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Buy four get 30% off: how consumers respond to missing a quantity discount

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Abstract

Purpose – This paper aims to examine how consumers evaluate and respond after failing to receive the promotional price for a quantity discount because the minimum purchase requirement (MinPR) is out of reach. Although quantity discounts are effective in terms of increasing sales volume, the outcome of using them is not always positive.

Design/methodology/approach – Two 2 × 2 experiments are carried out to test the research hypotheses in the context of apparel shopping.

Findings – The results of Experiment 1 demonstrate that offering quantity discounts with a high MinPR (e.g. “4 for 30 per cent off”) can result in greater willingness to buy (WTB) a single product at the full price than offering promotions with a low MinPR (e.g. “2 for 30 per cent off”) in the wake of a missed quantity discount. In other words, the purchase quantity has a positive effect on the consumers’ WTB even when they are not able to take advantage of the discount. However, this relationship weakens when the selection of discounted items is limited (i.e. the scope of the promotion is narrow). The results of Experiment 2 reveal that when the missed quantity discount is based on dollars rather than on the number of pieces (e.g. “Buy $100, get 30 per cent off” vs “Buy four pieces, get 30 per cent off”), the effect of purchase quantity on WTB is enhanced. Finally, perceived closeness of purchase outcome to the MinPR mediates the effect of purchase quantity on WTB.

Research limitations/implications – To maximize internal validity, hypothetical scenarios were used as stimuli rather than an actual consumption experience, and the setting involved only a single product category (clothing). Future work including other types of merchandise and a more natural setting is needed to generalize our findings.

Practical implications – The purchase quantity or MinPR serves as a reference point that influences consumers’ purchase decisions, even those who do not buy enough to qualify for the price reduction. Our findings suggest that retailers should specify a relatively high MinPR for quantity discounts. In addition, proper selection of the promotional scope and discount base will significantly improve consumers’ behavioral reactions when they are not able to take advantage of a quantity discount.

Originality/value – The primary contribution of this article to the marketing literature is that it provides empirical results that shed some light on the situational influences that missing a quantity discount has on the consumer’s WTB a single product at the regular price, and what the mechanisms for the purchase quantity effect might be.

Keywords Consumer behavior, Promotion, Purchasing, Clothing, Discounts

Paper type Research paper

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Introduction

The offering of a quantity discount, where the unit price declines with the purchase of larger quantities, is a common strategy used by retailers to increase their sales volume. For example, a clothing store might offer a discount on shirts that are regularly priced at $25 as “Buy 4, get 30 per cent off” or “Spend $100, get 30 per cent off”. From the retailer’s perspective, the consumers’ additional purchase will not only compensate for the lower profit margin for discounted items, but may also serve to increase overall profit (Teng, 2009).

Although quantity discounts are effective in terms of increasing sales volume, the outcome is not always positive (Foubert and Gijsbrechts, 2007; Manning and Sprott, 2007; Wansink et al., 1998). Several studies have examined the adverse effects of quantity discounts on the consumer side (Gu and Yang, 2010; Wu et al., 2012; Yoon and Vargas, 2010). Wu et al. (2012), for example, found that consumers who failed to receive a quantity discount reported the highest perceptions of unfairness and negative emotions. Yoon and Vargas (2010) demonstrated that consumers experienced frustration and felt worse when their expectation of receiving a quantity discount is violated. In another study, Gu and Yang (2010) examined scanner panel data related to consumer purchases of two major brands of light beer. They further concluded that quantity-discount-induced losses have a significant impact on consumer buying behavior.

Obviously, the quantity discount can be a double-edged sword. Consumers may perceive it as a gain to buy larger package sizes at lower unit prices or as a loss when buying smaller package sizes with higher unit prices (Gu and Yang, 2010). Although the adverse effects of quantity discounts have been highlighted in several studies (Gu and Yang, 2010; Wu et al., 2012; Yoon and Vargas, 2010), the situational influences that govern how consumers react to a missed quantity discount have not been explored. Emerging evidence shows that people’s consumption behaviors are mostly constructive and context-dependent (DelVecchio et al., 2007; Grewal et al., 1998; Kumar et al., 1998). Retailers need to recognize how the consumers’ response to missing a quantity discount is affected by situational cues so as to design more effective quantity discount strategies and formats. Thus, in this study, we explore how the form in which the quantity discount is expressed and the setting in which it is offered may influence the consumers’ consumption decisions. Specifically, we investigate the roles played by the minimum purchase requirement (MinPR) (low vs high), discount base (piece- vs dollar-based), and promotion scope (i.e. the number of items included in the promotion) in determining consumers’ likelihood to purchase one product at the full price when the discount mentioned in the promotion is missed because the MinPR is out of reach.

