

# **Seller Beware: How Bundling Affects Valuation**

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*ABSTRACT*

How does bundling affect valuation? This research proposes the asymmetry hypothesis in the valuation of bundles: Consumers demand more compensation for the loss of items from bundles, compared to the loss of the same items in isolation, yet offer lower willingness-to-pay for items added to bundles, compared to the same items purchased separately. This asymmetry persists because bundling causes consumers to perceive multiple items as a single, inseparable “gestalt” unit. Thus, consumers resist altering the “whole” of the bundle by removing or adding items. Six studies demonstrate this asymmetry across judgments of monetary value (Studies 1 and 2) and (dis)satisfaction (Study 3). Moreover, bundle composition—the ability of different items to create the impression of a “whole”—moderates the effect of bundling on valuation (Study 4), and the need to replace missing items (i.e., restoring the “whole”) mediates the effect of bundling on compensation demanded for losses (Study 5). Finally, we explore a boundary condition: The effect is attenuated for items that complete a set (Study 6).

*Keywords:* bundling, pricing, gestalt, satisfaction

Shoppers are often presented with the option to bundle multiple items together and pay a single price or purchase the same items separately and pay multiple prices (Guiltingan 1987; Soman and Gourville 2001; Stremersch and Tellis 2002; Yadav and Monroe 1994). For example, a consumer shopping online for a particular travel bag might scroll down the webpage to discover a recommendation for matching suitcases—part of a “frequently bought together” suggestion—along with the total cost of the proposed bundle. Of course, the same travel bag and matching suitcases can typically be purchased separately, as well. Do these different purchase formats affect valuation? That is, when a bundle and the sum of its parts are objectively identical, might consumers nevertheless value items differently, depending on whether they are offered as a bundle or offered separately? The present research examines this question.

In particular, we propose the asymmetry hypothesis in valuation of bundles: the prediction that consumers will demand more compensation for and experience greater dissatisfaction from the loss of items from bundles, compared to the loss of the same items in isolation. Yet consumers will offer lower willingness-to-pay (WTP) for and experience less satisfaction from items added to bundles, compared to the same items purchased separately.

We argue that this asymmetry in valuation (i.e., paying less, yet demanding more) persists because bundling leads consumers to see multiple items as a single, inseparable “gestalt” unit (Koffka 1935; Köhler 1970). Thus, consumers resist both removing items from and adding items to bundles. Specifically, when losing an individual component from a bundle (vs. separately), consumers suffer not only the loss of the item itself, but also the ruin of the “whole”—and, hence, demand greater compensation. Similarly, adding an additional item to a bundle would alter and therefore compromise the preexisting impression of a “whole.” Thus, consumers are reluctant to needlessly tamper with an established bundle by introducing an item

that does not belong. For example, consumers will demand more compensation when a travel bag ordered as part of a luggage set arrives damaged or is missing, compared to when the same item ordered separately is similarly unavailable. However, consumers will offer less WTP for the same travel bag when it is added to a preexisting existing luggage set, compared to when it is purchased separately. In the following section, we develop the asymmetry hypothesis in the valuation of bundles by examining the psychology of bundling and proposing a theoretical framework to explain how consumers value bundles and their components.

### *THEORETICAL BACKGROUND*

Bundling is the sale of two or more separate products (i.e., goods or services) in one package (Stremersch and Tellis 2002). These are products for which separate markets exist, such that at least some consumers wish to purchase the products separately. So, for example, a pair of shoes does not comprise a bundle, given that separate markets for right shoes and left shoes do not exist. Moreover, firms can engage in pure bundling, a strategy in which products can *only* be acquired as a package (i.e., “tying,” in the economics literature), or mixed bundling, a strategy in which products can be acquired either as a package or separately.

Previous research has distinguished between *price* bundling and *product* bundling (Stremersch and Tellis 2002). Price bundling involves the sale of two or more separate products as a package at a discount and can serve as a price discrimination mechanism (Adams and Yellen 1976). Research on price bundling has explored discount framing effects, which show that consumers are sensitive to how discounts are applied to the different components of a bundle (Janiszewski and Cunha 2004). For example, consumers prefer bundles for which low-benefit

(vs. high-benefit) components cost less (Hamilton and Srivastava 2008) and bundles that frame discounts as savings on relatively hedonic (vs. utilitarian) components (Khan and Dhar 2010). Product bundling strategies, on the other hand, involve the sale of two or more products that complement each other and thus, add value when combined. For example, Popkowski and Häubl (2010) demonstrate that auctions for bundles of stamps (vs. separate auctions for separate stamps) are more profitable when the stamps are complements, rather than substitutes.

Product complementarity implies that WTP for one product is increased when another product is acquired (i.e., exhibiting “super-additivity” in utility; Guiltinan 1987) and suggests, more broadly, that bundling can create value for consumers. For instance, a bundle might offer enhanced convenience by preconfiguring a set of items, thereby reducing potential search costs. As in the earlier example, an online shopper planning to purchase a particular travel bag may also be interested in matching suitcases. A luggage set that already includes these items obviates the need to search for the matching products. Moreover, consumers are not always aware of which products they need in the first place. A first-time vehicle owner, for example, might not know which automotive services (e.g., oil change, tire rotation, safety inspection, etc.) should be scheduled. Purchasing a comprehensive maintenance bundle, however, assures coverage of the new driver’s automotive service needs. These features suggest that bundles are often distinct from the same component items offered separately.

### *Bundles Create a Gestalt*

The tendency to organize multiple elements into a distinct entity (i.e., a “whole”) is an automatic psychological process. The result is the formation of a gestalt—a holistic integration of multiple items perceived as *other* than the sum of the parts (Koffka 1935; Köhler 1970). For example, people tend to imbue seemingly arbitrary collections of lines and shapes with structure

or form by establishing connections between and among disparate items (e.g., filling in gaps, seeing patterns, and recognizing incomplete images; Kanizsa 1979; Palmer 2002). In the same way, consumers integrate their perceptions of marketing messages and product offerings to form gestalt-level impressions of brands and firms (Park, Jaworski, and MacInnis 1986). Additionally, co-branding arrangements (e.g., pairing a less-known brand with a well-known brand) are effective, in part, because consumers perceive brands in a unitary configuration (Cunha, Forehand, and Angle 2015).

