

Less willing to pay but more willing to buy: How the elicitation method impacts the valuation of a promotion

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Abstract

Willingness to pay (WTP—how much one is willing to pay for something) and willingness to buy (WTB—whether one is willing to buy something at a given price) are two common methods to elicit valuations and normatively should yield the same valuation order between two options. However, this research finds that WTP and WTB can yield opposite valuation orders between the regular offer and the promotional offer of a product. Specifically, it demonstrates that, (a) if the valuation of a product is only elicited with WTP, consumers value the product less when it is offered with a price promotion than when it is not; (b) if the valuation of a product is only elicited with WTB, consumers value the product more when it is offered with a price promotion than when it is not; and (c) if the valuation of a product is first elicited with WTP and then elicited with WTB, consumers always value the product less when it is offered with a price promotion than when it is not. A value-inference account is proposed for the above findings, according to which, consumers infer the value of a promoted product differently when the valuation is elicited only with WTP or only with WTB. Theoretically, this research extends prior literature on sales promotion, showing that the valuation of a promotion is subject to the elicitation method. Practically, this research suggests how to help consumers manage their purchase intentions for promoted products.

KEYWORDS

pricing, promotion, willingness to buy, willingness to pay

1 | INTRODUCTION

Marketers often use promotions to boost the sales of their products (Blattberg & Neslin, 1990; Chen, Marmorstein, Tsiros, & Rao, 2012; Hardesty & Bearden, 2003; Neslin, Henderson, & Quelch, 1985). There is ample empirical evidence supporting that promotions can increase sales (e.g., Ascarza, Lambrecht, & Vilcassim, 2012; Shampanier, Mazar, & Ariely, 2007). However, there is also a line of research showing that promotions can have a negative effect on consumer responses (Kamins, Folkes, & Fedorikhin, 2009; Raghubir, 2004; Simonson, Carmon, & O'curry, 1994). Although prior research has identified some factors, such as the framing of a promotion, the inference of a promotion, and the usefulness of a promotion, that could impact consumers' response to the promotion (Chandran & Morwitz,

2006; Harlam, Krishna, Lehmann, & Mela, 1995; Inman, McAlister, & Hoyer, 1990; Khan & Dhar, 2010; Liu & Chou, 2017; Mishra & Mishra, 2011; Nunes & Park, 2003; Palmeira & Srivastava, 2013), it remains an open question how different elicitation methods will impact consumers' valuation of a promotion. This is the primary question the current work seeks to address.

2 | WTP AND WTB

Willingness to pay (WTP) and willingness to buy (WTB) are two common methods to elicit valuations. The WTP method uses an open-ended question (e.g., "How much are you willing to pay for...?") to ask individuals to indicate the maximum amount of money they are

willing to pay for the good (e.g., Becker, DeGroot, & Marschak, 1964; Kahneman & Knetsch, 1992; Mazar, Koszegi, & Ariely, 2014; Peters, Slovic, & Gregory, 2003). The WTB method uses a closed-ended question (e.g., "Are you willing to buy...?") to ask individuals to indicate whether they are willing to buy the good at a certain selling price (e.g., Cameron & James, 1987; Gao & Simonson, 2016; Kahneman, Knetsch, & Thaler, 1991; Morwitz & Fitzsimons, 2004).

To the best of our knowledge, previous research has only documented a main effect between WTP and WTB. That is, WTB tends to yield higher valuation than WTP, especially for public goods (Balistreri, McClelland, Poe, & Schulze, 2001; Carson, Flores, & Meade, 2001; Halvorsen & Sølensminde, 1998; Kealy & Turner, 1993; Kriström, 1993). However, no prior research has ever shown that WTP and WTB can lead to opposite valuation orders.

Normatively, both WTP and WTB elicit consumers' underlying valuations and should yield the same valuation order between two options (Hsee & Leclerc, 1998). For example, if consumers are willing to pay \$150 for cellphone X and \$50 for cellphone Y, that is, $WTP(X) > WTP(Y)$, that means they value cellphone X higher than cellphone Y. Then, if the price of the two cellphones are the same (say, \$100), consumers should also be more willing to buy cellphone X than to buy cellphone Y, that is, $WTB(X) > WTB(Y)$.

However, this research finds that WTP and WTB can lead to opposite valuation orders between the regular offer of a good (R) and the promotional offer of the good (P). That is, consumers are less willing to pay for P than for R, that is, $WTP(R) > WTP(P)$, but holding the selling price constant are more willing to buy P than to buy R, that is, $WTB(R) < WTB(P)$. We name this pattern of opposite valuation orders as *WTP-WTB reversal*.

At a general level, the WTP-WTB reversal investigated in this research is similar to the preference-reversal phenomena reported in existing literature (e.g., Hsee, 1996; Hsee, Dube, & Zhang, 2008; Hsee, Loewenstein, Blount, & Bazerman, 1999; Hsee & Zhang, 2010; Lichtenstein & Slovic, 1971; Nowlis & Simonson, 1997; Slovic, 1975; Slovic & Lichtenstein, 1968; Tversky, Sattath, & Slovic, 1988; Tversky & Thaler, 1990), in that they all show the constructive nature of preferences. But at a more specific level, they are different. The classic preference-reversal phenomena occurred because the stimuli involved a trade-off along two attributes and the relative impact of one attribute over the other was greater in one elicitation condition than in the other. For example, in the choice-pricing reversal, the relative impact of payoff over probability is greater in the pricing task than in the choice task, because relative to probability, payoff is pecuniary and hence more compatible with pricing (Tversky, Slovic, & Kahneman, 1990). As another example, in the joint-evaluation-single-evaluation reversal, the relative impact of a hard-to-evaluate attribute (e.g., number of entries in a dictionary) over an easy-to-evaluate attribute (e.g., whether there are any defects) is greater in joint evaluation than in single evaluation (Hsee, 1996). In contrast, the WTP-WTB reversal studied in this research occurs, as we will explain next, because consumers make different inferences about the value of a promoted product under different elicitation methods.

In the subsequent sections, we first introduce the WTP-WTB reversal (H1a and H1b) and a value-inference account for the WTP-WTB reversal (H2a and H2b), then describe the boundary condition

for the WTP-WTB reversal (H3) and the behavioral consequence of the WTP-WTB reversal (H4). Afterwards, we report four studies, covering different products and promotions, which support our hypotheses. In the end of the paper, we discuss some open questions for future exploration.

3 | HYPOTHESES

To start, consider a virtual-reality (VR) headset. One is not presented with a discount (regular offer); the other is presented with a 50% off discount (promotional offer).