Two experiments are carried out. In Experiment 1, we examine whether quantity discounts having a high MinPR will result in stronger willingness to buy (WTB) a single product at the regular price when the reduced price is missed than quantity discounts having a low MinPR. In other words, we test whether there is a positive relationship between the purchase quantity and WTB. Next, we explore whether the effect of purchase quantity on WTB becomes less pronounced when the selection of discounted items is limited (i.e. a narrow promotion scope). In Experiment 2, we examine whether a dollar-based quantity discount (e.g. Buy $100, get 30 per cent off) will enhance the positive effect of purchase quantity when a reduced price is missed. Finally, we test whether the effect of purchase quantity on WTB is mediated by the perceived closeness.
of the purchase outcome to the MinPR. The results will not only assist retailers in
designing better promotional strategies for quantity discounts, but also make a broader
contribution to the marketing literature by providing insight into the situational
influences and psychology that govern how consumers respond to losing out on a
quantity discount.

Conceptual background

Purchase quantity

Quantity discounts are a fundamental pricing strategy used in retail marketing, but they
often come with restrictions or conditions specifying the number of items the consumers
must buy or how much money they should spend to obtain the promotional price (Dolan,
1987). When fewer than the specified number of items are purchased or less than the
designated number of dollars are spent, the promotional discount is not available. With
a view towards increasing the amount purchased, some retailers choose to set a higher
MinPR as a prerequisite for the discount, meaning that more must be bought to receive
the lower price.

How do quantity discounts affect consumers’ purchase quantity decisions? Using a
simple anchoring and adjustment model, Wansink et al. (1998) demonstrated that the
purchase quantity requirement specified in the ads served as an anchor, influencing how
many units of packaged goods the consumer would buy. Across four studies, they found
evidence that anchor-based promotions – presented as multiple item promotions or
quantity discounts – can effectively increase sales because the consumers tend to
purchase more units when they see high promotional anchors. Similarly, Yoon and
Vargas (2011) reported that quantity restrictions (e.g. 40 percent off if you buy at least
5 packages of Brand A soup) shape the quantities purchased by the consumer. Manning
and Sprott (2007) found that multiple item promotions had a positive effect on quantity
purchase intentions only when the specified quantity anchor was high (e.g. 8 or 20, as
opposed to 2 or 4), and only for frequently consumed products.

Although past studies have confirmed the effectiveness of the quantity discount
strategy, none have explored the consequences associated with missing a discount
framed with low-versus high-quantity anchors. In other words, they do not answer the
following questions: Does a high MinPR help to attract consumers even if they do not
buy enough to qualify for the price reduction and what is the underlying mechanism for
this effect? For example, in the process of browsing in a clothing store, the consumers
often find that certain styles, colors or sizes of interest have been sold out. In such a
situation, how likely are they to purchase a single product sold at a full price when the
quantity discount is missed because they cannot find enough items to meet the low
versus high MinPR (e.g. “2 for 30 per cent off” vs “4 for 30 per cent off”)? By offering $N$
itens at a reduced price, the retailer provides an external reference price, and this may
affect consumer perceptions of the price of the product (Wu et al., 2012; Yoon and
Vargas, 2010). Thus, consumers missing the promotional price may perceive the normal
price as too high, interpreting it as a loss if they were to buy the product (Zeelenberg
and Van Putten, 2005). This loss aversion (Tversky and Kahneman, 1991) can make
consumers reluctant to purchase the product at the regular price.

Although it has been confirmed that the quantity discount can have a detrimental
impact on the consumer’s emotional reactions and subsequent behavior (Gu and Yang,
2010; Wu et al., 2012; Yoon and Vargas, 2010), other studies have also demonstrated that
consumption decisions are not only determined by the price judgment but also by the particular contextual variables employed by the retailer (Grewal et al., 1998; Kumar et al., 1998). One of the most important contextual cues in quantity discount advertising is the MinPR, where the consumer is required to purchase a certain minimum amount of the product, or to spend a minimum amount of dollars, to qualify for a discount (Dolan, 1987). As mentioned by Yoon and Vargas (2010, p. 1080):

[…] the presence of a MinPR in a promotional message can lead a consumer to suboptimal decisions by drawing attention to the MinPR itself. This causes the consumer to use the MinPR as a reference point for evaluating her purchase outcome.

Thus, the likelihood of consumers who fail to receive a quantity discount to purchase the single product at a regular price will be partially determined by the perceived closeness of the undiscounted purchase outcome to the MinPR.

In the next section, we will explain the discrepancy in how consumers evaluate and respond to a missed quantity discount with a low versus high MinPR. Findings from the literature on counterfactual thinking offer insight into how a close miss or a distant miss is perceived by consumers. We thus anticipate that the reaction to losing out on a quantity discount will vary with different levels of MinPR because of different closeness perceptions between the undiscounted purchase outcome and the MinPR, which will eventually affect the consumers’ WTB.