Building upon these findings, we argue that a similar process leads consumers to holistically perceive multiple items as a single, inseparable “gestalt” unit when products are bundled. Indeed, when consumers evaluate bundles, they aim to form an impression of the items as a whole (Weaver, Garcia, and Schwarz 2012) and exhibit preferences for product sets that “fit” together (Evers, Inbar, and Zeelenberg 2014). Previous research has also shown that bundles are treated differently than the individual components thereof (Wertenbroch 1998). For example, Mishra, Mishra, and Nayakankuppam (2006) point to a “bias for the whole” in documenting consumers’ reluctance to break large denomination bills, which are psychologically less fungible than equivalent amounts in smaller denomination bills (Raghubir and Srivastava 2009). Together, these results suggest that bundles are, in fact, *other* than the sums of their parts.

#### *The Asymmetry Hypothesis in the Valuation of Bundles*

We propose the asymmetry hypothesis in the valuation of bundles, which predicts that while consumers demand more compensation for and experience greater dissatisfaction from the loss of items from bundles, compared to the loss of the same items in isolation, they nevertheless offer lower WTP for and experience less satisfaction from items acquired as or added to bundles, compared to the same items purchased separately.

We argue that this asymmetry in valuation persists because bundling leads consumers to see multiple items as a single, inseparable “gestalt” unit. As a result, when an item is lost from a bundle, compared to when the same item is lost in isolation, consumers suffer not only the loss of the item itself, but also the ruin of the “whole” of the bundle. Hence, consumers demand more compensation and experience greater dissatisfaction. For example, consider paying a single price for a multi-course meal, compared to paying separate prices for the same dishes individually. If the dessert is unexpectedly unavailable when offered as part of the bundle, the meal itself—and not simply the dessert—is implicated and subsequently ruined. When purchased separately, however, the same unexpected unavailability affects only the dessert. Thus, the loss of a dessert from a bundle will cause consumers to demand more compensation and experience greater dissatisfaction than will the loss of the same dessert purchased separately.

In acquisition, however, we predict the opposite pattern. Adding an additional item to a bundle would alter and therefore compromise the preexisting impression of a “whole.” Thus, consumers are reluctant to needlessly tamper with an established bundle by introducing an item that does not belong. For example, if a diner has already purchased a multi-course meal, the prospect of adding yet another course would seem unnecessary, compared with adding the same dish to multiple dishes purchased separately. The multi-course meal, when presented as a bundle, is already “whole.” Moreover, consumers expect to pay less for what is perceived as a single unit (i.e., the bundle), compared to multiple units (i.e., separate items). As such, consumers will offer lower WTP for and experience less satisfaction from items acquired as or added to bundles, compared to the same items purchased separately.

Given that we describe opposite patterns for losses and gains, it is natural to consider our asymmetry hypothesis in light of loss aversion and the endowment effect (Kahneman, Knetsch,

and Thaler 1990; Nayakankuppam and Mishra 2005). Specifically, Park, Jun, and MacInnis (2000) demonstrate loss aversion in the context of bundles. They find that when presented with a fully-loaded product and asked to remove undesired features, consumers choose to keep more options and incur higher total costs, compared to when presented with a base model and asked to add desired features. Thus, by comparing losses from bundles with additions to bundles, Park et al. (2000) capture a main effect of loss versus gain framing in the valuation of bundles. However, previous research has not examined the effect of bundling *itself* on valuation. To that end, we compare losses from bundles with losses in isolation, and we compare additions to bundles with additions in isolation. We predict that on top of loss aversion (i.e., the aversion to removing items from bundles, compared to adding items to bundles; Park et al. 2000), consumers will exhibit a reluctance to remove items from bundles, compared to removing items in isolation, as well as a reluctance to add items to bundles, compared to adding items in isolation.

Whereas prospect theory (Kahneman and Tversky 1979; Tversky and Kahneman 1992) has not directly addressed these specific comparisons (i.e., bundling vs. offering the same items separately), we suggest that it could potentially make a different prediction. In particular, both the gain and loss functions described by prospect theory display diminishing marginal sensitivity. Therefore, it is possible that the loss of a single item from multiple items (i.e., from a bundle) and the addition of a single item to multiple items (i.e., to a bundle) are experienced farther from the relevant reference point (i.e., with diminished marginal sensitivity), compared to items lost or added separately. This interpretation of prospect theory argues for a main effect of bundling: Consumers should pay more for an item in isolation, compared to the same item added to a bundle, and demand more for a loss in isolation, compared to same the loss from a bundle. While this interpretation of prospect theory makes a similar prediction as our account for

acquisition, neither loss aversion, specifically, nor prospect theory, more broadly, capture our proposed asymmetry in the effect of bundling on valuation.

Finally, consumers also expect discounts for and infer savings from the purchase of products as bundles (Estelami 1999; Heeler, Nguyen, and Buff 2007). Such an account might describe why consumers would expect to pay less for items acquired as bundles, compared to the same items purchased separately. But paying less in acquisition should also lead consumers to demand less compensation for losses. So, for example, if consumers value a particular item less when it is purchased as part of a bundle, compared to when it is purchased separately, consumers should demand less compensation for the loss of that item (e.g., when it is subsequently missing, unavailable, or sold). However, we predict an opposite pattern for losses: Consumers will demand more compensation for the loss of items from bundles, compared to the loss of the same items in isolation. Additionally, we predict corresponding differences in satisfaction (and dissatisfaction)—that is, consumers should be more dissatisfied about losing an item from a bundle (vs. in isolation), yet be less satisfied about acquiring or adding to bundles—which cannot be accounted for by pricing expectations in the marketplace.

### *PRESENT RESEARCH*

We examine the proposed asymmetry in valuation:

**H1:** Consumers will demand more compensation for items lost from bundles, compared to the same items lost in isolation. Yet, consumers will offer lower WTP for items acquired as or added to bundles, compared to the same items purchased separately.

We also examine the subjective experience of loss and acquisition:

**H2:** Consumers will experience greater dissatisfaction when losing items from bundles, compared to when losing items in isolation. Yet, consumers will experience less satisfaction when acquiring or adding to bundles, compared to when acquiring items separately.

Next, Hypotheses 3–5 test the psychological properties of bundling. We argue that the bundle is distinct—*other* than the mere sum of the parts. Therefore, to the extent that the components of a bundle are viewed as less of a distinct “whole”—and, by extension, merely the sum of the parts—the predicted asymmetric pattern in valuation will be attenuated. As such, consumers should be less likely to view a bundle of identical products purchased in bulk as a single, inseparable “gestalt” unit because there is little that is distinct—or *other*—about a bundle of undifferentiated items, compared to those same items offered separately:

**H3:** Bundle composition will moderate the asymmetry in valuation (H1), such that differences in compensation demanded and WTP will be attenuated when items are undifferentiated.

