Framing the Deal: The Role of Restrictions in Accentuating Deal Value

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We propose that consumers use the presence of a restriction (i.e., purchase limit, purchase precondition, or time limit) as a source of information to evaluate a deal. In a series of four studies we present evidence suggesting that restrictions serve to accentuate deal value and act as "promoters" of promotions. We begin by using aggregate level scanner data to test our hypothesis that a sales restriction (e.g., "limit *X* per customer") results in higher sales. Via three subsequent experiments, we then investigate contextual and individual factors moderating this effect. Study 2 suggests that restrictions only have a positive effect for low need for cognition individuals. Study 3 explores the potential mediating role of deal evaluations on purchase intent across discount levels. Study 4 examines the effect of three types of restrictions (purchase limits, time limits, and purchase preconditions) across discount levels and explores the underlying beliefs driving these effects. An integrative model across studies demonstrates the robustness of the restriction effect and supports the premise that restrictions work through signaling value. Implications for how consumers determine promotional value are discussed.

Advertisers and retailers often promote their products using restrictions. These restrictions act to constrain consumers' ability to take advantage of the promotion and can assume several forms. For example, some promotions are advertised as limited time offers, while others limit the quantity that can be bought at the deal price by employing the phrase "limit 3 per customer," and still others require a minimum dollar store purchase to qualify for the deal price. Some retailers use such tactics extensively. A recent weekly flyer by a prominent retailer limited purchase quantities on 50 percent of the specials advertised on their front page. Restrictions even find a place among home shopping networks that give a running account of the number of items of a promoted brand that are being sold; the promotion is limited to a fixed number of items. Generally speaking, all promotions can be seen as restrictions since the promotional offer is available only for a fixed time period. However, we apply a stricter definition of restrictions and consider only those promotional tactics in which the offer is explicitly restricted.

When evaluating a deal, consumers may have several sources of information that they can consider in deciding whether to purchase the promoted brand. For instance, the depth of the discount, the brand, and the presence of a special display can all serve as data-based sources of information regarding the deal. Likewise, individual difference variables such as the need for cognition (Cacioppo and Petty 1982) can act as conceptually driven constructs that might play an active role in this process as well. In this article, we argue that the presence of a restriction operates to activate a cognitive resource that is used in rendering a judgment regarding the favorableness of the offering. In the absence of other information, this resource leads to an inference of "good value." However, we argue that in the presence of other value-related cues, such as those mentioned above, the restriction-activated resource is used to process that cue (and its attendant valence) as a basis for the judgment. Thus, the restriction can stimulate either favorable or unfavorable judgments. In other words, we posit that consumers use restrictions in conjunction with the information provided by other value-related cues in determining the overall attractiveness of a product offering. We use this thesis as the basis to generate and test contingency conditions under which restrictions are and are not effective.

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Academics acknowledge that the manipulation of perceived scarcity can potentially gain compliance (Cialdini 1985; Folger 1992; Lynn 1992). However, there is little research in the trade and consumer promotion literature about the effect of these tactics. Simonson (1992) implicitly tests a scarcity tactic by manipulating the salience of the limited time offer. Simonson found that consumers who were first asked to think about how they would feel if they did not take advantage of a limited time promotion and then had to pay full price on a subsequent purchase occasion as a result were more likely than control subjects to make a purchase during a promotion offered to them. Further, Lessne and Notarantonio (1988) examine the effect on purchase likelihood of limits of two and four bottles per customer of 2-liter sodas versus a control no-limit condition. They report that the four-bottle limit produced an increase in purchase likelihood compared with the two-bottle limit and no-limit conditions.

In contrast to the paucity of research in marketing on the subject, the role of scarcity has been examined in some depth in psychology (e.g., Lynn 1989, 1992; Verhallen 1982). There has been considerable empirical support for the notion that perceived unavailability positively influences brand attitudes (see Lynn [1991] and Verhallen and Robben [1995] for reviews). However, most of the empirical work in this area has either been undertaken on unfamiliar products with little consideration for how a scarcity tactic would affect choice behavior or has been tested under extreme conditions (e.g., a total ban) that leave unclear the applicability of unavailability theory in the context of promotions for commonly known brands. Further, although this research has examined the moderating role of individual difference variables such as perceived expensiveness (e.g., Lynn 1992) and need for uniqueness (e.g., Fromkin 1970), the contingencies (e.g., contextual factors and other individual difference variables) under which scarcity tactics such as restrictions do and do not influence consumers are poorly understood.

We define a sale restriction as a tactic that curtails a consumer's freedom to purchase a market offering. Consumers' freedom may be curtailed through limiting the quantity that a consumer can purchase (e.g., "limit *X* per customer"), which we refer to as a purchase quantity limit; limiting the duration during which a consumer can avail herself or himself of an offer (e.g., "Offer expires on ———"), commonly referred to as a time limit; or instituting a precondition for a consumer to purchase (e.g., "Only available with purchase of ———"), which we term the purchase precondition. In this article, we focus on the effect of restrictions in the context of price promotions.

Over a series of four studies, we examine how restrictions influence consumers. We begin our empirical examination by determining if, in fact, a restriction such as "limit 3 per customer" increases sales in an actual field setting after controlling for the effect of the discount level. Via a lab experiment, we then test the effect of the restrictions on individual consumer choice and test the moderating role of an important individual difference variable—need for cognition. In the third study we examine whether the influence of restrictions on choice is contingent on discount level and whether it is due to a direct effect on purchase intentions or is mediated by an influence on deal evaluations. We also test the robustness of the restriction effect by testing an additional operationalization of a restriction: an explicit time limit. In the fourth and final study we further expand our investigation to the case of a purchase precondition. We also explore variations in consumers' beliefs across types of restrictions and examine whether the route to purchase intentions is mediated by beliefs regarding the restriction. We conclude by discussing theoretical and managerial implications, noting study limitations, and suggesting areas for future research.