Perceived closeness
When individuals experience negative events, or nearly negative events, they usually consider alternatives to reality and mentally play out their consequences (Kahneman and Miller, 1986), a cognitive activity commonly known as counterfactual thinking. Empirical research on counterfactual thinking has found a closeness effect: individuals respond more negatively if the actual outcome is close to a better counterfactual outcome. Kahneman and Tversky (1982), for example, showed that missing one’s plane by 5 minutes was more upsetting than missing it by 30 minutes. Meyers-Levy and Maheswaran (1992) found there to be a difference when the unfavorable outcome was temporally close to the counterfactual act (e.g. a fire occurred only three days after forgetting to renew the insurance policy) rather than temporally remote (e.g. fire broke out six months after forgetting to renew the insurance). In the former case, the participants spontaneously generated more counterfactual thoughts and greater negativity. In their investigation of the emotional reactions of Olympic medalists, Medvec et al. (1995) revealed that silver medal winners (who missed a gold medal by a narrow margin) expressed greater regret than bronze medal winners (who missed a gold medal by a wider margin). More recently, Kühberger et al. (2011) carried out a study where they manipulated closeness levels (very close, close, distant and very distant) in three hypothetical vignettes (time, space, number). They confirmed that participants predicted that they would feel a stronger negative affect if the margin by which they failed to attain the goal was smaller.

In addition, Estelami et al. (2007) reported that consumer perceptions of service quality are worse when their request for a price-matching guarantee misses the policy deadline by a short time period than a long time period. Finally, Lassar et al. (1999) examined how the timing of product failure in relation to warranty coverage influences consumers’ affective and behavioral reactions to product breakdowns. Their results
demonstrated that affective reactions and repurchase intentions are much more negative when the consumers just miss the warranty as compared to conditions where the product breakdown occurs long after the expiration of the warranty.

Looked at altogether, these studies indicate that the perceived closeness of a harmful outcome to a more desired alternative outcome has an influence on the consumers’ affective responses, perceptions and repurchase intentions. The smaller the distance, the stronger the negative reaction (Kahneman and Miller, 1986). Extending the above findings, it is expected that the consumers’ behavioral intention to a missed quantity discount will be influenced by the perceived closeness of the undiscounted purchase outcome to the MinPR (i.e. buying one item at the full price vs N items at the lower promotional price). Because forgoing a low-MinPR quantity discount (e.g. “2 for 30 per cent off”) may lead to the perception of a near miss (1-2 = −1) and a high-MinPR quantity discount (e.g. “4 for 30 per cent off”) may produce a far miss perception (1-4 = −3), based on the above discussion, we thus hypothesize that losing out on a low-MinPR quantity discount (near miss) will result in a lower WTB than a high-MinPR quantity discount (far miss). Put differently, consumers who miss a quantity discount with a high MinPR are more likely to purchase a single unit of the product at the regular price than when there is a low MinPR:

\[ H1. \] Consumers who fail to receive a quantity discount show greater WTB one unit of the product at the regular price when the necessary minimum purchase quantity is high rather than low.

In addition, as forgoing a quantity discount with a low versus high purchase quantity (two for vs four for) gives rise to different closeness perceptions between the undiscounted purchase outcome and MinPR (near miss vs far miss), which in turn affect the consumers’ WTB a single product at the normal price (low WTB vs high WTB), it is expected that the effect of purchase quantity on WTB will be mediated by the perceived closeness. Formally stated:

\[ H2. \] After having forgone a quantity discount, the perceived closeness of the undiscounted purchase outcome to the MinPR mediates the effect of purchase quantity on WTB.

**Moderator of promotion scope**

However, as explained below, the positive effect of purchase quantity on WTB is tempered or moderated by the promotion scope. Promotion scope is defined as the number of items or product categories discounted (Lam et al., 2001). A retailer can offer a discount for an entire group (e.g. a sale on “All” items) or on a subset of advertised items (e.g. a sale on “items marked with a red tag” – only items marked with a red label qualify for the quantity discounts). Previous studies indicate that larger assortments enable consumers to fulfill their variety-seeking needs and purchase goals more effectively (Kahn and Lehmann, 1991; Simonsons, 1999). It has also been argued that a wider assortment means that consumers will have a higher chance of finding an option matching their preferences than a narrow assortment does (Chernev, 2003a; Oppewal and Koelmeijer, 2005). Lam et al. (2001) confirmed that greater promotion scope increases store traffic and consumers are more likely to make a purchase. Nevertheless, it is not clear what would happen if consumers fail to meet the MinPR and thereby their
expectation of receiving a quantity discount is violated in a situation where a wide breadth of discounted merchandise is offered versus a narrower breadth.