Moreover, because bundling leads consumers to see multiple items as a single, inseparable “gestalt” unit, consumers should express a greater need to replace an item lost from a bundle, compared to the same item lost in isolation. In the latter case, a replacement allows for recovery of just the missing item. In the former case, a replacement not only allows for recovery of the item itself, but also reestablishes the “whole” of the bundle. We suggest that it is precisely this ruin of the “whole” that accounts for differences in compensation demanded for losses from bundles, compared to losses in isolation. Thus, greater perceived importance of replacing an item lost from a bundle, compared to the importance of replacing the same item lost in isolation, would corroborate our account of bundles as singular entities:

**H4:** Greater perceived need to replace items lost from bundles, compared to the same items lost separately, will mediate the effect of bundling on compensation demanded for losses.

Finally, an important boundary condition to consider is whether a state of completion is an objective property of the target items. When a particular item completes a set or collection, a set completion or collection goal provides extra motivation for acquisition and retention (Belk 1995; Gao, Huang, and Simonson 2014). For example, a specific stamp that completes a stamp set will command a premium (Popkowski and Häubl 2010). Critically, if a state of completion is an objective property of the target items, the impression of a “whole” will principally depend on the completeness of the set, and acquiring or holding onto the final component of a set or collection would allow consumers to realize or maintain the “whole.” In these situations, therefore, the perception of a “whole” is defined by a state of completion, rather than whether the items are offered as a bundle or separately. Consequently, we expect attenuation of the effect:

**H5:** The asymmetry in valuation (H1) will be attenuated when adding an item completes a set (in acquisition) or losing an item renders a set incomplete (for losses).

Moreover, this boundary condition provides further evidence that the “gestalt” impression caused by bundling is the mechanism by which the asymmetry in valuation arises.

Together, moderation by bundle composition (H3), mediation by the need to restore the “whole” (H4), and the set completion boundary condition (H5) provide explicit tests of our proposed psychological process for the asymmetry hypothesis in the valuation of bundles. We examined these hypotheses across six studies.

*STUDY 1: BUNDLING INCREASES COMPENSATION DEMANDED FOR LOSSES, YET  
DECREASES WTP IN ACQUISITION*

Study 1 tested the proposed asymmetry in valuation (H1) in a consequential choice task, with real economic implications. Participants bought or sold a popular type of energy bar—Clif Bars—which were bundled or offered separately. We examined willingness-to-accept (WTA) for the sale of a Clif Bar and willingness-to-pay (WTP) for the purchase of multiple Clif Bars. We predicted that participants would (1) list higher selling prices for a single Clif Bar sold from a bundle, compared to a single Clif Bar sold separately, and (2) offer lower WTP when acquiring three Clif Bars as a bundle, compared to when acquiring the same three Clif Bars separately.

### *Method*

We recruited 192 undergraduate and graduate students ( $M_{\text{age}} = 23.12$ ,  $SD_{\text{age}} = 6.81$ ; 90 females, 99 males, three undisclosed) in exchange for an Amazon.com gift card and Clif Bars. Study 1 employed a  $2$  (scenario: *lose* vs. *add*)  $\times$   $2$  (presentation: *bundled* vs. *separate*) between-subjects design. In the *lose* condition, we assessed WTA for the sale of a single item, either sold from a bundle or sold separately. In the *add* condition, we assessed WTP for three items, either acquired as a bundle or acquired separately.

In the *lose* condition, a research assistant approached students at an on-campus dining hall and recruited potential participants for a two-part study. As compensation, the research assistant offered participants three different Clif Bars (flavors: White Chocolate Macadamia Nut, Coconut Chocolate Chip, and Chocolate Brownie). After completing a questionnaire about preferences for Clif Bars, those assigned to the *bundled* condition received a bundle of three Clif Bars (tied together with twine and labeled, “Clif Bar Chocolate Variety Pack”; see Web Appendix for detailed procedures and instructions for all studies), while those assigned to the *separate* condition received the same three Clif Bars separately (i.e., not tied together).

At this point, a second research assistant approached each participant, explaining that the second part of the study would involve determining how much compensation the participant would require to sell back one of the recently acquired Clif Bars. The research assistant then asked each participant to indicate a minimum selling price for the (ostensibly randomly selected) Chocolate Brownie Clif Bar. In order to incentivize disclosure of actual WTA, the research assistant explained that if the minimum selling price offered by the participant met or fell below a predetermined reservation price, the transaction would take place at the reservation price (Becker, DeGroot, and Marschak 1964).

In the *add* condition, a research assistant similarly recruited participants for a two-part study at the same location. As compensation for participation, the research assistant offered participants a \$5.00 Amazon.com gift card. Participants who agreed to participate then completed the same questionnaire about Clif Bars, but did not receive any Clif Bars.

At this point, a second research assistant approached each participant, explaining that the second part of the study would involve determining how much people would be willing to pay for Clif Bars. The research assistant then asked participants to indicate what, if any, portion of the \$5.00 Amazon.com gift card they would be willing to spend to acquire three different Clif Bars (flavors: White Chocolate Macadamia Nut, Coconut Chocolate Chip, and Chocolate Brownie). Those assigned to the *bundled* condition offered their WTP for a bundle of three Clif Bars (tied together with twine and labeled, “Clif Bar Chocolate Variety Pack”), while those assigned to the *separate* condition offered their WTP for same three Clif Bars separately (i.e., not tied together). Again, in order to incentivize disclosure of actual WTP, the research assistant explained that if the maximum purchase price offered by the participant met or exceeded a predetermined reservation price for the bundle or each of the Clif Bars, the transaction would

take place at the reservation price. Participants' listed prices were consequential, and transactions were executed in accordance with our predetermined reservation prices (\$0.50 per Clif Bar).