Suppose that consumer R and consumer P are potential VR headset buyers. Consumer R encounters the regular offer of the above headset, and consumer P encounters the promotional offer of the above headset. They have some vague idea of how much an average VR headset costs on the market but do not know the exact value of the VR headset above.

First, consider the WTP method. The question is who will indicate a higher WTP for the VR headset they encounter? We predict that consumer R will indicate a higher WTP. Here is why. When asked to indicate WTP, both consumer R and consumer P will use their knowledge about *the selling prices of similar VR headsets on the market* (say, on average \$20) as an internal reference price for their judgments of the value of the given VR headset (Grewal, Monroe, & Krishnan, 1998). Because the VR headset consumer R encounters is not on sale, she/he will indicate her/his estimated value of this VR headset (say, \$18) as her/his WTP for it. On the other hand, the VR headset consumer P encounters is labelled as on sale (50% off). Therefore, she/he will likely presume that she/he only needs to pay half of the regular price of this VR headset (Inman et al., 1990) and indicate only half of the estimated value of this VR headset (say, \$9) as her/his WTP for it. According to previous research, consumer P may also make negative inferences about a discount and thus value the given VR headset less than consumer R does (Raghubir, 2004). Regardless of the exact WTP they indicate, we predict that consumer P will indicate a lower WTP than consumer R.

Now, consider the WTB method. By definition, when asked about WTB, consumers are given a selling price in advance. Suppose both consumer R and consumer P are told that the selling price of their VR headset is \$20. The question is who will indicate a higher WTB for the VR headset they encounter? We predict that consumer P will indicate a higher WTB. Here is why. When asked to indicate WTB at the price of \$20, both consumer R and consumer P will use *the selling price of the given VR headset* as an external reference price for their judgments of the value of the given VR headset (Krishna, Wagner, Yoon, & Adaval, 2006). Because the VR headset consumer R encounters is not on sale, she/he will likely assume that the selling price \$20 is what the given VR headset regularly costs and use this price (i.e., \$20) to generate an estimation of the value of the given VR headset (say, \$18). On the other hand, the VR headset consumer P encounters is labelled as on sale (50% off). Therefore, she/he will likely presume that the selling price \$20 is only half of what the given VR headset regularly costs (Inman et al., 1990) and use the presumed regular price (i.e., \$40) to generate an estimation of the value of the given VR

headset (say, \$35). Because the selling price of the given VR headset is the same for consumer R and consumer P, consumer P's perceived transaction value of her/his VR headset will be higher than consumer R's perceived transaction value of her/his VR headset (Grewal et al., 1998; Raghubir, 2004; Simonson et al., 1994; Thaler, 1985). Therefore, we predict that consumer P will indicate a higher WTB than consumer R.

If the above assumptions are correct, we should also observe different valuation orders between the regular offer of a bundle (e.g., two VR headsets labelled as a twin pack) and the promotional offer of the bundle (e.g., two VR headsets labelled as "buy one get one free" [BOGO]). Specifically, consumers should indicate a lower WTP but a higher WTB for the bundle when it is presented with freebie designation than when it is not. Note that, according to Kamins et al. (2009), if the freebie is different from the focal product (e.g., a mixed bundle of cheese and wine), consumers' WTP for the bundle when it is presented with freebie designation can be similar to their WTP for the bundle when it is not presented with freebie designation, especially if consumers have limited cognitive resources. But according to our theory, consumers' WTB for the bundle when it is presented with freebie designation should be higher than their WTB for the bundle when it is not presented with freebie designation.

The above assumptions yield two sets of hypotheses. H1a and H1b describe a WTP–WTB reversal between the regular offer and the promotional offer of a product:

H1a. *Consumers' WTP for a product tends to be lower when the product is presented with a price promotion than when it is not presented with a price promotion.*

H1b. *Holding the selling price constant, consumers' WTB for a product tends to be higher when the product is presented with a price promotion than when it is not presented with a price promotion.*

H2a and H2b describe the value-inference process underlying the WTP–WTB reversal proposed in H1a and H1b:

H2a. *If the valuation of a product is elicited with the WTP method, consumers who encounter the promotional offer of the product will not perceive the value of the product to be higher than consumers who encounter the regular offer of the product will do.*

H2b. *If the valuation of a product is elicited with the WTB method, consumers who encounter the promotional offer of the product will perceive the value of the product to be higher than consumers who encounter the regular offer of the product will do.*

Note that we are not claiming that consumers make a mistake by making different value inferences in different elicitation-method conditions. Given the information that they have in each condition, they may be doing the best they can. The end result, however, is a WTP–WTB reversal.

A critical assumption behind H2b is that, consumers a priori are not sure about the value of the product so that there is room for them to infer the value of the product from the given selling price. If

consumers a priori know the value, there will be little room for value inferences, and according to Kalwani and Yim (1992), consumers would come up with an expected price of the product based on the product's regular price and the promotion signal (if any) and then decide their WTB based on how much the given selling price exceeds their expected price. Take the VR headset for an example. If consumer R and consumer P know a priori that the given VR headset (or a similar VR headset) regularly costs \$20 in the supermarket, consumer R will expect to pay \$20 for the regular offer and consumer P will expect to pay \$10 for the promotional offer. Holding the selling price of the VR headset the same for consumer R and consumer P, consumer R will likely indicate a higher WTB than consumer P because consumer R's expected price is higher than consumer P's. To summarize, if the value-inference process proposed in H2a and H2b is correct, the following hypothesis should hold:

H3. *The WTP–WTB reversal hypothesized in H1a and H1b is moderated by the knowledge of the regular price of the target product or similar products. Specifically, the WTP–WTB reversal is less likely to occur if consumers a priori know the regular price than if they do not.*

In many real-world situations, consumers do not know the regular price of a product. For example, if the price of a product often fluctuates (e.g., the price of a certain flight or a certain hotel), it will be hard for consumers to tell what its "regular price" is. Or, if a product is new to the market (e.g., VR headsets), consumers have no idea about its regular price either. According to H3, the predicted WTP–WTB reversal is most likely to occur in such situations.

Another assumption behind H2b is that, when the regular price of the target product or similar products is not known, consumers will rely on the given selling price of the target product rather than the selling prices of similar products stored in memory (which is less accessible) for their value inference (Feldman & Lynch, 1988; Lynch, Marmorstein, & Weigold, 1988). However, if consumers are prompted to recall the regular price of the target product or similar products before they indicate their WTB, we predict that consumers will no longer rely on the given selling price of the target product for value inference, and the promotional offer will no longer enhance consumers' WTB for the product.

To illustrate, consider two valuation elicitation conditions. In one condition (WTB only), consumers are directly asked whether they will buy a product at a given price. In the other condition (WTP + WTB), consumers are first asked to indicate the maximum amount they are willing to pay for the product and then asked whether they will buy the product at a given price.