Attribution theory studies have shown that people attempt to make causal inferences about unexpected and negative events and these affect their reactions (Weiner, 1985; Huang, 2008). Folkes (1984), for example, found that attributions about responsibility for a product failure affected the degree to which consumers believed a refund and apology were deserved. Similarly, failing to buy a product that is on sale may prompt consumers to attribute this unfavorable outcome to those responsible (Wu et al., 2012). Retailers are more likely to be blamed when the promoted items are limited to a small rather than a large range. The logic behind this is that consumers with limited options might feel that the reason they cannot buy enough to qualify for a quantity discount is because the scope of the promotion is too narrow. Thus, they feel that if the retailer had offered a more extensive number of discounted items, they would have succeeded in meeting the MinPR and could have received the lower promotional price. This type of attribution will inhibit their buying behavior (Huang et al., 2010). As a result, consumers who miss out on a quantity discount are less likely to make a purchase when the promotion scope is perceived to be narrow, regardless of whether MinPR is high or low. In other words, the positive effect of purchase quantity on WTB is diminished when the range of promotional items is restricted. Thus, we hypothesize that:

H3. After having forgone a quantity discount, the promotion scope moderates the effect of purchase quantity on WTB, such that the purchase quantity will have a positive effect only when the promotion scope is broad, not when it is narrow.

Experiment 1
Research design and stimuli
A 2 (purchase quantity: low vs high) × 2 (promotion scope: narrow vs broad) between-subject factorial design was used to test the predictions. This study assesses the impact of the unavailability of quantity discounts in the context of apparel shopping. This target group was selected for several reasons:

- Quantity discounts are one of the most common promotional strategies among clothing retailers, and the single-unit price and multiple-unit price are easily comparable by consumers. More importantly, the policy of the retailers is to not allow the consumer to obtain the discount when less than the designated amount is purchased.
- The probability of not meeting the MinPR and thus failing to obtain the quantity discount is high in this industry, because the styles, colors or sizes of interest are often out of stock.
- Undergraduate students are real-life consumers who purchase their own clothes at such retail outlets.

In the low-quantity condition, consumers were offered a quantity discount if they purchased at least two items: in the high-quantity condition, a purchase of four items was required to get the discount. Promotion scope was manipulated by varying the designated scope of items to which the quantity discounts applied: a narrow scope with a selection of 20 different shirts and a broad scope with 60 shirts. For example, participants in the low purchase quantity and narrow scope condition were asked to
imagine the following scenario (the high purchase quantity and broad scope condition appears in brackets):

You want to buy a new shirt. In an advertisement for a local store you find that they are promoting their seasonal products that include 20 (60) different stylish shirts. You see a nice one in the ad that is regularly priced at $25 and is now being offered at “2 for 30 per cent off! (4 for 30 per cent off)” You are interested and decide to go to the store to check it out. When you get there you find the favored item but, because the discount outlined in the promotion is not available when less than the quantity specified is purchased, you try to find other suitable shirts among the designated 20 (60) choices. After half an hour of searching and trying on, you still cannot find enough items to meet the store’s MinPR because the styles, colors, or sizes that interest you are sold out.

Participants
The participants were 170 college students enrolled in business-related courses at a large national university in Taiwan. They were randomly assigned one of the four scenarios and asked to imagine themselves as the consumer in that scenario. After having read the scenario, participants indicated their likely actions. This role-playing approach has been successfully used in a number of quantity discount studies (Manning and Sprott, 2007; Yoon and Vargas, 2010).

Owing to some partial non-responses, the usable sample size was 157, with each group ranging in size from 37 to 38. Approximately 57.3 per cent of the participants were female and their average age was 21.7 (SD = 2.3). Of these participants, 74.4 per cent reported that they had actually missed out on a quantity discount at a clothing store in a way that was very similar to the story outlined in the scenarios.

Measures
WTB was assessed on a seven-point Likert scale in response to the following question: “The likelihood that you would purchase the single shirt without the discount is” (1 = very unlikely to 7 = very likely) (Van Putten et al., 2008). The measure of perceived closeness was modified from that used by Argo et al. (2005) and participants rated the distance of undiscounted purchase outcome relative to the MinPR using two items (1 = far/away from MinPR to 7 = close/next to MinPR, r = 0.63).

In addition, price perception (“The price of $25 that the clothing store is asking for the shirt is? 1 = low/acceptable to 7 = high/unacceptable”, r = 0.83, borrowed from Koukova et al., 2012), prior experience with missing quantity discounts at a clothing store (“How often have you experienced missing out on a quantity discount at a clothing store? 1 = rarely to 7 = frequently”), and average amount of clothes purchased (“How much do you spend on clothes monthly in general?”) were collected as possible covariates. At the end of the survey, participants were asked to complete some demographic information. As these covariates and demographic variables had no significant effect in either of the experiments, they were excluded from further analysis.