STUDY 1

Hypotheses

As already discussed, unavailability theory predicts that promoting a brand with the use of restrictions results in an increase in choice probability for the restricted brand. A restriction such as a purchase limit of the type "limit 2 per customer" may signal a very attractive offer, which will increase short-term demand and lead to a stock-out (i.e., scarcity) unless purchase restrictions are imposed. Accordingly, the presence of the restriction may lead to higher likelihood of purchase. Therefore, we hypothesize:

H1: Promoting a brand with a restriction increases consumers' likelihood of purchase over promoting a brand without a restriction.

Method

Hypothesis 1 is tested in a field study using scanner data. We collected sales data from a large grocery chain that occasionally imposes quantity limits. The retailer did not maintain a history per se of the limits imposed, but we were able to reconstruct this history by examining the retailer's feature advertisements, employing a three-step approach. First, we examined each advertisement for the period beginning October 14, 1992, through April 20, 1994 (a period of 80 weeks), and noted the features for which a purchase limitation was noted on the ad; there were a total of 14 such instances. Fortunately, the grocery chain only imposed limits on featured products, so that all limits were captured. These restrictions were communicated to consumers in bold type directly under the brand name and price (e.g., "limit 3 per customer"). Second, we went back through all 80 weeks of features and noted all features for the products identified in the first step, a total of 44 cases. Third, we asked the chain to provide weekly chain sales quantity and unit price data for the identified brands for the weeks in which a feature was offered. This resulted in a database for seven brands: Angel Soft bathroom tissue, Kraft macaroni and cheese,

Mazola corn oil, MJB and Yuban coffees, Sparkle paper towels, and Starkist tuna.

Design. We measured promotion restrictions at two levels (i.e., present and absent) in a quasi-experimental unbalanced design. Restrictions used by the chain were of the "limit X per customer" type. We analyze our data with a one-way ANCOVA, with percent change in sales units from baseline as the dependent variable and with brand and discount as covariates. We omitted one outlying observation for which a purchase quantity limit was associated with a 3,500 percent increase in sales over baseline and controlled statistically for the unbalanced design. Two categories for which limits were imposed, cereal and beer, were not included in the subsequent analysis. Cereals were not included because almost all features had limits, confounding the feature and limit effects. The beer category was dropped because seasonality was confounded with the limit effect (i.e., limits were typically imposed in the summer months).

Dependent Variable. We use percent change in sales units from baseline as the dependent variable. Baseline was operationalized as the mean unit sales across all weeks in which no promotions were offered for the brand. In other words, we standardize the data so that variability in the transformed sales variable represents percentage of deviation from mean sales for each brand. This procedure allows us to pool the data.

Results and Discussion

Hypothesis 1 is strongly supported, as the effect of the purchase quantity limit is significant ($F(1, 32) = 16.84$, $p < .01$). After controlling for both brand and discount, it is evident that limits appear to have a dramatic and positive effect on sales: sales were over twice as high when a restriction was imposed. Featured products without a purchase quantity limit experienced an average increase in sales of 202 percent over baseline, while brands that were featured with a quantity limit enjoyed a 544 percent average increase in sales over baseline. As one would expect, the effect of the covariates, brand and discount, are statistically significant ($F(6, 32) = 2.63$, $p < .05$ and $F(1, 32) = 5.00$, $p < .05$ for brand and discount, respectively).

Study 1 demonstrates that restrictions can have a dramatic positive effect on product sales. Particularly in consideration of their incremental variable cost, which is close to zero, restrictions are a low-cost way of generating added sales. Although study 1 demonstrates the effectiveness of restrictions, it leaves the question unanswered of whether choice probability is affected at the individual consumer level or whether the restriction only caused people to buy more than they would have otherwise (i.e., whether there were more people buying the restricted product or just the average purchase size increased). A more controlled environment is needed to eliminate this alternative explanation by testing whether restrictions exert an effect at the individual level.

STUDY 2

In study 2 we wish to replicate conceptually the results of study 1 using controlled experimental methods and to test Hypothesis 1 at the individual level. Further, we attempt to garner evidence for the notion that the purchase-limit restriction works through heuristically signaling value to a customer. We do this by examining whether an individual's need for cognition moderates the size of the purchase-limit restriction effect.

Hypotheses

Need for cognition (NFC) is one of the determinants of the motivation to process information content (Haugtvedt, Petty, and Cacioppo 1992). We have argued above that consumers use restrictions as a source of information to help them assess a promotion's value. Prior research has demonstrated that individuals differ in terms of their likelihood to engage in effortful, systematic thinking. Specifically, those with a high need for cognition are more likely to use message content as a basis for judgments (Cacioppo and Petty 1982) than are those with a low need for cognition (Haugtvedt et al. 1992; Maheswaran and Chaiken 1991). Folger (1992) suggests that unavailability functions as a signal regarding the good, thereby making the good more salient. Similarly, a restriction may act as a heuristic cue that signals deal value (e.g., Inman, McAlister, and Hoyer 1990) and may prompt consumers to allocate resources to assess the offer. Therefore, we expect to find a restriction effect for low NFC individuals but not for high NFC individuals because high NFC supplies the same cognitive resource as the restriction (i.e., it gets consumers to assess the incentive).

H2: Promoting a brand with a restriction yields an increase in likelihood of purchase for low NFC individuals, while high NFC individuals are unaffected by a restriction.

Method

Subjects. Seventy-three undergraduate business students at a large West Coast university were invited to participate in the study and were compensated with cash and product incentives.

Procedure. Products arranged by category were placed on shelves lined along the walls of the laboratory with the regular price displayed at the base of the shelves. A sampling of area retailers provided us with the range of brand prices and the ordering of brands by price within each product category. To remove any display effects, brands within a product category were juxtaposed next to each other and each brand was arranged vertically.

Identical package sizes were used within each product category.

Promotions were indicated by a 4 × 7 inch promotion sign that was placed on the promoted brand's display. The promotion sign included the price and the brand name. In the case of a restriction (i.e., "limit 1 per customer"), the terms of the restriction were centered beneath the price in large type. The promotion signs, unit price labels, and shopping baskets used in the experiment were obtained from a local grocery chain to increase the realism of the simulated store. The experimental conditions were fully counterbalanced across the categories. We selected product categories used by most undergraduate students and determined the top three brands in each category based on a pretest. These product categories and brands were laundry detergent (Cheer, Surf, Tide), toothpaste (Aim, Colgate, Crest), toilet paper (Charmin, Northern, Scott), pasta sauce (Hunts, Prego, Ragu), bath soap (Caress, Dial, Ivory), and peanut butter (Jif, Peter Pan, Skippy).