### *Results and Discussion*

To confirm our manipulation, we presented, in counterbalanced order, images of both bundled and separate Clif Bars to 31 U.S.-based Amazon Mechanical Turk (MTurk) workers, who rated: "Do the above items form a bundle or are they separate entities?" ("completely separate" = 1; "form a bundle" = 7). To capture the extent to which participants maintained a "gestalt" impression of the bundles, participants also rated: "Do the above items feel like they belong together?" and "Do the above items go well together?" (for both: "not at all" = 1; "very much so" = 7). Confirming the manipulation, participants indicated that the Clif Bars offered as a bundle formed a bundle more so than the same Clif Bars offered separately (see Table 1). Collapsing the two "gestalt" impression questions ( $r(31) = .95, p < .001$ ), we also found that participants maintained a higher "gestalt" impression for the Clif Bars offered as a bundle than for the same Clif Bars offered separately. We ran these manipulation checks and gestalt impression tests for Studies 2, 3, and 5, using the same within-subjects design and a different sample for each (Studies 4 and 6 employed different designs). Also, while Studies 1–3 used on-campus and museum samples, we drew from MTurk for our manipulation checks.

[Insert Table 1 here]

Testing our main hypothesis, an ANOVA of valuation on scenario (*lose* vs. *add*) and presentation (*bundled* vs. *separate*) yielded a main effect of presentation ( $F(1, 188) = 5.04, p = .026$ ), such that valuation in the *separate* condition exceeded valuation in the *bundled* condition, and a main effect of scenario ( $F(1, 188) = 29.51, p < .001$ ), such that (unsurprisingly) purchase prices for three Clif Bars exceeded selling prices for a single Clif Bar. More importantly, as

predicted (H1), the ANOVA revealed the predicted two-way interaction ( $F(1, 188) = 29.35, p < .001$ ). Within the *lose* condition, participants indicated higher selling prices for a single Clif Bar removed from a bundle ( $M = \$2.45, SD = \$1.00$ ) than for a single Clif Bar sold separately ( $M = \$1.98, SD = \$0.90; F(1, 188) = 5.03, p = .026$ ; see Figure 1). Within the *add* condition, however, participants offered lower WTP for the bundle of three Clif Bars ( $M = \$2.45, SD = \$1.18$ ) than for the three Clif Bars sold separately ( $M = \$3.58, SD = \$0.99; F(1, 188) = 29.36, p < .001$ ).

[Insert Figure 1 here]

These results demonstrate the proposed asymmetry in valuation (H1) with economically consequential choices. When facing the loss of an individual component from a bundle, participants demanded greater compensation, compared to when facing the same loss in isolation. However, participants also expected to pay less for the acquisition of a single unit (i.e., the bundle), compared to the purchase of multiple units (i.e., separate items).

We do not compare responses between the *lose and add* conditions in this design, because we solicited WTA for a single item and WTP for three items. Moreover, within the *add* condition, participants offered a single WTP value for one item (i.e., the bundle) or three WTP values for three items (i.e., each Clif Bar), which we summed to calculate total valuation. Thus, it is possible that the elicitation procedure caused the latter to exceed the former. For example, participants may have exhibited diminishing marginal utility for each Clif Bar in the bundle, but not for each Clif Bar in isolation. Or scaling differences could have artificially yielded differences in WTP (e.g., participants possibly considered a different range of values for a bundle, compared to a single item). Therefore, in Study 2, in order to assess the robustness of the proposed asymmetry, we held the target item constant and examined its valuation when lost from a bundle, lost separately, added to a bundle, or added separately.

*STUDY 2: GREATER VALUATION OF AN ITEM LOST FROM A BUNDLE, YET LESS  
VALUATION OF THE SAME ITEM ADDED TO A BUNDLE*

We designed Study 2 to demonstrate the asymmetry in valuation (H1) in another consequential choice task, with real economic implications. In Study 2, we held the target item constant (a Lindt LINDOR milk chocolate truffle) and manipulated whether it was sold or bought as part of a bundle or separately. We predicted that participants would (1) set higher selling prices for a truffle originally acquired as part of a bundle, compared to the same truffle originally acquired separately, and (2) offer lower WTP for a truffle added to a bundle than for the same truffle added separately.

*Method*

We recruited 188 undergraduate and graduate students at an on-campus research laboratory in exchange for a \$1.00 Amazon.com gift card and Lindt LINDOR chocolate truffles. One hundred eighty-seven participants ( $M_{\text{age}} = 21.21$ ,  $SD_{\text{age}} = 6.73$ ; 109 females, 78 males) remained in the study after we excluded one participant who was allergic to chocolate. Study 2 employed a 2 (scenario: *lose* vs. *add*)  $\times$  2 (presentation: *bundled* vs. *separate*) between-subjects design. The dependent variable of interest was valuation of a milk chocolate truffle.

In the *lose* condition, participants received four different flavors of Lindt LINDOR chocolate truffles at the outset of the study (caramel chocolate, dark chocolate, milk chocolate, and white chocolate). For those assigned to the *bundled* condition, a research assistant placed the truffles into a small paper bag, and handed the bag to the participant. Each bag was labeled, “Lindt LINDOR Chocolate Truffle Bundle.” For those assigned to the *separate* condition, the

research assistant handed the individual truffles to the participant. Participants then completed a questionnaire about Lindt LINDOR chocolate truffles that required participants to sign their initials either once (acknowledging receipt of the bundle, in the *bundle* condition) or four times (acknowledging receipt of each flavor, in the *separate* condition).

Next, the research assistant explained that the second stage of the study would involve determining how much compensation the participant would require to sell back one of the recently acquired truffles. In order to incentivize disclosure of true WTA, the research assistant explained that the transaction would take place, at a predetermined reservation price, if the minimum selling price offered by the participant met or fell below that predetermined reservation price. The research assistant further explained that the reservation price could be, at most, \$1.00, which was the maximum possible valuation in this paradigm.

In the *add* condition, participants received *three* different flavors of Lindt LINDOR chocolate truffles at the outset of the study (caramel chocolate, dark chocolate, and white chocolate), either as a bundle or separately, and completed the same questionnaire. Next, the research assistant explained that the second stage of the study would involve determining how much the participant would be willing to pay to acquire an additional truffle. In order to incentivize disclosure of true WTP, the research assistant explained that the transaction would take place, at a predetermined reservation price, if the maximum purchase price offered by the participant met or exceeded that predetermined reservation price (at most \$1.00). Participants' listed prices in all conditions were economically consequential, and transactions were executed in accordance with our predetermined reservation prices (\$0.50 per truffle).

### *Results and Discussion*

Prior to analyzing the data, we recoded to \$1.00 eight responses that exceeded the maximum possible valuation of \$1.00. That is, when a participant offered a WTA or WTP value that exceed the maximum in the task (i.e., \$1.00), we coded the response as \$1.00 (the results remain statistically significant after dropping these observations).