Manipulation checks
A two-item, seven-point Likert scale was employed to capture the participants’ perceptions of purchase quantity: “I think buying two/four pieces to get a discount is a high threshold” and “I think buying two/four pieces to get a discount is an easy requirement to meet” (r = −0.73). The low-quantity group received a mean rating of 3.47
and the high-quantity group a mean rating of 5.01, t(155) = −8.84, p < 0.001, showing that the manipulation was perceived as intended. The effectiveness of the promotion scope manipulation was measured by comparing participants’ perceptions of variety in the choice alternatives across the experimental conditions (Chernev, 2003b). There was a variety of perceptions indicating significant differences between the narrow and the broad promotion scopes. The mean evaluation for the narrow scope was 3.13, which was significantly different from 4.47, the mean evaluation of the variety in the broad scope (seven-point scale: 1 = very limited, 7 = overwhelming; t(155) = −5.91, p < 0.001), meaning that the manipulation was perceived as intended.

Results
To test the hypotheses, we performed a two-way analysis of variance (ANOVA) on WTB with purchase quantity and promotion scope as independent variables. As expected, there was significant support for H1 which predicted a main effect of purchase quantity on the likelihood of purchase (M\text{low quantity} = 3.57 vs M\text{high quantity} = 4.06, F(1, 145) = 4.17, p < 0.05), where participants in the high-quantity group reported greater likelihood to purchase a single item at the full price than those in the low-quantity group. Moreover, this effect was qualified by a significant two-way interaction between purchase quantity and promotion scope, F(1, 145) = 5.13, p < 0.05. As can be seen in Figure 1, there was an insignificant difference in the WTB between the low- and high-quantity groups for participants in the narrow scope conditions (M\text{low quantity} = 3.81 vs M\text{high quantity} = 3.76, t(72) = 0.146, p = 0.88). Conversely, for participants in the broad scope conditions, the WTB was greater when the purchase quantity was high than when it was low (M\text{low quantity} = 3.32 vs M\text{high quantity} = 4.37, t(73) = −3.33, p < 0.001). Hence, H3 was supported. The effect of purchase quantity on WTB was moderated by the promotion scope.

The mediation proposed in H2 was tested by completing the series of regression models prescribed by Baron and Kenny (1986). The first regression model (F = 4.74; p < 0.05; r² = 0.02) indicated that purchase quantity (0 = low-quantity, 1 = high-quantity)
had a positive effect on WTB when the quantity discount was missed ($\beta = 0.18; t = 2.18; p < 0.05$). The second regression model ($F = 114.10; p < 0.001; r^2 = 0.44$) revealed the anticipated negative association between purchase quantity and perceived closeness ($\beta = -0.67; t = -10.68; p < 0.001$). In the final regression model, WTB was regressed in terms of both purchase quantity and perceived closeness, which was used to assess whether the mediator had a significant effect on WTB while controlling for the purchase quantity effect. The results ($F = 3.70; p < 0.05; r^2 = 0.04$) showed that the perceived closeness had a significant effect on WTB ($\beta = -0.25; t = -2.29; p < 0.05$), but the effect of purchase quantity was reduced to an insignificant level ($\beta = 0.05; t = 0.43; p = 0.67$). The Sobel test confirmed a significant mediation effect of perceived closeness (Sobel test $= 2.61; p < 0.01$). Thus, $H2$ was supported. These findings suggest that when a quantity discount is missed, the purchase quantity specified in the promotion can generate a counterfactual closeness perception, which in turn influences the consumer’s WTB.

**Discussion**

The results from Experiment 1 revealed that the higher the purchase quantity, the greater consumers’ likelihood to purchase the product at the regular price when a quantity discount was missed. However, this effect was moderated by the promotion scope. That is, a limited number of discounted items (narrow scope) lessened the positive effect of purchase quantity on WTB. In addition, it was found that the perceived closeness of the undiscounted purchase outcome to the MinPR mediated the effect of purchase quantity on WTB when losing out on a quantity discount.

In this experiment, we examined how low (two pieces) versus high (four pieces) purchase quantity influences WTB when a reduced price is missed. However, in some cases, retailers offer discounts based on the total amount spent instead of the number of pieces. For example, Lotus Traders, Muaythai-Fighting, Hewats Edinburgh and Dancewear Solutions provide quantity discounts for orders greater than $30, $80, £100 and $400, respectively, in their apparel shopping. What is the impact when a low versus high purchase quantity is framed in different units (e.g. “Buy four pieces, get 30 per cent off” vs “Buy $100, get 30 per cent off”)? Although both forms of the piece- and dollar-based quantity discount have an economically equivalent MinPR (four pieces = $100), their impact on the consumers may be different (the unit effect as discussed by Pandelaere et al., 2011). A dollar-based quantity discount is expected to inflate the difference between the undiscounted outcome and MinPR because of the size of the associated numbers (e.g. “$25 vs $100” > “one vs four pieces”). We assume that the positive effect of purchase quantity on WTB will be enhanced when a missed quantity discount is based on dollars.

**Experiment 2**

**Unit effect**

Quantitative information can appear in different units. For example, a cell phone warranty can be specified in terms of months or years (e.g. a 24-month warranty = two-year warranty). An energy bar’s caloric information can be specified in kilocalories or kilojoules. Prior studies have demonstrated that the choice of unit used to describe quantitative information does affect consumer perceptions and decisions (Burson et al., 2009; Monga and Bagchi, 2012; Pandelaere et al., 2011).