On arrival at the laboratory each subject was given an instruction sheet. The instructions asked the subject to imagine that s/he had $14 with which to purchase products. The subject was then directed to shop as s/he normally would by "purchasing" one brand in each product category and placing it in the shopping basket provided. Subjects were told that they would keep either the remaining change or one of the selected products (determined by a die roll at the end of the experiment). Our intention was to motivate subjects to select products that they would like to keep while being conscious of prices. Each subject shopped individually and then was "checked out," with his or her product selections noted. The subject then rolled a die to determine whether s/he kept the change or received a product. The average value of the "change" ($1.46) was approximately the same as the value of the randomly selected product ($1.55).

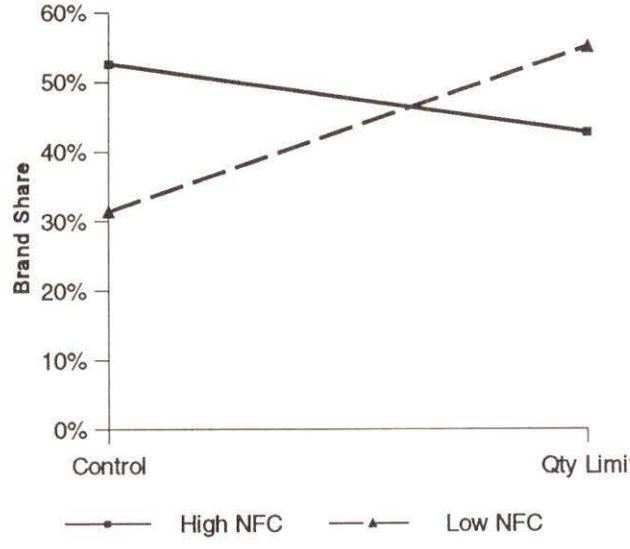
Design. Analogous to study 1, we pooled the observations across product categories. We analyzed the data via logistic regression. Need for cognition was transformed into a dichotomous variable using a median split.

Independent Variables. Restriction was manipulated at two levels: present and absent. For promotions with a purchase quantity limit, the restriction "limit 1 per customer" was added to the bottom of the promotion sign. The price cut was 15 percent of the regular price cut to make it noticeable. Need for cognition was assessed by asking subjects to complete a standard 18-item NFC scale two weeks before the date of the experiment (Cacioppo, Petty, and Kao 1984, $\alpha = .86$). The average NFC score across all subjects was 85.9 (SD = 16.9). Following the median split, the average NFC score in the high NFC group was 99.6 (SD = 9.7) and the average NFC score in the low NFC group was 72.3 (SD = 10.3).

Dependent Variable. The dependent variable is choice of the target brand. This measure takes on the value of 1 for the chosen brand and 0 otherwise.

FIGURE 1

THE MODERATING EFFECT OF NEED FOR COGNITION: STUDY 2



Results and Discussion

As predicted by Hypothesis 2, need for cognition interacts with the presence of the restriction (χ^2 (df = 1) = 4.16, $p < .05$). Figure 1 graphically depicts this interaction. Hypothesis 2 predicts that restrictions cause share to increase for low NFC individuals but not for high NFC individuals. Examining this interaction in further detail, one sees that this is indeed the case. The imposition of a restriction increased brand share for low NFC individuals from 31.4 percent to 55.3 percent, over 23 share points. Importantly, this difference is statistically significant (χ^2 (df = 1) = 4.20, $p < .05$). Conversely, the effect of the restriction is not significant for high NFC individuals, as share was 52.6 percent with no restriction and 42.9 percent when a restriction was present ($\chi^2 < 1$). While the overall choice share is greater when the brand is promoted with a restriction (share for the promoted brand was 42 percent without a restriction vs. 49 percent with a restriction), the effect is not statistically significant ($\chi^2 < 1$).

Importantly, the results in study 2 extend those of study 1. Supporting our suggestion that the presence of a restriction is used as a heuristic by some consumers, subjects with low NFC were found to be affected by the presence of the restriction, while subjects with a high NFC were relatively unaffected. Restrictions appear to have a greater influence on individuals who have a lower intrinsic preference for the cognitive demands imposed by information processing.

We did not directly measure brand knowledge in study 2. It is possible that high NFC subjects may be more knowledgeable about brands and prices and promotions and are, therefore, more adept at determining the attractiveness of a restriction. For example, Haugtvedt et al.

(1992, p. 255) argue that "high need for cognition individuals are more likely to evaluate the product claims contained in advertisements spontaneously than are low need for cognition individuals." However, it is not inconsistent with our argument that low NFC subjects use the presence of the restriction as a peripheral cue while high NFC subjects use the restriction in conjunction with their other knowledge structures in making a judgment regarding the attractiveness of the deal. Rather, greater knowledge on the part of high NFC subjects contributes toward a better rationalization of our results.

Additional evidence is required to sustain our claim that people use a restriction as a source of information and that this use is contingent on the availability of alternative sources of information. In the next study we attempt to further understand the information value of the purchase-limit restriction by studying its effect on purchase likelihood in contexts varying in terms of the diagnosticity of an alternate source of information—discount level. Further, we have shown thus far that restrictions influence consumer behaviors, such as brand sales in a field setting and choice in a controlled experiment. Although we have argued that restrictions affect purchase likelihoods by signaling that the deal is a good deal we do not have direct evidence for this proposition. The next two studies provide a better test of our thesis by showing that the presence of a restriction makes consumers sensitive to the quality of the incentive and enhances intention when the deal is substantial and undermines it when the deal is not substantial.