In the WTB-only condition, following H1b, we predict that consumers who encounter the promotional offer of the product will be more willing to buy the product than consumers who encounter the regular offer of the product. In the WTP + WTB condition, however, we predict that the valuation will be reversed. Here is the reason. When first asked to indicate WTP and then asked to indicate WTB, consumers will compare the WTP they indicate in the first place with the selling price given in the WTB question and then indicate their WTB based on whether their WTP exceeds or falls short of the given price (Wertenbroch & Skiera, 2002). Following H1a, those who

encounter the regular offer of the product will indicate a higher WTP than those who encounter the promotional offer of the product. Consequently, the WTP indicated by those who encounter the regular offer of the product will be more likely to exceed a given selling price than the WTP indicated by those who encounter the promotional offer of the product. Therefore, we predict that those who encounter the regular offer will indicate a higher WTB than those who encounter the promotional offer, a pattern opposite to H1b.

We summarize the above assumptions in the following hypothesis and name it as a *WTB–WTB reversal*. The first WTB in the “WTB–WTB reversal” is WTB in the WTP + WTB condition, and the second WTB in the “WTB–WTB reversal” is WTB in the WTB-only condition:

H4. *Consumers' WTB for the regular offer of a product and their WTB for the promotional offer of the product will reverse depending on whether WTP is elicited in the first place. Specifically, if WTB is elicited right after WTP, consumers will be less willing to buy the product when it is offered with a price promotion than when it is not; whereas if WTB is elicited directly, consumers will be more willing to buy the product when it is offered with a price promotion than when it is not.*

4 | OVERVIEW OF STUDIES

We tested the above hypotheses in four studies that covered diverse products and promotions. Study 1 tested the WTP–WTB reversal (H1a and H1b) and the value-inference account (H2a and H2b) on a single product with/without a discount promotion. Study 2 replicated the findings of Study 1 on a twin pack with/without a BOGO promotion. Study 3 further tested the value-inference account on a twin pack by manipulating the knowledge of the regular price of a similar product. Study 4 replicated the WTP–WTB reversal on a mixed bundle and tested H4 regarding the WTB–WTB reversal due to the elicitation procedure. See Table 1 for an overview of the four studies.

A note about outliers: Because WTP responses in Studies 3–4 and perceived values in Studies 1–3 had no upper limits, some responses were extremely high. To reduce their undue influence, we adopted a consistent a priori outlier-exclusion criterion for all the studies: excluding responses that were over three standard deviations from the mean. By this criterion, we excluded four respondents from Study 1

($N = 270$), six respondents from Study 2 ($N = 300$), two respondents from Study 3 ($N = 628$), and two respondents from Study 4 ($N = 239$). In all the studies, we report the sample sizes before excluding the outlier respondents (i.e., respondents who indicated a value over three standard deviations from the mean) and report the results after excluding the outlier respondents.

5 | STUDY 1: WTP–WTB REVERSAL BETWEEN A REGULAR OFFER AND A DISCOUNTED OFFER

Study 1 tested the WTP–WTB reversal (H1a and H1b) and the value inference account (H2a and H2b) on a single product—a VR headset. This study compared the WTP valuation and the WTB valuation of this headset when it was not presented with a discount promotion (50% off) and when it was presented with a discount promotion (50% off). We chose this product as the stimulus because VR headsets was a quite novel product to the market, and an average consumer should have limited knowledge of the value of a VR headset.

5.1 | Method

Three hundred and thirty participants (57% female; mean age = 36.82, $SD = 11.92$) recruited from Mechanical Turk participated in this study for a nominal payment. They were randomly assigned to one of four conditions that constituted a 2 (pricing: regular vs. promotional) $\times$ 2 (elicitation method: WTP vs. WTB) between-subject design.

All participants saw a picture of a VR headset and a list of features of this headset. They were told to imagine that they were interested in buying a VR headset for smartphones and saw this headset at a local department store. In the regular condition, there was no promotion label on the product. In the promotional condition, there was a label of “On Sale—50% OFF” attached to the headset.

In the WTP condition, participants were asked the following question: “Think about at most how much money you are willing to pay for this headset. Is it higher than or equal to \$19.99?” In the WTB condition, participants were asked the following question: “The price of this headset is \$19.99. Would you buy this headset at this price?” We set the selling (reference) price at \$19.99 because this headset was priced

TABLE 1 Overview of studies

Study	Stimuli	Design	Type of promotion	Objectives
1	Virtual-reality headset (single product)	2 (pricing: regular vs. promotional) $\times$ 2 (elicitation method: WTP vs. WTB)	Discount	Testing H1a, H1b; H2a, H2b.
2	Bath towels (two pack)	2 (pricing: regular vs. promotional) $\times$ 2 (elicitation method: WTP vs. WTB)	BOGO	Testing H1a, H1b; H2a, H2b. Extending to a 2-pack.
3	Coffee mugs (two pack)	2 (pricing: regular vs. promotional) $\times$ 2 (elicitation method: WTP vs. WTB) $\times$ 2 (regular price: unknown v known)	BOGO	Testing H1a, H1b; H2a, H2b; H3.
4	Wine and cheese (mixed bundle)	2 (pricing: regular vs. promotional) $\times$ 2 (elicitation method: WTP + WTB vs. WTB only)	BOGO	Testing H1a, H1b; H4. Extending to a mixed bundle.

Note. BOGO: buy one get one free; WTB: willingness to buy; WTP: willingness to pay.

at \$19.99 by a local department store when we conducted this study (with a regular price of \$39.99).

Notice that, to facilitate the comparison between WTP and WTB responses, we did not directly ask participants to write down the maximum amount of money they were willing to pay for the headset but asked them to provide a dichotomous response of whether their WTP for the headset was higher than or equal to \$19.99. According to Thaler (1985), WTB at a given price should be interpreted as “yes” if WTP is higher than or equal to this price and as “no” if WTP is lower than this price. Therefore, we coded WTP as 1 if participants answered “yes” to the WTP question (i.e., their reservation price was higher than or equal to \$19.99) and as 0 if participants answered “no” to the WTP question (i.e., their reservation price was lower than \$19.99), just as we coded WTB as 1 if participants answered “yes” to the WTB question (i.e., they would buy this headset at \$19.99) and as 0 if participants answered “no” to the WTB question (i.e., they would not buy this headset at \$19.99).

To measure the perceived value of the VR headset in different conditions, at the end of the study, we followed the methodology of Ajzen and Driver (1992) asking participants to answer an open-ended question “Please estimate (in dollars) how much this product is worth to you.”

