design was used. Participants were 264 undergraduate students at Indiana University taking part in the experiment for course credit, which translated into 48 collaborative and 40 nominal groups. Each group or individual in the cueing condition was exposed to the same four moderately familiar brand cues at retrieval as used in experiment 1. Pretests identified brand targets of 48 highly familiar beverage brands across six competing product categories: soda, water, juice, iced tea, coffee, and sports drinks. Thirty undergraduate students were asked to list as many brands as possible in these categories. Highly familiar target brands were identified as a set of eight brands in each product category that was recalled by greater than 80% of the students surveyed. There were no significant differences in familiarity of brand targets across the six categories ( $p > .1$ ). The procedures and measures were identical to those in experiment 1.

### Results

All responses were verified by two independent coders ( $\alpha = .97$ ) who subsequently met to resolve any disagreements. The data were analyzed as an unbalanced ANOVA design to test the effects of the manipulated factors, followed by cell mean comparisons (see table 2).

**TABLE 2**  
EXPERIMENT 2: CELL MEANS

	Collaborative groups	Nominal groups
Recall:		
No cue	23.20 <sub>A,a</sub>	25.27 <sub>b</sub>
Moderately familiar cue	19.17 <sub>B,b</sub>	24.33 <sub>c</sub>
Brand cue intrusions:		
No cue	.72 <sub>A</sub>	.72
Moderately familiar cue	2.00 <sub>B,b</sub>	1.10 <sub>c</sub>
Within-category place value scores:		
No cue	.34 <sub>A</sub>	.40
Moderately familiar cue	.13 <sub>B,b</sub>	.35 <sub>c</sub>
Across-category ARC scores:		
No cue	.33 <sub>A,a</sub>	.48 <sub>b</sub>
Moderately familiar cue	.10 <sub>B,b</sub>	.48 <sub>c</sub>

NOTE.—ARC = adjusted ratio of clustering. Capital letters that are different represent column comparisons that are significantly different at the .05 level or less. Lowercase letters that are different represent row comparisons that are significantly different at the .05 level or less. Cell sizes range from 18 to 25.

*Covariates.* Category and brand knowledge did not have a significant effect on recall or interact with either independent variable ( $F < 1$ ) and were excluded from subsequent analyses.

*Collaborative Group versus Nominal Group Recall.* Recall was inhibited for collaborative groups relative to nominal groups in both the cue ( $F(1, 84) = 24.18, p < .001$ ) and no-cue conditions ( $F(1, 84) = 4.52, p < .05$ ). As predicted, when categories are large, recall is inhibited in a collaborative setting, even in the absence of brand cues. Further, a significant interaction ( $F(1, 84) = 4.65, p < .05$ ) suggests that the inhibition was higher for collaborative (vs. nominal) groups when brand cues were present.

*Individual Recall.* An independent *t*-test showed that brand cues significantly inhibited individual recall for highly familiar brand targets ( $M_{\text{modfam}} = 13.55, M_{\text{no cue}} = 14.87; F(1, 121) = 4.1, p < .05$ ).

*Process.* First, a significant interaction was found for brand cue intrusions ( $F(1, 84) = 4.03, p < .05$ ), such that intrusions were greater for collaborative (vs. nominal) groups exposed to brand cues ( $F(1, 84) = 9.24, p < .01$ ), whereas no difference existed when brand cues were absent ( $F(1, 84) = .033, p > .1$ ). Next, a significant interaction was found for within-category place value scores ( $F(1, 84) = 5.72, p < .05$ ), such that scores were lower for collaborative (vs. nominal) groups exposed to brand cues ( $F(1, 84) = 20.66, p < .001$ ), whereas no difference existed when cues were absent ( $F(1, 84) = 1.99, p > .1$ ). Finally, across-category ARC scores were significantly lower for collaborative (vs. nominal) groups in both the cue ( $F(1, 84) = 21.89, p < .001$ ) and no-cue conditions ( $F(1, 84) = 4.06, p < .05$ ). A significant interaction ( $F(1, 84) = 4.23, p < .05$ ) indicates that differences between collaborative (vs. nominal) groups were higher when brand cues were present.