Pandelaere et al. (2011), for example, found that consumers perceived a difference between dishwasher warranties based on how they were expressed. They interpreted it
to be better when the length of the warranty period was expressed in relatively small units (84 vs 108 months) as opposed to large units (seven vs nine years). Wertenbroch et al. (2007) investigated monetary differences that are communicated using a weak currency (e.g. Singapore dollars) or a strong currency (e.g. Euros). Given the exchange rate at that time, they revealed that a monetary difference is enlarged when units are small ($1.70 vs $17.00) compared to large (€0.8 vs €8) because smaller units inflate differences (17-1.7 > 8-0.8). Burson et al. (2009) examined how individuals choose between movie rental plans. They found that consumers prefer a plan that is expressed in large (364 vs 468 movies per year) rather than small numbers (seven vs nine movies per week), even though the plans are actually equivalent. Finally, Price (1994) asked participants to rate the likelihood that they would rent a more conveniently located $650 apartment over a less conveniently located $600 apartment. The results showed that consumers’ likelihood of renting the more expensive apartment is significantly decreased when the price difference between the two apartments is expressed in a yearly frame ($600) than a weekly frame ($11.54).

These studies demonstrate that consumers perceive an attribute difference as larger when it is expressed in large numbers (i.e. small units) rather than small numbers (i.e. large units), and that this further leads to changes in preferences. A possible explanation for this so-called “unit effect” is that people judge the numerical information by focusing on the size of the numbers without considering the units, which makes all quantities dimensionless (i.e. they use the numerosity heuristic, Pelham et al., 1994). As a result, higher numbers are perceived as representing bigger quantities. Likewise, ignoring the unit in which the MinPR for quantity discounts is specified may lead consumers to amplify the perceived distance between the undiscounted outcome and the MinPR when the missed quantity discount is based on “large numbers” (i.e. dollars). Therefore, it is reasonable to expect the positive effect of purchase quantity on WTB to be more intense because the relative numerical size of the margin is larger when the quantity discount is based on dollars (e.g. $25 vs $100) rather than on pieces (e.g. one vs four pieces):

**H4.** The positive effect of purchase quantity on WTB will be magnified when a missed quantity discount is based on dollars.

**Experimental design and stimuli**

H4 was investigated using a 2 × 2 between-subject experimental design with two factors: purchase quantity (low vs high) and discount base (pieces vs dollars). Purchase quantity was manipulated as described in Experiment 1. The discount base manipulation refers to the discount preconditions, specifying the number of items the consumers must buy to obtain the discount (i.e. two or four pieces) or the specified dollar amount (i.e. $50 or $100) needed to receive the quantity discount. The scenarios were similar to those used in Experiment 1. In all cases, the product’s regular price was included ($25 per shirt); and it was assumed that only one suitable shirt was found (because certain styles, colors or sizes of interest were sold out), meaning the consumer could not obtain the quantity discount or price reduction (30 per cent off). The scenario in the “Buy $50, get 30 per cent off” (i.e. the low quantity and dollar-based) condition read as follows:

You want to buy a new shirt. In an advertisement for a local store you see a nice one regularly priced at $25 that is now being offered at “Buy $50, get 30 per cent off!” You are interested and decide to go to the store to check it out. When you get there you find the favored item but,
because the discount outlined in the promotion is not available when less than the quantity specified is purchased, you try to find other suitable shirts. After half an hour of searching and trying on, you still cannot find enough items to meet the store’s purchase quantity requirement because certain styles, colors, or sizes of interest are sold out.

Participants and measures
Consumers at a large shopping center were recruited as participants. Advertisements were posted on bulletin boards near each entrance. Volunteers were offered a small gift (about $5 in value) for participating. Data were obtained on a Thursday, a Friday and a Saturday, so that both weekday and weekend consumers were surveyed. Each participant was given a survey kit consisting of a questionnaire and a randomly chosen scenario. The instructions asked participants to imagine themselves as the consumer in the scenario. At the end of the survey, participants were asked to complete some demographic information. A total of 120 consumers took part (30 per condition): 58.2 per cent of the participants were female and had an average age of 39.7 years (SD = 8.4). Of these participants, 65.2 per cent had a college degree or higher and 81.5 per cent reported that they had not been able to take advantage of a quantity discount at a clothing store in a way that was very similar to the story used in the scenarios.

WTB, perceived closeness ($r = 0.70$), and perceptions of purchase quantity ($r = −0.80$) were measured as in Experiment 1. In addition, measures for perceived price levels ($r = 0.81$), priorexperience of losing out on a quantity discount at a clothing store and average amount spent on clothing each month were collected for potential use as covariates.