5.2 | Results

5.2.1 | WTP–WTB reversal

In the WTP conditions, 21% of the participants in the regular condition were willing to pay a price higher than or equal to \$19.99, whereas only 6% of the participants in the promotional condition were willing to pay a price higher than or equal to \$19.99 (21% vs. 6%; $\chi^2(1) = 7.01$, $p = 0.01$; odds ratio = 3.89, CI = [1.35, 11.25]). In contrast, in the WTB conditions, 21% of the participants in the regular condition were willing to buy the product at \$19.99, whereas 38% of the participants in the promotional condition were willing to buy the product at \$19.99 (21% vs. 38%; $\chi^2(1) = 5.56$, $p < 0.05$; odds ratio = 0.45, CI = [0.23, 0.88]). Because both WTP and WTB responses were binary, we conducted a logistic regression of participants' responses. The results indicated no main effect of the type of pricing ($B = -0.28$, $SE = 0.32$; $p = 0.39$), a main effect of the elicitation method ($B = 1.11$, $SE = 0.32$; $p < 0.01$), and a significant interaction between the type of pricing and the elicitation method ($B = 2.17$, $SE = 0.64$; $p < 0.01$). See Figure 1a.

5.2.2 | Value inference

An analysis of the perceived value indicated that, in the WTP conditions, participants who saw the regular offer of the headset perceived the headset to be more valuable than participants who saw the promotional offer of the headset ($M_{\text{regular}} = 13.28$, $SD_{\text{regular}} = 7.78$; $M_{\text{promotional}} = 9.61$, $SD_{\text{promotional}} = 5.84$; $t(152) = 3.32$, $p < 0.01$; Cohen's $d = 0.53$). In contrast, in the WTB conditions, participants who saw the promotional offer of the headset perceived the headset to be more valuable than participants who saw the regular offer of the headset ($M_{\text{regular}} = 13.31$, $SD_{\text{regular}} = 6.84$; $M_{\text{promotional}} = 15.85$,

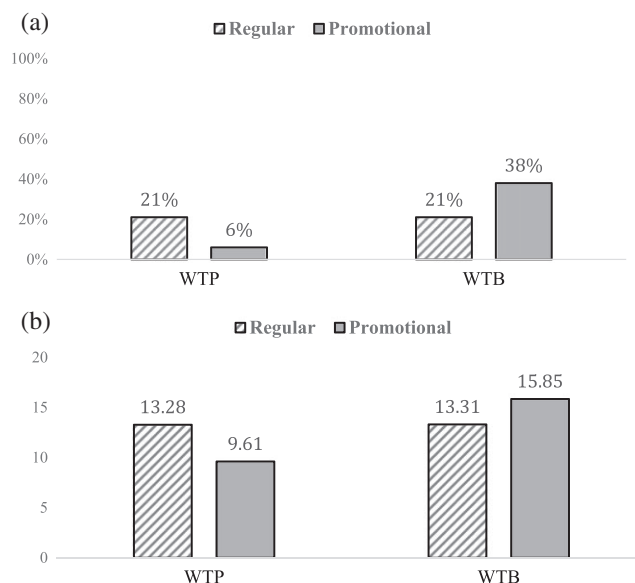


FIGURE 1 (a) Willingness to pay and willingness to buy in Study 1. (b) Perceived value (\$) in Study 1.

$SD_{\text{promotional}} = 8.73$; $t(169) = 2.11$, $p < 0.05$; Cohen's $d = 0.32$). An ANOVA analysis indicated no main effect of the type of pricing, $F(1, 321) = 0.47$, $p = 0.49$; a main effect of the elicitation method, $F(1, 321) = 14.48$, $p < 0.01$; and a significant interaction of the type of pricing and the elicitation method, $F(1, 321) = 14.23$, $p < 0.01$. See Figure 1b.

5.3 | Discussion

Results of Study 1 provided initial evidence for the WTP–WTB reversal (H1a and H1b) and the value-inference account for this phenomenon (H2a and H2b). Specifically, participants were less willing to pay a certain price (\$19.99) for a VR headset when it was labelled as discounted than if not but were more willing to buy the VR headset at that price (\$19.99) when it was labelled as discounted than if not. In support of the value-inference account, when considering WTP, participants perceived the headset to be less valuable when it was promoted with a discount than if not, but when considering WTB, participants perceived the headset to be more valuable when it was promoted with a discount than if not.

6 | STUDY 2: WTP–WTB REVERSAL BETWEEN A REGULAR OFFER AND A BOGO OFFER

Study 2 tested the WTP–WTB reversal (H1a and H1b) and the value inference account (H2a and H2b) on a twin pack—two bath towels of the same kind. This study compared the WTP and the WTB for this two pack when it was not presented with a BOGO promotion and when it was presented with a BOGO promotion. We chose this product as the stimulus because the price range of a bath towel was rather large (from less than \$4 to more than \$40 online), and an average consumer should have limited knowledge of the value of a particular bath towel.

6.1 | Method

Three hundred participants (58% female; mean age = 35.54, $SD = 12.85$) from Mechanical Turk participated in the study for a nominal payment. They were randomly assigned to one of four conditions that constituted a 2 (pricing: regular vs. promotional) $\times$ 2 (elicitation method: WTP vs. WTB) between-subject design.

All participants saw a picture of a twin pack of bath towels and a list of features of these bath towels. They were told to imagine that they were shopping for bath towels at a reputable department store and found a two pack as depicted in the picture. In the regular condition, there was no freebie label attached to the pack. In the promotional condition, there was a label of "FREE" attached to one bath towel in the pack.

In the WTP condition, participants were asked the following question: "Think about at most how much money you are willing to pay for this pack of two bath towels. Is it higher than or equal to \$15?" In the WTB condition, participants were asked the following question: "The price of this pack of two bath towels is \$15. Would you buy this pack at this price?" We set the selling (reference) price at \$15 because these bath towels were regularly sold at \$14.99 each at a local department store and were occasionally promoted with a BOGO offer.

As in Study 1, to measure the perceived value of the stimulus in different conditions, at the end of the study, we followed the methodology of Ajzen and Driver (1992) asking participants to answer an open-ended question "Please estimate (in dollars) how much one single bath towel in this twin pack is worth to you."