## Discussion

Experiment 2 replicates the results from experiment 1 by showing that brand cues have a greater inhibitory effect when recall takes place in a collaborative (vs. noncollaborative) setting. More important, experiment 2 demonstrates that when categories are large, recall is more sensitive to differences in retrieval-strategy disruption between collaborative and noncollaborative groups. This was demonstrated by the fact that, even when cues were not present, lower clustering of brands by category (i.e., across-category disruption) led to correspondingly lower recall for collaborative (vs. nominal) groups.

## GENERAL DISCUSSION

### Research Contributions

The current research examines retrieval in a collaborative group setting, which is a novel context for brand memory research. We lay claim to these contributions. First, our findings show that when collaborative groups are exposed to brand cues at retrieval, recall for highly familiar brand targets is inhibited. Inhibition for highly familiar brand targets was reliably shown across two separate experiments using both moderately (experiments 1 and 2) and highly familiar (experiment 1) brand cues. This is a stark contrast to individual recall for familiar brand targets that has shown mixed results (e.g., Alba and Chattopadhyay 1985, 1986; Kent and Allen 1993; Miniard et al. 1989, 1991).

Second, our theory identifies double cueing as a source of inhibition under collaborative retrieval. The group is not only exposed to external cues from an outside source (e.g., TV) but they also hear cues verbalized by other group members during retrieval. The double cueing that takes place during collaborative recall was shown to lead to (a) greater brand cue salience and (b) greater within- and across-category retrieval-strategy disruption, both of which lower retrieval of other target brands (Basden et al. 1997; Basden and Basden 1995). To our knowledge, this is the first attempt to document various sources of retrieval inhibition due to brand cues.

Third, consistent with the theory, the inhibition from double cueing was shown to be greater for collaborative groups when participants were exposed to highly familiar (vs. moderately familiar) brand cues. Highly familiar brand cues result in greater verbalization and, as a result, greater salience and within- and across-category disruption.

Fourth, the theory and findings in the current article extend the boundaries of collaborative group inhibition. Basden et al. (1997) show that when categories are small ( $\leq 6$  instances), collaborative group retrieval is not inhibited. The reason for this is that both individuals and groups rely less on category organization to aid in recall for small categories (Basden et al. 1997; Basden and Draper 1973). In contrast, we show that collaborative retrieval can suffer inhibition effects, even in small categories. The reason is that when groups are exposed to brand cues, double cueing leads to

greater cue salience and greater retrieval disruption—relative to situations in which groups are not exposed to such cues during retrieval.

Overall, the theoretical contribution resides in expanding the range of theories that have been used to explain brand recall inhibition. Current explanations rely on salience (Alba and Chattopadhyay 1986; Rundus 1973) and interference (Burke and Srull 1988; Kent and Allen 1994; Kumar and Krishnan 2004) as the predominant theoretical mechanisms for brand recall inhibition. We provide an initial foray into a third theoretical mechanism to explain brand inhibition, namely, retrieval-strategy disruption. Retrieval-strategy disruption occurs when an individual's retrieval pattern is changed due to exposure to a cue or responses from other individuals in a collaborative group. Retrieval-strategy disruption combines an encoding and retrieval view to explain memory performance. Given the recent interest in categorization theories and the interplay between encoding and retrieval, the theoretical views in this article provide fodder for conceptual development in related areas.

Finally, on a practical level, a group premium (over and above the standard market-share premium) seems to exist for advertising brands during programming where a higher percentage of viewers are group based. In essence, such ads would seem to have a greater effect on individuals in collaborative settings than on individuals in noncollaborative settings.

### Limitations and Future Research

The following limitations must be acknowledged. First, the experiments used an episodic memory paradigm to afford more control. A semantic memory approach may increase external validity of future findings by focusing on existing brand schemas. Second, we focus on collaborative retrieval inhibition, given that it has received limited attention. Future research could examine facilitation due to brand cues. One possible scenario would be to provide group members brand cues from secondary (vs. dominant) product categories. Third, our triads consisted of groups of virtual strangers. In many consumption situations, group members know one another. Although beyond the scope of this article, it would be interesting to examine collaborative retrieval where participants know the preferences of other group members. Finally, the current experiments used one member of the collaborative group to record the group's responses. This procedure may produce different results relative to audio- or videotaping. Future research should investigate the effect of different procedural formats on recall in such settings.

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