STUDY 3

Study 3 examines three main issues. First, studies 1 and 2 utilize a purchase quantity–limit restriction operationalization. In study 3 we explore whether another commonly used restriction operates in a similar manner to the purchase quantity limit: the explicit time-limit restriction (i.e., "Offer available till ———"). A successful replication to this restriction extends the results from the first two studies to a different sales restriction operationalization and demonstrates the robustness and generalizability of the restriction effect. Second, we test the effect of the purchase-limit and the time-limit restrictions at high and low discount levels to study the effect of restrictions when alternative deal information is present. Finally, we examine the process by which restrictions influence purchase intentions. Specifically, we seek to test our thesis that restrictions derive their effect on purchase through influencing deal evaluations.

Hypotheses

The Moderating Effect of Discount Level. We suggest that consumers use restrictions as a source of information to help them assess deal value. However, since restrictions are not the only source of information available to consumers when forming a judgment regarding a particular promotional offering, we wish to study the effect of restrictions when alternative deal information is present. An obvious alternative source of information available to consumers to make this judgment is the actual discount level. If the depth of a discount is a detector cue that signifies how good a deal is and the purchase-limit restriction is an alternative source of information for the same judgment, then to the extent that the presence of the restriction reinforces the information value of the depth of the discount, it should have a greater effect. This is consistent with Feldman and Lynch's (1988) conceptualization that the use of a particular source of information is inversely related to the availability and diagnosticity of alternative sources of information. Diagnosticity, in this context, is defined as the adequacy of a particular source of information to make a judgment. Arguably, one important antecedent of diagnosticity of a source of information is its perceived correlation with the final judgment. Thus, the consistency between alternative sources of information should affect the perceived diagnosticity of each source of information while making a judgment.

Based on this reasoning, one operationalization of the diagnosticity of a restriction is how consistent it is with the discount itself. The literature on persuasion suggests that when consumers are exposed to inconsistent pieces of information (i.e., when the "heuristic" conflicts with the information content), then people do not rely on the heuristic cue (e.g., Chaiken 1980; Maheswaran and Chaiken 1991). Therefore, if there is only a small discount (e.g., 5 percent), the information value of the restriction (namely, "good deal") is inconsistent with the information value of the discount, and consumers should be more likely to disregard the heuristic cue (i.e., the restriction) while forming their intent to purchase. Thus, we hypothesize:

H3: Discount level will moderate the effect of promotional restrictions such that restrictions will exert a positive effect on purchase intentions at high discount levels but not at low discount levels.

Mediation of Purchase Intent. According to unavailability theory, a scarcity tactic such as a restriction increases the desirability of the promoted brand. However, this literature is vague on whether restrictions' effect on choice is due to an increase in the evaluation of the deal or is a result of a direct effect on purchase intention independent of antecedents. Assuming that consumers' perceptions of commonly purchased brands are relatively stable over time, an increase in choice probability should be due to consumers using the restriction as an indication of the value of the deal itself, which would cause an increase in deal evaluations. This leads to our next hypothesis:

H4: The effect of restrictions on purchase intent is mediated by deal evaluations.

Method

Subjects. Subjects were 182 undergraduate business students at a large Midwestern university, who completed the task during a regularly scheduled class.

Design. We manipulated promotion restrictions at three levels (quantity limit, time limit, and control) and two discount levels (5 percent and 20 percent) in a between-subjects design.

Procedure. Subjects were asked to imagine that they needed to buy either a pack of four AA Kodak alkaline batteries, a Sony UX 90-minute audiocassette, or an Oral B Indicator toothbrush and that their neighborhood supermarket was running a promotion for this product. The type of promotional information each subject received depended on the condition to which s/he was assigned. Subjects then completed the dependent measures and were debriefed. The procedure took approximately 15 minutes.

Independent Variables. We manipulated discount at two levels: 20 percent (high) and 5 percent (low). In terms of restrictions, subjects were exposed to one of three conditions. Subjects in the control condition were not exposed to any sales restriction, while subjects in the experimental conditions were exposed to either a quantity limit (i.e., "Restricted Offer. Maximum Purchase Allowed: One (1) per Customer") or a time limit (i.e., "Restricted Offer. Only Available for a Limited Time [Expires ———]"). The restriction was in a smaller font size, italicized, and appeared on the line below the discount offer, in a manner similar to how these typically appear in supermarket and discount store flyers.

Dependent Variables. To measure deal evaluations, subjects completed a three-item, seven-point semantic differential scale anchored at "a bad deal–a good deal," "worthless–valuable," and "unattractive to me–attractive to me" ($\alpha = .92$). Purchase intent was then measured using a seven-point semantic differential scale anchored at "definitely NOT–definitely WILL."

Results and Discussion

To test mediational hypothesis 4, we used the method suggested by Baron and Kenny (1986). Specifically, we first tested the effect of restrictions on the proposed mediator, deal evaluation. Then we tested the effect of the restriction on the dependent variable, purchase intent, both with and without incorporating the effect of the mediator. Perfect mediation is demonstrated if the independent variable exerts significant effects on the mediator as well as on the dependent variable but the effect of the independent variable on the dependent variable becomes nonsignificant when the mediating variable is incorporated as a covariate. If the effect remains significant but the effect size significantly reduces, partial mediation is demonstrated.

TABLE 1

STUDY 3 MEANS FOR DEAL EVALUATION AND PURCHASE INTENTION

	Experimental condition			
	Deal evaluation		Purchase intention	
Restriction	5% discount	20% discount	5% discount	20% discount
Purchase quantity limit	2.67	5.25	3.87	4.70
Time limit	2.91	5.42	4.23	4.56
Control	3.98	4.65	4.93	4.00
Overall	3.18	5.07	4.36	4.39