6.2 | Results

6.2.1 | WTP–WTB reversal

In the WTP conditions, 48% of the participants who saw the regular offer of the bath towels were willing to pay a price higher than or equal to \$15, whereas only 29% of the participants who saw the promotional offer of the bath towels were willing to pay a price higher than or equal to \$15, 48% vs. 29%; $\chi^2(1) = 5.86$, $p < 0.05$; odds ratio = 2.30, $CI = [1.16, 4.53]$. In the WTB conditions, 46% of the participants who saw the regular offer of the bath towels were willing to buy them at the price of \$15, whereas 65% of the participants who saw the promotional offer of the bath towels were willing to buy them at the price of \$15 (46% vs. 65%; $\chi^2(1) = 5.52$, $p < 0.05$; odds ratio = .45, $CI = [0.23, 0.88]$). A logistic regression indicated no main effect of the type of pricing ($B = -0.02$, $SE = 0.24$; $p = 0.94$), a main effect of the elicitation method ($B = 0.74$, $SE = 0.24$; $p < 0.01$), and a significant interaction between the type of pricing and the elicitation method ($B = 1.63$, $SE = 0.49$; $p < 0.01$). See Figure 2a.

6.2.2 | Value inference

An analysis of the perceived value indicated that, in the WTP conditions, participants who saw the regular offer of the bath towels perceived the bath towels to be of the same value as participants who saw the promotional offer of the bath towels ($M_{\text{regular}} = 9.42$, $SD_{\text{regular}} = 5.06$; $M_{\text{promotional}} = 8.35$, $SD_{\text{promotional}} = 4.52$;

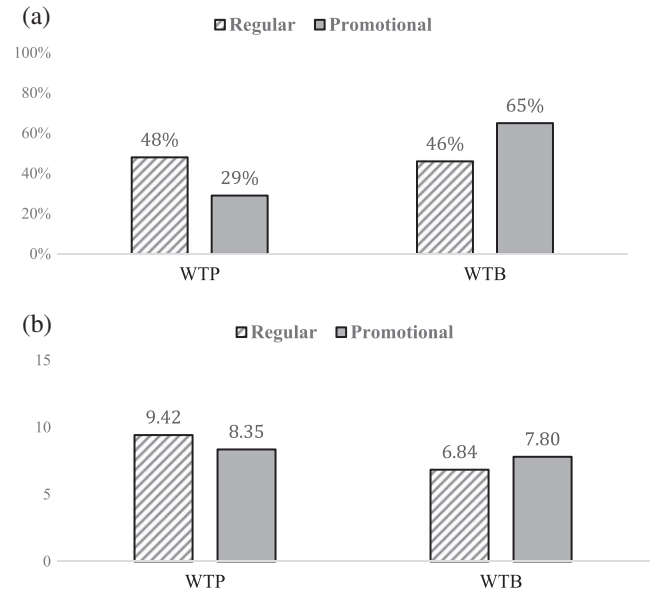


FIGURE 2 (a) Willingness to pay and willingness to buy in Study 2. (b) Perceived value (\$) in Study 2

$t(146) = 1.36$, $p = 0.18$; Cohen's $d = 0.22$). In contrast, in the WTB conditions, participants in the promotional condition perceived the bath towels to be more valuable than participants in the regular condition did ($M_{\text{regular}} = 6.84$, $SD_{\text{regular}} = 2.89$; $M_{\text{promotional}} = 7.80$, $SD_{\text{promotional}} = 2.70$; $t(144) = 2.06$, $p < 0.05$; Cohen's $d = 0.34$). An ANOVA analysis indicated no main effect of the type of pricing, $F(1, 290) = 0.02$, $p = 0.90$, a main effect of the elicitation method, $F(1, 290) = 11.60$, $p < 0.01$, and a significant interaction effect of the elicitation method and the pricing, $F(1, 290) = 4.87$, $p < 0.05$. See Figure 2b.

6.3 | Discussion

Results of Study 2 replicated the findings of Study 1 with another type of promotion (BOGO), providing extra evidence for the WTP–WTB reversal (H1a and H1b) and the value-inference account for this phenomenon (H2a and H2b).

7 | STUDY 3: REPLICATION AND FURTHER EVIDENCE FOR THE VALUE-INFERENC ACCOUNT

Study 3 tested whether consumer knowledge of the regular product price would moderate the WTP–WTB reversal (H3) and thus to verify the value-inference account for the WTP–WTB reversal. According to our theory, the WTP–WTB reversal should be less likely to occur if consumers know about the regular price of the target product or similar products than if they do not. We chose a mug set as the stimulus because the price range of a coffee mug was rather large (from less than \$2 to more than \$20 online), and an average consumer should

have limited knowledge of the value of the unbranded mug set in this study.

7.1 | Method

Six hundred and twenty-eight participants (67% female; mean age = 34.18, $SD = 10.92$) from Mechanical Turk participated in the study for a nominal payment. They were randomly assigned to one of eight conditions that constituted a 2 (pricing: regular vs. promotional) $\times$ 2 (elicitation method: WTP vs. WTB) $\times$ 2 (regular price: unknown vs. known) between-subject design.

All participants saw a picture of two identical ceramic mugs. They were told to imagine that "Christmas is around the corner. You are considering buying a gift for your best friend. You are at a reputable grocery store now and find a mug set that includes two identical ceramic mugs (300-mL size)." In the regular condition, there was no freebie label attached to any mug. In the promotional condition, there was a label of "FREE" attached to one mug.

In the WTP conditions, participants were asked "How much at most would you be willing to pay for this mug set?" In the WTB conditions, participants were told "The current price of the mug set is \$14" and were asked to indicate "Would you be willing to buy it?" We set the selling (reference) price of the mug set at \$14 because we did not find the market price of this mug set, and a pretest ($N = 71$; 70% female; mean age = 34.14) indicated that participants recruited from Mechanical Turk perceived a single mug of this kind to be worth \$8 (median response); therefore, we chose a price above \$8 and below \$16 as the price of this mug set.

The regular-price-known conditions were identical to the regular-price-unknown conditions except that before participants were asked about their WTP or WTB, they were told, "The regular price of one single mug of this kind is \$7.50."

As in Studies 1 and 2, at the end of the study, we followed the methodology of Ajzen and Driver (1992) asking participants to answer an open-ended question "Please estimate (in dollars) how much one single mug in this set is worth to you."