An ANOVA of valuation on scenario (*lose* vs. *add*) and presentation (*bundled* vs. *separate*) revealed a main effect of scenario ( $F(1, 183) = 12.76, p < .001$ ), such that selling prices exceeded purchase prices. This main effect is consistent with loss aversion and previous research demonstrating the endowment effect. There was no main effect of presentation ( $F < 1$ ). More importantly, as predicted (H1), the ANOVA revealed a two-way interaction ( $F(1, 183) = 11.29, p = .001$ ). Specifically, in the *lose* condition, those who sold a truffle from a bundle set a higher minimum selling price ( $M = \$0.57, SD = \$0.28$ ) than did those who sold the same truffle separately ( $M = \$0.43, SD = \$0.32; F(1, 183) = 5.97, p = .016$ ; see Figure 2). In contrast, in the *add* condition, those who added a truffle to a bundle offered lower WTP ( $M = \$0.28, SD = \$0.27$ ) than did those who acquired the same truffle separately ( $M = \$0.42, SD = \$0.29; F(1, 183) = 5.37, p = .022$ ).

[Insert Figure 2 here]

We also note that while we observed a main effect of scenario consistent with loss aversion, we only observed an endowment effect in the *bundled* condition ( $F(1, 183) = 23.16, p < .001$ ). In the *separate* condition, we did not observe an endowment effect ( $F(1, 183) = .02, p = .878$ ). We discuss a potential explanation in the General Discussion.

Holding the target item constant, Study 2 again revealed the predicted asymmetry in valuation: WTA for an item sold from a bundle was higher than WTA for the same item sold separately, while WTP for an item added to a bundle was lower than WTP for the same item

added separately. We explain that this asymmetric effect of bundling arises because consumers resist altering the “whole” of the bundle and are reluctant to both remove items from and add items to bundles. However, for acquisition, our results can also be potentially explained by inferences about the pricing of bundles and their components in the marketplace. That is, consumers expect discounts for and infer savings from bundles (Estelami 1999; Heeler, Nguyen, and Buff 2007) and may therefore expect to pay less to add an item to a bundle. To address this alternative, we next examined the effect of bundling on the subjective experiences of dissatisfaction from loss and satisfaction from acquisition (rather than WTA and WTP), depending on whether items were offered as a bundle or separately. Presumably, there are no norms in the marketplace for how consumers are expected to feel.

*STUDY 3: GREATER DISSATISFACTION FOR A LOSS FROM A BUNDLE, YET LESS SATISFACTION FOR THE SAME ITEM ADDED TO A BUNDLE*

We designed Study 3 to examine, in a consequential choice task located in a field setting, the effect of bundling on the emotional costs and benefits of losing and acquiring items, respectively. Specifically, in Study 3, participants experienced either the actual loss or actual gain of a holiday card. In order to test whether bundling causes, for the same item, both greater dissatisfaction for losses and less satisfaction in acquisition (H2), we manipulated whether the holiday card was unexpectedly unavailable after it had been selected along with other holiday cards (either as part of a bundle or separately) or unexpectedly added to other holiday cards that had been selected (either as a bundle or separately).

We predicted that the loss of the holiday card from a bundle would yield greater reported dissatisfaction than would the loss of the same holiday card in isolation, while adding the holiday card to a bundle would yield less reported satisfaction than would adding the same holiday card separately.

### *Method*

In the two weeks prior to Christmas, we recruited 208 adults at a large Midwestern science museum to take part in a “Christmas Cards Survey,” which involved evaluating Christmas cards. We told participants that they would receive Christmas cards as compensation. Two hundred six participants ( $M_{\text{age}} = 39.29$ ,  $SD_{\text{age}} = 18.11$ ; 149 females, 57 males) remained in the study after we excluded two participants who left before completing the full procedure.

Study 3 employed a 2 (scenario: *lose* vs. *add*)  $\times$  2 (presentation: *bundled* vs. *separate*) between-subjects design, with different dependent variables for the *lose* and *add* conditions: In the *lose* condition, participants reported their dissatisfaction associated with the unexpected unavailability of a Christmas card, which had been selected as part of a bundle or selected separately. In the *add* condition, participants reported their satisfaction after unexpectedly receiving the same Christmas card as an extra gift, either added to a bundle or added separately.

In the first stage of the *lose* condition, those assigned to the *separate* condition evaluated seven different Christmas cards presented separately (e.g., “How much do you like this card?”). The seven cards were organized into three categories (i.e., rows): three animal cards, three plant cards, and a single candy canes card. Participants then read they would receive three of the seven cards to take home as a gift, and were asked to “select the Christmas cards you wish to receive (one in each row).” Because the candy canes card was the only card offered in the third category (i.e., the third row), all participants selected the candy canes card.

The *bundled* condition followed a similar procedure; however, rather than evaluating seven different Christmas cards presented separately, participants evaluated nine bundles that each contained three cards. The nine bundles represented every possible combination of the three animal cards and three plant cards, and every bundle included the candy canes card. For each bundle, participants answered the same two questions as in the *separate* condition and then selected one of the nine bundles to take home as a gift. Because the candy canes card was offered as part of every bundle, all participants selected a bundle that included the candy canes card.

In the second stage of the *lose* condition, a research assistant fulfilled orders for participants. Those assigned to the *separate* condition were told: “I see you chose the [first card selected], the [second card selected], and the candy canes card. I’m sorry, but the candy canes card is not available.” Those assigned to the *bundled* condition were told: “I see you chose [package selected]. I’m sorry, but the candy canes card in this bundle is not available.”

In the first stage of the *add* condition, those assigned to the *separate* condition followed the same initial procedure as those assigned to the *separate* condition of the *lose* condition. However, participants evaluated six, rather than seven, cards (we excluded the candy canes card). By the end of the survey, participants had to select two of the six cards to take home (again, one in each category). The *bundled* condition followed a similar procedure; however, participants evaluated nine different bundles that each contained two cards (no bundle included the candy canes card). Participants then selected one of the nine bundles to take home.

In the second stage of the *add* condition, a research assistant fulfilled the orders for participants. Those assigned to the *separate* condition were told: “I see you chose the [first card selected] and the [second card selected]. Good news. We also have an extra candy canes card.”

Those assigned to the *bundled* condition were told: “I see you chose [package selected]. Good news. We also have an extra candy canes card to add to the package.”