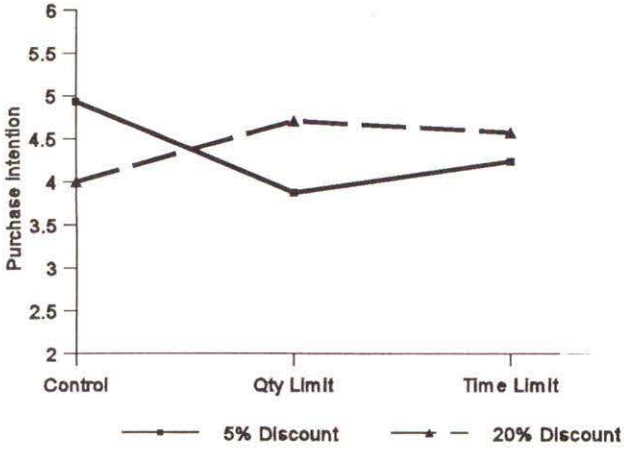
Deal Evaluations. We analyze the data using a 3 (restriction) × 2 (discount) × 3 (brand) ANOVA. Means by condition are given in Table 1. In terms of the effect on deal evaluations, the results reveal the expected interaction between restriction and discount level ($F(2, 161) = 12.27, p < .01$). Further, there is a main effect of both brand ($F(2, 161) = 2.64, p < .08$) and discount ($F(1, 161) = 106.59, p < .01$), such that the higher the discount, the higher the deal evaluation ($\bar{X} = 3.18$ vs. 5.07 for the 5 percent and 20 percent discounts, respectively). Not surprisingly, deal evaluations are higher when the discount is 20 percent than when it is 5 percent for each restriction condition ($t(165) = 8.02, p < .05$, $t(165) = 7.77, p < .05$, and $t(165) = 2.16, p < .05$ for quantity limit, time limit, and control, respectively).

An analysis of the restriction × discount interaction reveals that, as predicted by Hypothesis 3, at the 20 percent discount level, quantity limits ($\bar{X} = 5.25$ vs. $\bar{X} = 4.65$, $t(161) = 1.96, p < .05$) and time limits ($\bar{X} = 5.42$ vs. $\bar{X} = 4.65$, $t(161) = 2.43, p < .05$) were rated higher than the unrestricted control condition. Interestingly, at the low discount level the reverse held—the restricted deals were rated lower for quantity limits ($\bar{X} = 2.67$ vs. $\bar{X} = 3.98$, $t(161) = -4.07, p < .05$) and time limits ($\bar{X} = 2.91$ vs. $\bar{X} = 3.98$, $t(161) = -3.39, p < .05$) than the unrestricted (control) condition. Therefore, the results are partially consistent with Hypothesis 3, which predicts that restrictions exert a positive effect only at a high discount level, but they also suggest a negative effect of restrictions at a low discount level. Further, this analysis serves as the first step in our test of Hypothesis 4: the independent variables (restrictions and discount levels) exert a significant effect on the potential mediating variable, deal evaluations.

Mediating Effect on Purchase Intention. A similar 4 × 2 × 3 ANOVA on purchase intent reveals a significant restriction × discount interaction (shown in Fig. 2) consistent with the Hypothesis 3 prediction ($F(2, 164) = 5.38, p < .01$). The pattern of the means demonstrates that at the 20 percent discount level, both the quantity limit ($\bar{X}$

FIGURE 2

THE MODERATING EFFECT OF DEPTH OF PRICE CUT ON PURCHASE INTENTION: STUDY 3



= 4.70 vs. $\bar{X}$ = 4.00, $t(164) = 2.07$, $p < .05$) and the time limit ($\bar{X}$ = 4.56 vs. $\bar{X}$ = 4.00, $t(164) = 1.65$, $p < .05$) were associated with higher intent to purchase than was the control no-restriction deal. In contrast, at the 5 percent level, the opposite pattern was evident for both the quantity limit ($\bar{X}$ = 3.87 vs. $\bar{X}$ = 4.94, $t(161) = -3.27$, $p < .05$) and time limit ($\bar{X}$ = 4.23 vs. $\bar{X}$ = 4.94, $t(161) = -2.18$, $p < .05$) compared to the control. As with deal evaluations, we see that restrictions appear to induce a positive effect when coupled with a high discount but induce a negative effect when combined with a low discount.

Importantly, as predicted by Hypothesis 4, when deal evaluation is added to the analysis as a covariate, the restriction × discount effect reduces to nonsignificance ($F(2, 160) = 1.13$). This pattern demonstrates that the restriction × discount effect of restrictions on purchase intent is mediated by deal evaluations, supporting Hypothesis 4. This suggests that restrictions signal consumers that a deal is a good deal, thereby increasing intent to purchase. With the multitude of deals offered in the marketplace, a signal that helps consumers identify a good deal should be effective in increasing sales for the brand. Demonstrating that the effect of restrictions on purchase intent is mediated by deal evaluations suggests that restrictions act as such signals.

The negative effect of restrictions at the 5 percent level may be due in part to an anomalous result in the control group. Comparing purchase intentions across deal levels (see Table 1), as the discount increases from 5 percent to 20 percent, purchase intentions are higher for quantity limits ($\bar{X}$ = 3.87 vs. $\bar{X}$ = 4.70, $t(161) = 2.42$, $p < .05$) and directionally higher for time limits ($\bar{X}$ = 4.23 vs. $\bar{X}$ = 4.56, $t < 1$). In the control group, purchase intentions are lower at the 20 percent level than at the 5 percent level ($\bar{X}$ = 4.93 vs. $\bar{X}$ = 4.00, $t(161) = 2.92$, $p < .05$). Importantly, this anomalous effect may cause suspicion concerning the discount × restriction interaction. However, the reduction of the interaction to nonsignificance with the addition of deal evaluations as a covariate allays this concern somewhat.

Several robust effects emerge from study 3. First, we broaden the effect of the quantity limit restriction on purchase intent to the time-limit restriction. Second, we expand the restriction effect to deal evaluations. Third, we find that these effects are contingent on the level of discount; restrictions only increase purchase intent at higher discount levels. Finally, we demonstrate that the process by which restrictions affect choice is indirect: its influence is mediated by deal evaluations. In the next study we further explore the contingent nature by which restrictions affect choice and investigate whether restrictions of various types affect purchase intentions through different routes.

STUDY 4

Study 4 tests the robustness of the results documented in studies 1–3 by testing Hypothesis 1 using a different subject sample; the study was conducted in Hong Kong. The retail markets in Hong Kong are fairly similar to those in the United States, inasmuch as grocery shopping is done at large chain supermarkets and price promotions in the form of discounts are commonly used by retailers to attract consumers (Goldman, Krider, and Ramaswami 1996). It also extends our empirical investigation to a third type of restriction: the purchase precondition (i.e., a requirement that consumers make other purchases to qualify for the deal price).