7.2 | Results

7.2.1 | WTP–WTB reversal

When the regular price of the mug was unknown, we found the same WTP–WTB reversal as in previous studies. Relative to participants in the regular condition, participants in the BOGO condition were less willing to pay for the mug set ($M_{\text{regular}} = 10.14$, $SD_{\text{regular}} = 4.38$; $M_{\text{promotional}} = 7.68$, $SD_{\text{promotional}} = 4.45$; $t(152) = 3.46$, $p < 0.01$; Cohen's $d = 0.56$) but more willing to buy the mug set at the given price (34% versus 51%, $\chi^2(1) = 4.34$, $p < 0.05$; odds ratio = 0.51, $CI = [0.27, 0.96]$). To facilitate the comparison between WTP responses and WTB responses, we converted WTP responses in such a way that WTP was coded as 1 if the original WTP response was higher than or equal to the selling price in the WTB conditions (i.e., \$14) and coded as 0 if the original WTP response was lower than the selling price in the WTB conditions (Thaler, 1985). The converted WTP indicated that 24% of the participants in the regular condition

were willing to pay a price of \$14 or higher for the mug set, whereas only 8% of the participants in the BOGO condition were willing to pay a price of \$14 or higher for the mug set (24% vs. 8%, $\chi^2(1) = 7.48$, $p < 0.01$; odds ratio = 3.72, $CI = [1.39, 9.99]$). A logistic regression found no main effect of the type of pricing ($B = -0.32$, $SE = 0.30$; $p = 0.29$), a main effect of the elicitation procedure ($B = 1.51$, $SE = 0.30$; $p < 0.01$), and a significant interaction between the type of pricing and the elicitation method ($B = 2.00$, $SE = 0.60$; $p < 0.01$).

However, when the regular price of the mug was known to participants, we did not see the WTP–WTB reversal. Specifically, relative to participants in the regular condition, participants in the BOGO condition were less willing to pay for the mug set ($M_{\text{regular}} = 10.43$, $SD_{\text{regular}} = 3.66$; $M_{\text{promotional}} = 7.53$, $SD_{\text{promotional}} = 2.85$; $t(152) = 5.45$, $p < 0.01$; Cohen's $d = 0.88$) and also less willing to buy mug set at the given price (49% versus 28%, $\chi^2(1) = 7.76$, $p < 0.01$; odds ratio = 2.51, $CI = [1.30, 4.83]$). To facilitate the comparison between WTP responses and WTB responses, we converted WTP responses in the same way as above. The converted WTP indicated that 18% of the participants in the regular condition were willing to pay a price of \$14 or higher for the mug set, whereas only 5% of the participants in the BOGO condition were willing to pay a price of \$14 or higher for the mug set (18% versus 5%, $\chi^2(1) = 5.45$, $p < 0.05$; odds ratio = 3.71, $CI = [1.16, 11.85]$). A logistic regression found a main effect of the type of pricing ($B = -1.12$, $SE = 0.34$; $p < 0.05$), a main effect of the elicitation procedure ($B = 1.70$, $SE = 0.34$; $p < 0.01$), and no interaction between the type of pricing and the elicitation method ($B = 0.39$, $SE = 0.68$; $p = 0.57$). See Figure 3a.

7.2.2 | Value inference

When the regular price was unknown, in support of H2a, in the WTP conditions, participants in the promotional condition did not perceive the mug to be more valuable than participants in the regular condition ($M_{\text{regular}} = 7.19$, $SD_{\text{regular}} = 6.16$; $M_{\text{promotional}} = 6.23$, $SD_{\text{promotional}} = 3.59$; $t(152) = 1.18$, $p = 0.24$; Cohen's $d = 0.19$); in support of H2b, in the WTB conditions, participants in the promotional condition perceived the mug to be more valuable than participants in the regular condition ($M_{\text{regular}} = 6.37$, $SD_{\text{regular}} = 2.88$; $M_{\text{promotional}} = 7.33$, $SD_{\text{promotional}} = 3.03$; $t(153) = 2.03$, $p < 0.05$; Cohen's $d = 0.33$). An ANOVA analysis indicated no main effect of the type of pricing, $F(1, 305) = 0.00$, $p = 0.99$; no main effect of the elicitation method, $F(1, 305) = 0.09$, $p = 0.77$; but a significant interaction effect between the type of pricing and the elicitation method, $F(1, 305) = 4.19$, $p < 0.05$.

When the regular price was known, the effect predicted in H2a persisted, but the effect predicted in H2b disappeared. Specifically, in the WTP conditions, participants in the promotional condition perceived the mug to be less valuable than participants in the regular condition ($M_{\text{regular}} = 6.58$, $SD_{\text{regular}} = 3.38$; $M_{\text{promotional}} = 5.01$, $SD_{\text{promotional}} = 2.25$; $t(152) = 3.37$, $p < 0.01$; Cohen's $d = 0.55$); in the WTB conditions, participants in the promotional condition perceived the mug to be equally valuable as participants in the regular condition, $M_{\text{regular}} = 6.70$, $SD_{\text{regular}} = 2.21$; $M_{\text{promotional}} = 7.01$, $SD_{\text{promotional}} = 2.23$; $t(160) = 0.89$, $p = 0.38$; Cohen's $d = 0.14$). An ANOVA analysis indicated a main effect of the type of pricing, $F(1, 312) = 4.77$, $p < 0.05$; a main effect of the elicitation method, $F(1, 312) = 13.49$,

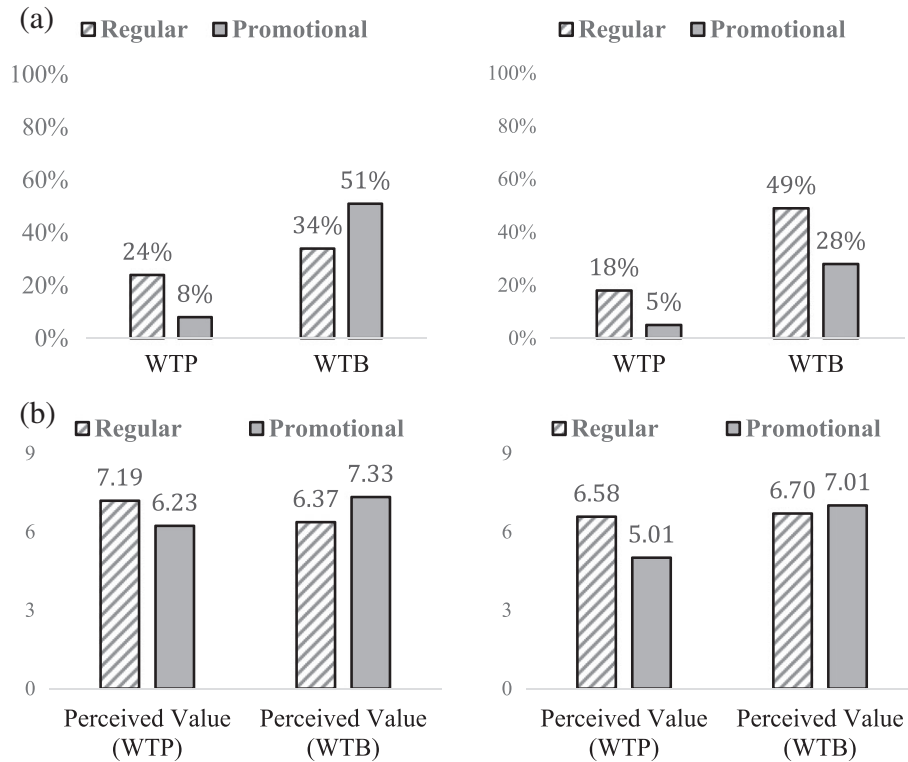


FIGURE 3 (a) Converted willingness to pay and willingness to buy in Study 3 when the regular price was unknown (left graph) and when the regular price was known (right graph). (b) Perceived value (\$) in Study 3 when the regular price was unknown (left graph) and when the regular price was known (right graph)

$p < 0.01$; and a significant interaction effect between the type of pricing and the elicitation method, $F(1, 312) = 10.59$, $p < 0.01$. See Figure 3b.