Finally, all participants completed a follow-up survey, which included several filler questions and a section containing the dependent variables: “When running this study, sometimes we have extra cards, and sometimes cards are not available. Did you receive any extra cards from the experimenter today?” Participants in the *lose* condition circled “no,” while participants in the *add* condition circled “yes,” identified the relevant card and indicated their satisfaction: “Rate your satisfaction on a 0–100 scale (0 = not at all *satisfied*; 100 = extremely *satisfied*).” We next asked: “Were any cards not available today?” Participants in the *add* condition circled “no,” while participants in the *lose* condition circled “yes,” identified the relevant card, and indicated their dissatisfaction: “Rate your dissatisfaction on a 0–100 scale (0 = not at all *dissatisfied*; 100 = extremely *dissatisfied*).”

### *Results and Discussion*

Prior to analyzing the data, we excluded 19 blank responses for ratings of dissatisfaction or satisfaction. In support of our hypothesis (H2), participants who experienced the loss of the candy canes card selected as part of a bundle expressed greater dissatisfaction ( $M = 25.43$ ,  $SD = 30.36$ ) than did participants who experienced the loss of the same candy canes card selected separately ( $M = 12.17$ ,  $SD = 24.52$ ;  $t(90) = 2.28$ ,  $p = .025$ ; see Figure 3). For acquisition, however, the pattern reversed. Participants who acquired the candy canes card as part of a bundle expressed less satisfaction ( $M = 82.88$ ,  $SD = 21.84$ ) than did participants who acquired the same candy canes card separately ( $M = 91.60$ ,  $SD = 13.64$ ;  $t(93) = 2.34$ ,  $p = .022$ ).

[Insert Figure 3 here]

These results demonstrate that the loss of an item from a bundle yields greater dissatisfaction than the loss of the same item in isolation, while the acquisition of an item as a part of a bundle yields less satisfaction than the acquisition of the same item separately. These findings rule out competing explanations based on inferences about the pricing of bundles and their components in the marketplace. Participants reported only their subjective experience of loss or acquisition, depending on whether items were offered as a bundle or offered separately. Moreover, the results of Study 3 are consistent with the asymmetry in valuation observed in Studies 1 and 2, given that lower WTP (in acquisition) should be associated with less satisfaction and greater compensation demanded (for losses) should be associated with greater dissatisfaction. With evidence for the asymmetry in valuation across multiple domains, we next examined the underlying psychological process.

#### *STUDY 4: MODERATION BY BUNDLE COMPOSITION*

We designed Study 4 to test a moderator: bundle composition (H3). Bundling leads consumers to see multiple items as a single, inseparable “gestalt” unit. Therefore, to the extent the components of a bundle are viewed as less of a distinct “whole,” the asymmetry in valuation should be attenuated.

One relevant context in this regard is that of bulk purchases, wherein products are uniform and undifferentiated. Almost by definition these types of bundles are merely the sums of their parts. Consequently, consumers should be less likely to view a bundle of identical products purchased in bulk as a single, inseparable “gestalt” unit, because there is little that is distinct—or *other*—about a bundle of five undifferentiated items, compared to the same five items offered

separately. To that end, we tested moderation by bundle composition by manipulating whether participants considered differentiated items (e.g., five vouchers for five different automotive services) or undifferentiated items (e.g., five vouchers for five oil changes).

### *Method*

We recruited 800 U.S.-based MTurk workers in exchange for \$0.75. Seven hundred eighty-nine participants ( $M_{\text{age}} = 34.49$ ,  $SD_{\text{age}} = 12.01$ ; 330 females, 459 males) remained in the study after we removed those who failed an attention check (“Hopefully you have been reading carefully. If so, please do not answer this question”) and/or admitted to answering questions randomly. We employed the same exclusion criteria in all studies conducted online.

Study 4 employed a 2 (scenario: *lose* vs. *add*)  $\times$  2 (presentation: *bundled* vs. *separate*)  $\times$  2 (composition: *differentiated* vs. *undifferentiated*) between-subjects design. In the *lose* condition, we assessed WTA for the sale of a single item, either from a bundle or separately. In the *add* condition, we assessed WTP for five items, offered as a bundle or separately.

Participants in the *lose* condition imagined that they had purchased vouchers for various automotive services from their local car dealership, either as a bundle or separately. We manipulated the composition of the vouchers presented to participants. Those assigned to the *differentiated* condition read that they had purchased vouchers for five different services: exterior car wash, oil change, tire rotation, interior car detailing, and a safety inspection. Those assigned to the *undifferentiated* condition read that they had purchased vouchers for five identical services: five oil changes. In the *separate* condition, these services were presented as an unlabeled list, while in the *bundled* condition, these services were labeled as either a “Full Service Vehicle Maintenance Package” (*differentiated* condition) or a “Full Service Oil Change Package” (*undifferentiated* condition). Participants in the *lose* condition then indicated their

WTA to sell an oil change voucher (“I would not be willing to accept less than \$ \_\_\_\_\_ in exchange for [one of] the oil change voucher[s].”)

Participants in the *add* condition also imagined purchasing vouchers for various automotive services from their local car dealership, either as a bundle or separately. We then manipulated the composition of the vouchers presented to participants. Those assigned to the *differentiated* condition read that they planned to purchase vouchers for five different services: exterior car wash, oil change, tire rotation, interior car detailing, and a safety inspection. Those assigned to the *undifferentiated* condition read that they planned to purchase vouchers for five identical services: five oil changes. In the *separate* condition, these services were presented as an unlabeled list, while in the *bundled* condition, these services were labeled as either a “Full Service Vehicle Maintenance Package” (*differentiated* condition) or a “Full Service Oil Change Package” (*undifferentiated* condition). Participants in the *add* condition then offered their WTP for the vouchers (“How much would you be willing to pay for [the bundle/each]?”).

### *Results and Discussion*

To capture the extent to which participants maintained a “gestalt” impression of the bundles, we presented 30 U.S.-based MTurk workers with the descriptions of both types of bundles. For each type of bundle, they rated: “Does this bundle feel like a distinct entity, or does it feel like just the sum of its parts?” (“feels like just the sum of its parts” = 1; “feels like more than the sum of its parts” = 7). Consistent with our account, participants indicated that the differentiated bundle felt like more than the sum of its parts (i.e., felt like a “gestalt” unit;  $M = 4.90$ ,  $SD = 1.95$ ) than the undifferentiated bundle ( $M = 3.73$ ,  $SD = 2.00$ ; paired  $t(29) = 2.41$ ,  $p = .023$ ).