Hypotheses

In study 3 we tested our thesis that the route to higher purchase intent is through higher deal evaluations. Another way of assessing the differential information value of restrictions is to examine whether the route by which discount levels affect purchase intent is moderated by the type of restriction accompanying the discount. To test whether restrictions work differently, albeit producing similar results on consumers' brand choice (studies 2 and 3) or overall brand sales (study 1), we explore whether consumers' beliefs regarding a promotional offer are different if the deal is restricted and whether the type of restriction moderates such beliefs.

On the one hand, purchase limits may imply that supply will exceed demand because the deal is so good (e.g., due to existing consumers stockpiling the brand). Thus, the route through which purchase limits increase purchase intent is likely to be through beliefs regarding the number of units consumers will purchase. On the other hand, purchase preconditions might work by suggesting that the retailer is attempting to move other, potentially less attractive, goods. If so, consumers should believe that a purchase precondition is likely to lead to the purchase of other items in the store. Finally, a time limit need not

carry such implications. Instead, consumers may realize that all deals have limits, the likely reason being that a profitable operation cannot be realized with permanently reduced prices. Thus, one might expect consumers to simply expect that a deal with a time limit exists to induce consumers in general and new users in particular to avail themselves of the deal before it expires. In fact, this effect should be present across restriction types.

H5: The route through which discount levels increase purchase intent is moderated by the type of restriction accompanying the discount such that (*a*) for purchase quantity limits, this is via beliefs regarding the likelihood of stockpiling, (*b*) for purchase preconditions, this is via beliefs regarding the purchase of other, nonpromoted, brands in the store, and (*c*) for all three restriction types, this is via beliefs regarding the number of customers in general and the number of new users in particular that the deal will attract.

Method

Subjects. Subjects were 128 undergraduates at a business school in Hong Kong, who completed the experimental task for partial course credit.

Design and Procedure. A 4 (restriction) × 2 (depth of price cut) mixed design was utilized, where presence of restrictions was manipulated between subjects and depth of price cut was manipulated within subjects.

The restrictions that were used were the purchase limit (i.e., "Restricted Offer. Maximum Purchase Allowed: One (1) per customer"), the purchase precondition (i.e., "Restricted Offer. Only Available with a Minimum Purchase of $25"), and the explicit time limit (i.e., "Restricted Offer. Only Available for a Limited Time [Expires ———]"). The restriction was in a smaller font size, italicized, and appeared on the line below the discount offer, as in study 3. There was also a control (i.e., no restriction) condition. Since US$1 = HK$7.78, the minimum purchase required was US$3.00. Depth of price cut was operationalized at two levels: high (50 percent) and low (5 percent).

Subjects were exposed to two promotional offers. The products used were the same three commonly purchased products used in study 3—Sony 90-minute audiocassette, four Kodak AA alkaline batteries, Oral B toothbrush (40 Regular)—and were fully counterbalanced across conditions. All three products were available at the local supermarket for $18.90 (approximately US$2.39). The order in which the two discounts were presented was fully counterbalanced. Subjects provided their intent to purchase the brand using a seven-point scale anchored at "Definitely will buy/definitely will not buy." We also asked subjects to rate the "likely consequences" of the promotion. Specifically, the question asked, "To what extent do you believe this particular promotional offer is likely to: Attract consumers to the store? Attract non-users to try this brand? Make customers stockpile (i.e., buy a large quantity of the product)? and Lead to customers buying other non-promotional products from this store?" Ratings for the four consequence items were elicited on a seven-point scale, anchored at "Not at all likely/very likely."

TABLE 2

STUDY 4 MEANS FOR PURCHASE INTENTION BY CONDITION

	Experimental condition	
Restriction	Low discount: 5%	High discount: 50%
Time limit	3.57	4.97
Purchase limit	3.30	5.13
Purchase precondition	3.25	5.03
Control—no restriction	3.75	4.22

Results and Discussion

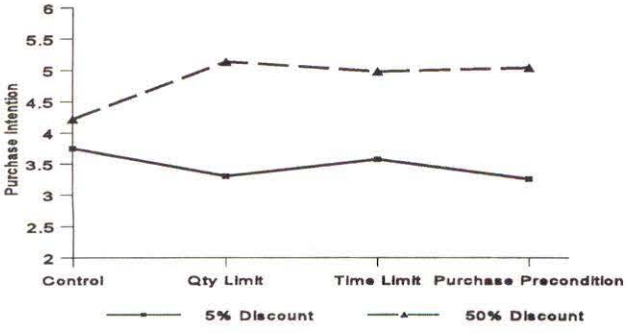
Restriction Effects. To test for the effects of presence of restrictions on purchase intent (Hypothesis 1) and the interactive effects of restrictions and discount levels (Hypothesis 3), we conducted a 2 (discount level) × 4 (restrictions) × 3 (brands) ANOVA on the purchase intent measure. Cell means are given in Table 2. As expected, there is a significant interaction between discount level and restriction ($F(3, 232) = 3.54$, $p < .05$), while the main effect of discount is also significant ($F(1, 232) = 66.38$, $p < .01$). The effect of the brand factor interacted with the discount factor ($F(2, 232) = 6.63$, $p < .01$) but was not involved with any interactions with the restriction factor. Purchase intentions were higher as the discount increased for each restriction condition: quantity limit ($\bar{X} = 3.30$ vs. $\bar{X} = 5.13$, $t(232) = 5.46$, $p < .05$), purchase precondition ($\bar{X} = 3.25$ vs. $\bar{X} = 5.03$, $t(232) = 5.14$, $p < .05$), time limit ($\bar{X} = 3.57$ vs. $\bar{X} = 4.97$, $t(232) = 3.92$, $p < .05$), and control ($\bar{X} = 3.75$ vs. $\bar{X} = 4.22$, $t(232) = 1.36$, $p < .10$).