7.3 | Discussion

In summary, Study 3 showed that the WTP–WTB reversal would arise if the regular price of the target product or similar products was unknown and would disappear if it was known. These results lent further support to the value-inference account for the WTP–WTB reversal, suggesting that only if consumers do not know the value of a product will they make different value inferences in different elicitation conditions.

We wish to note that, when the regular price was known, the inconsistent pattern of WTB and the perceived value (WTB was statistically lower in the promotional condition than in the regular condition, whereas perceived value was statistically the same between the promotional condition and the regular conditions) is consistent with our theory. As stated in the rationale for H3: when the regular price is unknown, to decide WTB, consumers tend to use the selling price and the promotion signal (if any) to infer the value of a product and then decide their WTB based on whether the inferred value exceeds the given selling price. However, when the regular price is known, there is little room for value inferences. Consumers tend to use the given regular price and the promotion signal (if any) to come up with an expected price of the product (Kalwani & Yim, 1992) and then decide their WTB based on whether their expected price exceeds

the given selling price. This is why WTB and perceived value can exhibit different patterns when the regular price is known, as in this study.

8 | STUDY 4: REPLICATION OF WTP–WTB AND WTB–WTB REVERSALS WITH A MIXED BUNDLE

Study 4 tested the WTP–WTB reversal (H1a and H1b) and the WTB–WTB reversal (H4) on a mixed bundle—a bottle of red wine and a block of cheddar cheese. This study served two objectives. First, it tested whether the WTP–WTB reversal observed in previous studies would generalize to mixed bundles. Second, it tested the WTB–WTB reversal, namely, whether eliciting WTP before eliciting WTB would reverse consumers' WTB for the regular offer and the promotional offer.

We chose the red wine as the focal product because the price range of a bottle of red wine was rather large (from less than \$10 to more than \$100 online) and an average consumer should have limited knowledge of the value of a bottle of unfamous red wine. We chose cheese as the complementary item in the bundle because it was generally considered as a good match with wine.

8.1 | Method

Two hundred and thirty-nine participants (56% female; mean age = 36.49, $SD = 12.42$) recruited from Mechanical Turk participated

in this study for a nominal payment. The study comprised four conditions that constituted a 2 (pricing: regular vs. promotional) $\times$ 2 (elicitation method: WTP + WTB vs. WTB-only) between-subject design.

All participants saw a picture of a bottle of red wine (750 ml) and a block of cheddar cheese (2 lb). They were told to imagine that “You are browsing an online grocery store for something you can bring to a friend's house warming party. You find a gift bundle that includes a bottle of red wine (750 ml) and a block of Tillamook cheddar cheese (2 lb).” In the regular condition, there was a label of “World's Best Medium Cheddar” attached to the cheese in the bundle. In the promotional condition, there was a label of “World's Best Medium Cheddar” and “FREE” attached to the cheese in the bundle.

In the WTP + WTB conditions, participants were first asked to indicate “How much at most would you be willing to pay for this bundle?” and then were told “The current price of the bundle is \$25” and were asked to indicate “Would you be willing to buy it?” In the WTB-only conditions, participants were directly told “The current price of the bundle is \$25” and were asked to indicate “Would you be willing to buy it?” We set the price of the bundle at \$25 because a pretest ($N = 60$; 49% female; mean age = 35.47, $SD = 10.34$) indicated that participants recruited from Mechanical Turk generally perceived such a bottle of red wine to be worth \$20 (median response) and such a block of cheddar cheese to be worth \$8 (median response); therefore, we chose a price above \$20 and below \$28 as the price of this bundle.

8.2 | Results

8.2.1 | WTP–WTB reversal

To test for the WTP–WTB reversal (H1a and H1b), we focused on the first response of all participants, namely, the WTP response in the WTP + WTB condition and the WTB response in the WTB-only condition. Again, the two elicitation methods yielded opposite valuation orders: relative to participants in the regular condition, participants in the promotional condition were less willing to pay for the bundle ($M_{\text{regular}} = 25.55$, $SD_{\text{regular}} = 13.22$; $M_{\text{promotional}} = 20.24$, $SD_{\text{promotional}} = 8.85$; $t(116) = 2.55$, $p < 0.05$; Cohen's $d = 0.47$) but more willing to buy the bundle (52% vs. 70%, $\chi^2(1) = 4.41$, $p < 0.05$; odds ratio = 0.45, $CI = [0.21, 0.95]$). The converted WTP indicated that 53% of the participants in the regular condition were willing to pay a price of \$25 or higher for the bundle, whereas only 26% of the participants in the promotional condition were willing to pay a price of \$25 or higher for the bundle (53% vs. 26%, $\chi^2(1) = 9.29$, $p < 0.01$; odds ratio = 3.28, $CI = [1.51, 7.12]$). A logistic regression found no main effect of the type of pricing ($B = -0.19$, $SE = 0.28$; $p = 0.49$), a main effect of the elicitation procedure ($B = 0.93$, $SE = 0.28$; $p < 0.01$, and a significant interaction between the type of pricing and the elicitation method ($B = 1.99$, $SE = 0.55$; $p < 0.01$). See Figure 4a.