Before testing our main hypothesis, we log-transformed WTP and WTA because the distribution of the raw valuation responses was significantly right-skewed ( $\chi^2(2) = 781.60, p < .001$ ). In the results that follow, we report the raw valuation responses, but perform our statistical tests on the log-transformed variables.

An ANOVA of valuation on scenario (*lose* vs. *add*), presentation (*bundled* vs. *separate*), and composition (*differentiated* vs. *undifferentiated*) revealed a main effect of scenario ( $F(1, 781) = 444.53, p < .001$ ), such that (unsurprisingly) WTP for five vouchers exceeded WTA for a single voucher, and a main effect of composition ( $F(1, 781) = 8.16, p = .004$ ), such that valuation was greater for differentiated products than for undifferentiated products. More importantly, as predicted (H3), the ANOVA yielded a three-way interaction ( $F(1, 781) = 7.82, p = .005$ ), confirming moderation of the asymmetry in valuation by bundle composition (see Figure 4).

Specifically, within the *lose* condition (i.e., for WTA), we observed a significant presentation (*bundled* vs. *separate*) by composition (*differentiated* vs. *undifferentiated*) two-way interaction ( $F(1, 781) = 5.02, p = .025$ ). For the *differentiated* condition, those who imagined selling the oil change voucher from a bundle of five different automotive services indicated higher selling prices ( $M = \$66.51, SD = \$110.22$ ) than did those who imagined selling the same voucher separately ( $M = \$29.62, SD = \$23.70; F(1, 781) = 26.27, p < .001$ ). A similar, yet attenuated pattern emerged for the *undifferentiated* condition ( $M_{bundled} = \$39.93, SD = \$36.94$  vs.  $M_{separate} = \$27.68, SD = \$11.80; F(1, 781) = 3.98, p = .046$ ). Consistent with our account, the difference in WTA between the *bundled* condition and the *separate* condition narrowed for undifferentiated products, compared to differentiated products.

Within the *add* condition (i.e., for WTP), we observed a marginally significant presentation (*bundled* vs. *separate*) by composition (*differentiated* vs. *undifferentiated*) two-way

interaction ( $F(1, 781) = 2.96, p = .086$ ). For the *differentiated* condition, those who imagined purchasing a bundle of five different automotive services indicated lower WTP ( $M = \$83.33, SD = \$57.14$ ) than did those who imagined purchasing the same five vouchers separately ( $M = \$132.77, SD = \$91.21; F(1, 781) = 23.75, p < .001$ ). Again, a similar, yet attenuated pattern emerged for the *undifferentiated* condition ( $M_{bundled} = \$89.16, SD = \$68.12$  vs.  $M_{separate} = \$105.57, SD = \$61.19; F(1, 781) = 5.64, p = .018$ ). That is, the effect of bundling narrowed for undifferentiated products, compared to differentiated products.

[Insert Figure 4 here]

The three-way ANOVA also yielded a scenario (*lose* vs. *add*) by presentation (*bundled* vs. *separate*) two-way interaction ( $F(1, 765) = 51.56, p < .001$ ), replicating the asymmetry in valuation observed in Studies 1 and 2. Furthermore, although WTP for multiple items naturally exceeded WTA for a single item (as in Study 1), we can test for loss aversion within just the *separate* condition, wherein participants offered WTP separately for either one oil change voucher (along with four other vouchers for vehicle services; *differentiated* condition) or five oil change vouchers (*undifferentiated* condition). In this latter condition, we examined WTP for just the first oil change voucher. A two-way ANOVA of valuation on scenario (*lose* vs. *add*) and composition (*differentiated* vs. *undifferentiated*) revealed a main effect of scenario ( $F(1, 370) = 10.87, p = .001$ ), such that WTA for the oil change voucher ( $M = \$28.63, SD = \$18.60$ ) exceeded WTP ( $M = \$25.06, SD = \$15.93$ ), consistent with loss aversion and previous research demonstrating the endowment effect.

Another relevant consideration in light of these results is whether the oil change voucher was simply the most highly valued item. If so, participants may have been more sensitive to its loss when possessing only a single valuable voucher (compared to five in the *undifferentiated*

condition). To address this concern, within the *separate* condition, we calculated WTP for each of the services from the *differentiated* condition (car wash:  $M = \$11.50$ ,  $SD = \$7.61$ ; oil change:  $M = \$27.12$ ,  $SD = \$16.76$ ; tire rotation:  $M = \$25.96$ ,  $SD = \$21.43$ ; interior car detailing:  $M = \$34.82$ ,  $SD = \$29.12$ ; safety inspection:  $M = \$33.38$ ,  $SD = \$39.57$ ). Thus, WTP for the oil change voucher was not unusually high. Therefore, the observed moderation by bundle composition cannot be accounted for by the relative value of the oil change voucher.

In short, these results confirm, as predicted (H3), that bundle composition plays an important role in causing consumers to view multiple items as a single, inseparable “gestalt” unit. With evidence for a theoretically derived moderator, we next investigated a potential mediator: the desire to replace items lost from bundles (i.e., restoring the “whole”).

#### *STUDY 5: MEDIATION BY THE NEED TO RESTORE THE “WHOLE”*

We designed Study 5 to test whether the perceived need to replace missing items mediates the effect of bundling on compensation demanded for losses (H4). We argue that the additional compensation demanded for losses from bundles (compared to losses in isolation) accrues from both the forfeiture of the lost item itself and the ruin of the “whole” of the bundle. Therefore, consumers facing losses from bundles (vs. in isolation) should believe they require more compensation because the “whole” has been compromised and, consequently, replacing the missing component—restoring the “whole”—is more important.

Specifically, Study 5 examined valuation of a travel bag, either offered as part of a bundle or offered separately. We predicted that the loss of the bag from a bundle would yield greater compensation demanded than would the loss of the same bag in isolation, while the

addition of the bag to a bundle would yield lower WTP than would acquisition of the same bag separately. Moreover, we expected greater perceived need to replace the bag when it was missing from a bundle, compared to when the same bag was lost in isolation—and that this perceived need to replace the missing item (which facilitates restoration of the “whole” for bundles) would mediate the effect of bundling on compensation demanded for losses.

### *Method*

We recruited 200 U.S.-based MTurk workers in exchange for \$0.50. One hundred eighty-eight participants ( $M_{\text{age}} = 31.20$ ,  $SD_{\text{age}} = 9.26$ ; 71 females, 117 males) remained in the study after applying the exclusion criteria.