An analysis of the discount by restriction interaction, depicted graphically in Figure 3, reveals that at the 50 percent discount level, all three promotions with restrictions were associated with a higher purchase intent than the control promotion. Individual contrasts versus the control condition show that this effect is significant for each of the three restrictions—the purchase-limit restriction ($\bar{X} = 5.03$ vs. 4.22, $t(232) = 2.41$, $p < .05$), the purchase precondition restriction ($\bar{X} = 5.13$ vs. 4.22, $t(232) = 2.60$, $p < .05$), and the explicit time-limit restriction ($\bar{X} = 4.97$ vs. 4.22, $t(232) = 2.13$, $p < .05$).

Conversely, at a low discount level (5 percent) restrictions appear to have little effect. None of the three restrictions affected purchase intent, with a mean of 3.75 for control versus 3.30 for the quantity limit ($t(232) = -1.49$, not significant [NS]), 3.25 for the purchase precondition ($t(232) = -1.28$, NS), and 3.57 for the time limit (t

FIGURE 3

THE MODERATING EFFECT OF DEPTH OF PRICE CUT ON PURCHASE INTENTION: STUDY 4



< 1). Interestingly, similar to study 3, it appears that restrictions on unattractive promotions lead to directionally lowered purchase intent. Thus, the results of this study replicate our earlier results and support our premise that consistency with other deal-related cues enhances the effect of restrictions. Conversely, restrictions can decrease purchase intent if paired with a small discount.

Attesting to the generalizability of the effect of restrictions, we found the effect of the three restrictions to be similar. In other words, if the control condition is omitted, a 2 (discount) $\times$ 3 (restriction) $\times$ 3 (brands) ANOVA shows both a null effect of restriction ($F < 1$) as well as a nonsignificant discount $\times$ restriction interaction ($F < 1$). The only significant effect in this analysis is the discount level $\times$ brand interaction ($F(2, 174) = 7.36$, $p < .01$). The lack of main or interaction effects on restriction suggests that the documented phenomenon is a generalizable restriction phenomenon versus a specific purchase quantity–limit, purchase precondition, or time-limit phenomenon.

Routes to Purchase Intentions. The following analyses, testing Hypothesis 5, explore the differences in how the three restrictions increase purchase intent. The type of analysis used is moderated mediation (Menon, Raghubir, and Schwarz 1995), a modification of the standard mediation analysis (Baron and Kenny 1986). The factors mediating the effect of discount level on purchase intent are modeled separately for each of the three restrictions. As in study 3, perfect mediation is demonstrated if the independent variable exerts a significant effect on the mediator as well as on the dependent variable, but the independent variable's effect on the dependent variable becomes nonsignificant when the mediating variable is incorporated as a covariate. If the effect remains significant but the effect size significantly reduces, partial mediation is demonstrated. The analyses (one-way ANOVAs of discount level on purchase intent and each of the mediators, followed by an ANCOVA of discount level on purchase intent incorporating the four beliefs as covariates) are done separately for each restriction.

Hypothesis 5a predicts that the effect of discount level when a restriction is imposed by a quantity limit is via beliefs regarding the likelihood of stockpiling. As expected, discount level exerts an effect on both beliefs of the likelihood of stockpiling ($F(1, 70) = 14.16$, $p < .01$) and of purchase intent ($F(1, 70) = 26.64$, $p < .01$). Further, as predicted, when the potential mediators are included in the analysis, the effect of discount level on purchase intent reduces ($F(1, 62) = 5.22$, $p < .05$), while only the effect of likelihood of stockpiling is significant ($F(1, 62) = 15.26$, $p < .01$). Thus, partial mediation is observed for this belief.

Hypothesis 5b predicts that the effect of discount level restricted by a purchase precondition will be mediated by beliefs regarding the purchase of other, nonpromoted, brands in the store. This hypothesis is not supported. Although the effect of discount level on both the belief of the likelihood of purchasing other nonpromoted products ($F(1, 70) = 12.57$, $p < .01$) and purchase intent ($F(1, 70) = 31.18$, $p < .01$) is significant, only the belief that the deal would attract nonusers emerges as a partial mediator.

Hypothesis 5c—which predicts that the effect of discount level on purchase intent in the presence of restrictions will be mediated by beliefs regarding the number of customers the deal would attract—is supported. For quantity limits, the belief that the deal will attract consumers in general is significant ($F(1, 62) = 10.97$, $p < .01$), partially supporting Hypothesis 5c. As discussed above, the belief that the deal will attract nonusers partially mediated the effect of discount level for purchase preconditions. Finally, for time limits, discount level exerts a significant effect on purchase intent ($F(1, 70) = 18.88$, $p < .01$) and on subjects' estimated likelihoods that the deal will attract more customers in general ($F(1, 70) = 19.91$, $p < .01$) and new users in particular ($F(1, 58) = 25.62$, $p < .01$). Further, the ANCOVA shows that the effects of these two mediators is significant ($F(1, 50) = 3.83$, $p < .05$ and $F(1, 50) = 11.42$, $p < .05$, respectively), while the main effect of discount level on purchase intent substantially reduces ($F(1, 50) = 5.01$, $p < .05$), again demonstrating partial mediation. In sum, these results suggest that although restrictions all serve to signal value, they appear to do so through different routes.

GENERAL DISCUSSION

Our four studies using different methods (i.e., grocery sales data, a simulated grocery store experiment, and a survey), different samples (i.e., West Coast, Midwest, and Hong Kong), and operationalizations of restrictions (i.e., purchase quantity limit, purchase precondition, and time limit) consistently demonstrate that imposing a purchase restriction on a promoted brand can increase the choice probability for the restricted brand. This effect is a function of contextual variables (e.g., discount) and individual difference variables (e.g., need for cognition). Taken together, our results establish the nomological validity of

the thesis that restrictions are a source of information that consumers use to assess deal value, the use of which depends on the consistency of alternative sources of information.

To assess the significance of the results across studies, measures, and types of restrictions, we examine the significance level across all tests in studies 3 and 4. We use the test of mean p's ($\bar{p}$) recommended by Rosenthal (1978), which computes a standard normal variate: $Z = (0.5 - \bar{p})(12N)^{0.5}$, where N is the number of tests. We compute this measure for both the positive effect of restrictions at the high discount level and the negative effect at the low discount level across the two restrictions in study 3 for both deal evaluations and purchase intent (four measures), as well as the effects in study 4 (three measures), for a total of seven tests. Further, in order to be conservative we use the p-value based on two-sided tests. The resulting z-value for the positive effect of restrictions is 4.23, whereas the resulting z-value for the negative effect of restrictions is 3.30, both significant at $p < .01$. The z-values, based as they are on near identical samples, suggest that the strength of the positive effect is somewhat larger than the negative effect.