8.2.2 | WTB–WTB reversal

To test for the WTB–WTB reversal (H4), we focused on the WTB response of all participants. As reported earlier, in the WTB-only condition, relative to participants in the regular condition, participants in the promotional condition were more willing to buy the bundle (52%

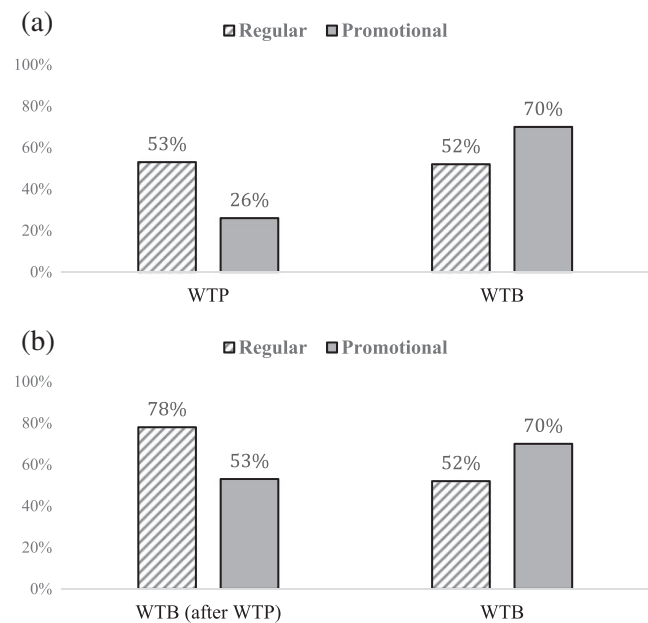


FIGURE 4 (a) Willingness to pay and willingness to buy (WTB) in Study 4. (b) WTB and WTB in Study 4

vs. 70%, $\chi^2(1) = 4.41$, $p < 0.05$; odds ratio = 0.45, $CI = [0.21, 0.95]$). However, in the WTP + WTB condition, relative to participants in the regular condition, participants in the promotional condition were less willing to buy the bundle (78% vs. 53%, $\chi^2(1) = 8.15$, $p < 0.01$; odds ratio = 3.15, $CI = [1.41, 7.02]$). Confirming the WTB–WTB reversal, a logistic regression found no main effect of the type of pricing ($B = -0.17$, $SE = 0.28$; $p = 0.54$), no main effect of the elicitation procedure ($B = -0.24$, $SE = 0.28$; $p = 0.39$), and a significant interaction between the type of pricing and the elicitation method ($B = 1.95$, $SE = 0.56$; $p < 0.01$). See Figure 4b.

8.3 | Discussion

Study 4 replicated the WTP–WTB reversal proposed in H1a and H1b with a mixed bundle and demonstrated the WTB–WTB reversal proposed in H4, indicating that asking consumers to first consider how much they are willing to pay for can reverse their WTB for the regular offer and the promotional offer of a bundle.

9 | GENERAL DISCUSSION

In the present work, four studies, covering diverse experimental paradigms, diverse products, and diverse promotions, demonstrated a robust and hitherto overlooked anomaly: When the valuation is elicited in the form of WTP, people value the promotional offer of a product less than the regular offer of the product, whereas when the valuation is elicited in the form of WTB, people value the promotional offer of a product more than the regular offer of the product. Three studies (Studies 1, 2, and 3) found consistent evidence for the value-inference account. One study (Study 4) demonstrated a WTB–WTB reversal due to the elicitation procedure. See Table 2 for an overview.

TABLE 2 Overview of the valuation of a promotion

Study	Stimuli	Elicitation method	Regular versus promotional	Effect size
1	Virtual-reality headset	WTP WTB	21% versus 6%; $\chi^2(1) = 7.01, p = 0.01$ 21% versus 38%; $\chi^2(1) = 5.56, p < 0.05$	Odds ratio = 3.89 Odds ratio = 0.45
2	Bath towels	WTP WTB	48% versus 29%; $\chi^2(1) = 5.86, p < 0.05$ 46% versus 65%; $\chi^2(1) = 5.52, p < 0.05$	Odds ratio = 2.30 Odds ratio = 0.45
3	Coffee mugs (when the regular price is unknown)	WTP WTB	24% versus 8%; $\chi^2(1) = 7.48, p < 0.01$ 34% versus 51%; $\chi^2(1) = 4.34, p < 0.05$	Odds ratio = 3.72 Odds ratio = 0.51
3	Coffee mugs (when the regular price is known)	WTP WTB	18% versus 5%; $\chi^2(1) = 5.45, p < 0.05$ 49% versus 28%; $\chi^2(1) = 7.76, p < 0.01$	Odds ratio = 3.71 Odds ratio = 2.51
4	Wine and cheese	WTP WTB WTB (after WTP)	53% versus 26%; $\chi^2(1) = 9.29, p < 0.01$ 52% versus 70%; $\chi^2(1) = 4.41, p < 0.05$ 78% versus 53%; $\chi^2(1) = 8.15, p < 0.01$	Odds ratio = 3.28 Odds ratio = 0.45 Odds ratio = 3.15

Note. WTB: willingness to buy; WTP: willingness to pay.

This work carries nonobvious practical implications for both sellers and buyers. For sellers, our findings suggest that whether sellers should label a product as on promotion depends on the valuation context. Particularly, in a bidding context where the seller does not provide a selling price and the prospective buyer expresses her/his bid price (e.g., Ariely & Simonson, 2003), labelling a product as on promotion will lower the bid price (i.e., WTP) than not labelling it as on promotion. On the other hand, in a shopping context where the seller provides a selling price and the prospective buyer makes her/his purchase decision (e.g., Moe, 2003), offering a product with a price promotion will likely stimulate purchase (i.e., WTB). For buyers, our findings suggest that if buyers are first prompted to think about their WTP for a promotional offer, their WTB for the offer will likely be lower than if they directly indicate their WTB for the offer.

Although the current studies have accumulated robust evidence that valuations of the promotional offer and the regular offer of a product reverse between WTP and WTB, it also raises open questions.

One question is whether our findings apply to all kinds of sales promotions. We doubt so. First, if the discount of a product is too small (e.g., 5% off the regular price), we speculate that we are less likely to observe a WTP–WTB reversal for the discounted product and the product at its regular price. This is because as the discount decreases, the relative impact of the discount diminishes. Second, if a bundle includes many items and in the promotional condition only one of many items is labelled as a freebie (e.g., buy 10 and get one free), we speculate that we are less likely to observe the WTP–WTB reversal than if the bundle includes only two items and one item is promoted as a freebie (i.e., buy one and get one free). That is because as the bundle size increases, the relative impact of the freebie diminishes.

A second open question is whether the effect proposed in H1b—that consumers are more willing to buy the promotional offer rather than the regular offer of a product—contradicts Simonson et al.'s (1994) finding that adding a useless freebie (e.g., an outdated and useless tie) to an otherwise useful item (e.g., a shirt) reduces WTB for the useful item. We doubt so. In Simonson et al.'s studies, the comparison is between (a) a useful item plus a useless add-on and (b) the useful item alone, and the key variable is the *uselessness* of the add-on. In some of our studies (Studies 2–4), the comparison is between (a) two items with one being free and (b) the same two items with neither being free, and the key variable is the *“free”-dom* of one of the items.

Simonson et al. explain their finding in terms of justifiability—the uselessness of the add-on makes it unjustifiable for consumers to purchase. We explain our proposed effect in terms of inference—consumers make different value inferences of a promotion between the WTP and the WTB elicitation methods.

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