Results
Manipulation checks
As expected, participants in the low-quantity condition scored lower levels of perceived purchase quantity than those in the high-quantity condition ($M_{\text{low quantity}} = 4.07$ vs $M_{\text{high quantity}} = 5.38$; $t(118) = −7.78; p < 0.001$). A recognition task was employed for the manipulation check of the discount base. Participants were asked to answer whether the quantity discount was based on pieces or dollars. Among these participants, 91.7 per cent of those who received the piece-based discount scenarios and 93.3 per cent of those who received the dollar-based discount scenarios were able to correctly identify the content after reading the scenario ($\chi^2 = 86.72; p < 0.001$). Taken together, the results indicate that the manipulations were effective.

Hypothesis testing
An ANOVA calculation elicited a significant main effect for the discount base ($M_{\text{piece-based}} = 3.70$ vs $M_{\text{dollar-based}} = 4.43$; $F(1, 116) = 6.01; p < 0.05$), but not the purchase quantity ($M_{\text{low quantity}} = 3.90$ vs $M_{\text{high quantity}} = 4.23$; $F(1, 116) = 1.24; p = 0.27$). The interaction between purchase quantity and discount base was also significant, $F(1, 116) = 4.03; p < 0.05$. The nature of these relationships is shown in Figure 2. As hypothesized, when the quantity discount was based on dollars, participants in the high-quantity condition reported higher levels of WTB than those in the low-quantity condition ($M_{\text{low quantity}} = 3.97$ vs $M_{\text{high quantity}} = 4.90$; $t(58) = −2.48; p < 0.05$; see Figure 2). In contrast, when the quantity discount was based on pieces, there was no
significant difference in ratings (for both the low and high purchase quantity conditions) for WTB ($M_{\text{low quantity}} = 3.83$ vs $M_{\text{high quantity}} = 3.57$; $t(58) = 0.57; p = 0.57$), supporting $H4$. That is, a dollar-based quantity discount intensified the positive effect of purchase quantity on the WTB of consumers who have missed out on the opportunity to buy the products at the discounted price.

Next, we again tested mediation following Baron and Kenny (1986). Regression analysis showed that purchase quantity ($0 = \text{low-quantity}, 1 = \text{high-quantity}$) had a significant positive effect on WTB ($\beta = 0.26; t = 2.91; p < 0.01$) as well as a significant negative effect on perceived closeness ($\beta = -0.58; t = -7.78; p < 0.001$). However, purchase quantity was no longer significant ($\beta = 0.09; t = 0.88; p = 0.38$) when perceived closeness was added as a predictor ($\beta = -0.28; t = -2.66; p < 0.001$). The Sobel test further confirmed this mediation (Sobel test $= 3.51; p < 0.001$), supporting $H2$.

Discussion and managerial implications
This study investigates how consumers respond to missing a quantity discount in the context of apparel shopping. Experiment 1 reveals that the higher the purchase quantity, the greater the WTB a single product at the normal price when consumers cannot take advantage of the quantity discount because of purchasing less than the MinPR. This finding adds to existing results, indicating that the purchase quantity or MinPR serves as a reference point that influences consumers’ consumption decisions, even if they do not buy enough to qualify for the price reduction. Our results are valuable to retailers. The implication is that the quantity specified within quantity discounts warrants retailers’ careful consideration. Further, our findings suggest that retailers should specify a relatively high MinPR in quantity discounts. Thus, if consumers fail in meeting this threshold value and a lower promotional price is missed, they are still likely to make a purchase.

Our findings differ from Yoon and Vargas’ (2010) who manipulated the purchase amounts ($\$250.09$ vs $\$249.02$) and examined whether consumers succeeded or failed to attain the MinPR ($\$250$) in the ad message shaped the direction of the counterfactual
thinking, which in turn polarized consumer affect. We chose to manipulate the MinPR (promotional factors) rather than purchase amount (consumer factors), and consumers’ behavioral intention rather than their affect was measured in our study. The implications are significant because the retailer has the power to inflate or deflate the consumers’ purchase intention. It is believed that this manipulation – altering the MinPR instead of the purchase amount – is unique to this paper.

In addition, the data corroborate that the effect of purchase quantity on WTB is mediated by the perceived closeness of purchase outcome to the MinPR. This finding is important because it helps to understand the psychology that governs how consumers evaluate and react after missing out on a quantity discount. Therefore, a notable contribution of the present work is its clarification of the theoretical process by which purchase quantity impacts consumption behavior.

Moreover, we found that the positive effect of purchase quantity on WTB is moderated by the scope of the promotion (i.e. the designated number of items offered on discount), specifically, that a purchase quantity effect exists when the scope of the promotion is broad, but not when it is narrow. If the range of items to which the quantity discount applies is too limited, it may cause consumers to blame the retailer when they fail to obtain a reduced price, which in turn affects the likelihood of purchase. This finding reveals the influence of situational cues that consumers may use to arrive at casual inferences after having forgone a quantity discount. The result also highlights that the decisions retailers make involving selecting the number of items offered for quantity discount are important (Chernev, 2008). Proper selection of the promotional scope and the purchase quantity in particular will significantly improve consumers’ behavioral reactions when losing out on a quantity discount.