This article makes several contributions. First, we have shown that restrictions serve to activate a mental resource that is used to render a judgment regarding a promoted product. In the absence of other information, this resource appears to lead to an inference of "good value." In the presence of other value-related cues, however, either data-based (e.g., depth of discount) or conceptually based (e.g., need for cognition), the resource is used in conjunction with the other cues as a basis for judgment, leading to different effects across levels of these other value-related cues. Thus, in study 2, restriction affects only low NFC individuals because high NFC individuals supply the same resource as the restriction. Studies 3 and 4 show that restriction sensitizes people to the offer's quality. Thus, the restriction increases purchase intention when the deal is substantial (i.e., a 20 percent or 50 percent discount) and decreases it when the deal is minimal (i.e., a 5 percent discount).

Second, we contribute to the literature on unavailability by examining contingencies under which the predictions of scarcity theory (i.e., scarcity acts as a cue that enhances a good's value [Verhallen and Robben 1995]) do not obtain. Specifically, the effect of restrictions is not uniform across all conditions. Rather, the effect is modified by the presence of other variables. We identify two important variables (i.e., depth of discount and need for cognition) that help explain the contingencies under which scarcity tactics are effective. Our research is consistent with the notion of a contingency commodity theory recently proposed by Bozzolo and Brock (1992), which examines the moderating role of contingency variables such as the need for cognition and strength of message on the scarcity-value relationship. Furthermore, our research points to conditions wherein scarcity theory might not apply, namely, when other deal information sources such as discount level are present.

Finally, we demonstrate that all restrictions are not created equal. We find that different restrictions signal deal value in different ways. Consumers appear to perceive that time limits are used to attract consumers to the brand, while quantity limits are necessary to reduce stockpiling. This suggests other possible differences across restrictions. For example, quantity limits could imply brand quality (i.e., this brand at this price is so good that purchases must be limited). In contrast, purchase preconditions force the consumer to spend a certain amount to qualify for the deal, which suggests that inferences about the absolute quality of the promoted item would decline from purchase limits (highest quality) to time limits to purchase preconditions (lowest quality). This might be expected to be particularly true for unfamiliar brands.

Little work has been done to investigate the role of restrictions on sales. Our research suggests that restrictions can have an impact on brand choice in certain contexts. Thus, when an appropriate restriction is used in conjunction with an appropriate price cut and presented to appropriate consumers, restrictions can be a very effective promotional tool. The advantage of a restriction such as a purchase quantity limit is that it allows the retailer to increase sales to regular buyers of a brand and increase sales to new buyers, while simultaneously restricting sales to price sensitive "cherry pickers" who only buy on deal and stockpile. However, caution must be exercised when setting the restriction for the brand, an avenue in need of research (e.g., Wansink, Kent, and Hoch 1997). For instance, if the restriction is too stringent (e.g., a minimum store purchase of $100), the sales lost to people who cannot (or refuse to) meet the requirement may lead to a decrease in sales. Similarly, if a quantity limit is set too low, the resulting ceiling on sales may cause consumers attracted by deeper price cuts to be prevented from increasing their transaction size on the brand.

If restrictions are used by some consumers to assess deal value, the public policy implications for consumer advocacy groups are clear. Restrictions can be used by unscrupulous marketers to dupe some consumers into believing that a mediocre deal is a good deal. Public policy makers should be interested in seeing that restrictions are not used to deceive consumers, and public policy may be required to ensure that restrictions are employed only under appropriate circumstances.

Finally, although study 2 examined effects of NFC, this variable was employed as a tool to examine the impact of motivation on reactions to restrictions on deals. Practitioners do not need to be aware of individual differences in order to use this information—they simply need to assess the extent to which consumers are likely to be motivated in a particular context. Future studies should examine the impact of situational motivation to verify results similar to the NFC results. Managers do not need to focus only on a subset of consumers; if seeing the restriction is a critical factor, practitioners should make

the fact that there is a restriction more salient at the point of purchase (e.g., through point-of-purchase advertising) or in feature advertisements (Haugtvedt and Petty 1992; Haugtvedt et al. 1992).

LIMITATIONS AND FUTURE RESEARCH

Study limitations and directions for future research deserve mention. First, due to the within-subject design and potentially obtrusive measures in study 4, the mediation results of the different beliefs on purchase intentions should be viewed as preliminary and in need of verification in future research. Second, we communicated all discounts using a "——— percent off" frame. The efficacy of restrictions in increasing sales for promotions using different semantics is a promising area of future endeavor. Lichtenstein, Burton, and Karson (1991) show that the manner in which a promotion is worded affects how it is evaluated. Deal semantics have hitherto been treated as contextual cues that affect the perception of focal cues such as price level (Das 1992; Lichtenstein et al. 1991). For example, consumers can use the information contained in a "——— percent off" frame to assess the value of a promotion more easily than if they were presented with a "Now Only $———" frame, where the actual discount information is missing and the regular price is not provided. For purchase preconditions, framing the restriction as a hurdle that a consumer has to pass prior to being eligible for the deal versus framing the deal as a reward for a consumer who has already spent a fair amount in the store is likely to be differentially effective.

Our results suggest that a restriction can affect consumer behavior through three possible routes: (i) the affective route, through making consumers feel irritated or inconvenienced by the offer, (ii) the economic route, through making the consumer lose an opportunity to stockpile at a low price, or forcing him or her to make additional purchases; or (iii) the informative route, through changing what consumers believe about the transaction. The first two routes should lead to sales restrictions reducing sales, and the negative effect of restrictions at low discount levels noted in studies 3 and 4 suggest an unfavorable, "boomerang" affective reaction to restrictions overpowering any positive informational effect. This attests to the importance of studying all three routes in future research by examining the effects of sales restriction in particular and of promotions in general.

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