One way to enhance the purchase quantity effect is by expressing the quantity discount in relatively large as opposed to small numbers. This can be done by granting consumers a discount when they spend a certain amount of money (“Buy $100, get 30 per cent off”) rather than buying a certain number of items (“Buy four pieces, get 30 per cent off”). The rationale behind this phenomenon is that people tend to focus on the size of the number and ignore the unit in which quantity discount information is offered (Pandelaere et al., 2011). As a result, the perceived distance between the purchase outcome and the MinPR seems greater with dollar-based promotions than piece-based promotions, leading to a higher level of WTB. In other words, the purchase quantity becomes more influential when the discount is based on dollars. This conclusion is consistent with previous findings on the unit effect, showing that the unit in which quantitative information is described affects consumer perceptions and decisions (Burson et al., 2009; Monga and Bagchi, 2012; Pandelaere et al., 2011).

Additionally, our findings are in agreement with the framing effect, where consumers respond differently to different descriptions of the same decision problem (Frisch, 1993). In their seminal work, Kahneman and Tversky (1979) demonstrated that the framing of decision problems can affect consumers’ cognitive judgment and preferences. According to Monroe (1990), the way a price promotion is communicated is similar to the framing of purchase decisions. For example, McKechnie et al. (2012) manipulated identical discounts presented in percentage and absolute terms, and found that discount framing resulted in different consumer perception of transaction value and purchase intention. Gamliel and Herstein (2012) manipulated ad messages in positive and negative frames. Their results show that consumers report less purchase intentions
of a product offered in a positively framed price deal ("save if you purchase") than the conventional negative frame ("lose if you don’t purchase"). In this study, we manipulated discount base in terms of pieces or dollars to describe an equivalent MinPR for quantity discounts. Our findings provide evidence that consumers respond differently to these two different discount base frameworks. Thus, the current research deepens the understanding of the framing effect.

The implication is that it is easier for consumers to accept quantity discount campaigns based on dollars rather than on pieces, after having forgone a quantity discount. In fact, a dollar-based quantity discount may not only benefit retailers but also consumers. It is obviously advantageous for shoppers to have an assortment of products to choose from to meet the dollar threshold. They can reach the MinPR by choosing a variety of products rather than buying multiples of the same items. Retailers such as Dancewear Solutions (who sell various clothes and accessories for dancers at different levels of prices), choose to offer quantity discounts (or volume discounts) based on specific dollar values instead of product units may have similar considerations. Our results further confirm the success of their pricing strategies by showing that even if shoppers failed to receive a discount, they were still likely to purchase the favored product at the higher price.

Finally, it is worthwhile to note that failing to receive a quantity discount is not a special case. Over 70 per cent of participants (including university students as well as consumers at a shopping center) in our experiments have had such an experience. As this is such a common experience, the negative impact quantity discounts might have on consumers does merit further investigation.

In summary, in the present study, we examined the importance of the as yet under-researched issue of how consumers evaluate and respond to a quantity discount with low versus high MinPR when the promotional price is missed. This problem has not been studied previously. In the past, the focus has been on the detrimental effects of quantity discounts (Gu and Yang, 2010; Wu et al., 2012; Yoon and Vargas, 2010). The contextual influences that might affect how consumers respond to missing a promotion have not been explored. The primary contribution of this article to the marketing literature is that it provides empirical results that shed some light on the situational influences that missing a quantity discount has on the consumer’s WTB a single product at the regular price, and what the mechanisms for the purchase quantity effect might be.

Limitations and directions for future research
There are numerous opportunities for future research in this area, some of which are made evident by the limitations encountered in this study. For example, to maximize internal validity, hypothetical scenarios were used as stimuli rather than an actual consumption experience, and the setting involved only a single product category (clothing). Future work including other types of merchandise and a more natural setting are needed to generalize our findings. Moreover, in this study, we examined the influence on consumer reactions to low versus high MinPRs under a discount scheme with a single price break (e.g. “2 for 30 per cent off” or “4 for 30 per cent off”) after a quantity discount is missed. However, in fact, retailers can offer different types of discount schemes with a number of price breaks, for example, “2 for 30 per cent off, 3 for 40 per cent off, and 4 for 50 per cent off”. Here, three price breaks are offered and the
numbers 2, 3, and 4 indicate the price break quantities. We ask the question “Do consumer reactions vary across different discount schemes (single price break vs multiple price breaks) when the promotional price is missed?” Finally, although there are many ways quantity discounts can be framed, we focused on the percentage-off format (e.g. 4 for 30 per cent off). Future research could determine the influence of other saving presentation formats such as a dollar-off (e.g. 4 for $30 off) and a total-expense format (e.g. 4 for $70).

References


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