Study 5 employed a 2 (scenario: *lose* vs. *add*)  $\times$  2 (presentation: *bundled* vs. *separate*) between-subjects design. In the *lose* condition, we elicited compensation demanded for a loss, either from a bundle or separately. In the *add* condition, we elicited WTP for a single item, either added to a bundle or added separately.

In the *lose* condition, participants imagined having already purchased, for a total price of \$250, three suitcases—a small suitcase, a medium suitcase, and a large suitcase—either as a bundle or separately. The three suitcases in the *bundled* condition were presented together in a single image, while the three suitcases in the *separate* condition (which were identical to the three suitcases in the *bundled* condition) were presented separately in three different images. Participants read that one of the items (the small suitcase) was never delivered and subsequently unavailable. Participants then indicated the amount of compensation they believed they deserved (“I should receive a total of \$ \_\_\_\_\_”).

Those in the *add* condition imagined purchasing two suitcases—a medium suitcase and a large suitcase—either as a bundle or separately. The two suitcases in the *bundled* condition were

presented together in a single image, while the two suitcases in the *separate* condition were presented separately in two different images. Those in the *bundled* condition, after reviewing the first suitcase set, read that another suitcase set was also available and identical to the first suitcase set; however, it also included a small suitcase (the same small suitcase as in the *lose* condition). Participants indicated how much more they would be willing to pay for the second suitcase set than for the first suitcase set (i.e., WTP to add the small suitcase). Those in the *separate* condition, after reviewing the first two suitcases, read that a small suitcase was also available. Participants indicated how much they would be willing to pay for the small suitcase (“I would be willing to pay \$\_\_\_\_\_ for the small suitcase”).

Finally, in the *lose* condition, participants considered how important it would be to replace the missing item (“not at all important” = 1; “very important” = 7) and how unhappy they would be with the company that failed to deliver the small suitcase (“not at all unhappy” = 1; “very unhappy” = 7). In the *add* condition, participants indicated how happy they would be with the company that sold the luggage (“not at all happy” = 1; “very happy” = 7).

### *Results and Discussion*

Because the distribution of the raw valuation responses was significantly right-skewed ( $\chi^2(2) = 127.32, p < .001$ ), we log-transformed WTP and compensation demanded. In the results that follow, we report the raw valuation responses, but perform our statistical tests on the log-transformed variables.

An ANOVA of valuation on scenario (*lose* vs. *add*) and presentation (*bundled* vs. *separate*) yielded a main effect of scenario ( $F(1, 184) = 197.34, p < .001$ ), such that compensation demanded exceeded purchase prices. This pattern is consistent with loss aversion and previous research demonstrating the endowment effect, although we note that compensation

demanded included both a refund and additional compensation for the unavailability and thus, was expected to be higher. There was no main effect of presentation ( $F(1, 184) = 2.56, p = .111$ ).

More importantly, the ANOVA yielded the predicted (H1) two-way interaction ( $F(1, 184) = 16.30, p < .001$ ; see Figure 5). Specifically, participants who lost the small suitcase from a bundle demanded more compensation ( $M = \$91.22, SD = \$45.04$ ) than did participants who lost the small suitcase in isolation ( $M = \$78.26, SD = \$46.28; F(1, 184) = 3.09, p = .080$ ). In contrast, participants who added the small suitcase to the bundle offered lower WTP ( $M = \$27.50, SD = \$14.45$ ) than did participants who added the same suitcase separately ( $M = \$40.34, SD = \$22.14; F(1, 184) = 15.28, p < .001$ ).

[Insert Figure 5 here]

Next, in order to test our main hypothesis—that the greater compensation demanded for losses from bundles accrues from the ruin of the “whole” of the bundle—we analyzed desire to replace the item for those in the *lose* condition. As predicted, participants who imagined losing the small suitcase from a bundle stated that replacing the item was more important ( $M = 5.78, SD = 1.28$ ), compared to participants who imagined losing the small suitcase in isolation ( $M = 5.13, SD = 1.64; t(96) = 2.14, p = .035$ ).

Furthermore, perceived importance of replacing the small suitcase mediated the effect of presentation condition (*bundled* vs. *separate*) on compensation demanded in the *lose* condition. Specifically, we conducted a mediation analysis using the bootstrap procedure, with 20,000 resamples (Preacher, Rucker, and Hayes 2007; SPSS Macro PROCESS Model 4). Our model included presentation condition as the independent variable (*bundled* = 0; *separate* = 1), perceived importance of replacement as the mediator variable, and log-transformed compensation demanded as the dependent measure. As predicted, we found a significant indirect

effect of perceived importance of replacement (indirect effect =  $-.04$ ,  $SE = .03$ , bias-corrected 95% confidence interval =  $[-.121, -.004]$ ). The *separate* condition significantly reduced perceived importance of replacement ( $a = -.65$ ,  $p = .035$ ), and perceived importance of replacement was significantly and positively associated with compensation demanded ( $b = .07$ ,  $p = .016$ ). Including perceived importance of replacement in the model significantly reduced the effect of presentation condition on compensation demanded (from  $c = -.17$ ,  $p = .047$  to  $c' = -.12$ ,  $p = .140$ ), suggesting full mediation. Notably, perceived importance of replacement and compensation demanded were distinct variables, only somewhat correlated ( $r(98) = .230$ ,  $p = .022$ ).

Finally, we also analyzed subjective experience ratings (i.e., unhappiness and happiness ratings; H2). As predicted, in the *lose* condition, participants who lost the small suitcase from a bundle were unhappier ( $M = 6.02$ ,  $SD = .97$ ) than were participants who lost the same suitcase purchased separately ( $M = 5.26$ ,  $SD = 1.48$ ;  $t(96) = 2.94$ ,  $p = .004$ ). In the *add* condition, we did not observe a corresponding difference in happiness ( $M_{\text{bundled}} = 5.26$ ,  $SD_{\text{bundled}} = .98$ ;  $M_{\text{separate}} = 5.16$ ,  $SD_{\text{separate}} = .86$ ;  $t(88) = 0.52$ ,  $p = .602$ ), likely because this particular measure asked about happiness with the company offering the luggage, rather than with the overall acquisition experience (as in Study 3). Nevertheless, the observed difference between the *bundled* and *separate* conditions for the *lose* condition does replicate the pattern observed in Study 3.

These results reveal that the perceived importance of replacing a lost item mediates the effect of bundling on compensation demanded for losses (H4). With evidence that additional compensation demanded for losses from bundles accrues from both the forfeiture of the lost item itself and the dissolution of the “whole” of the bundle, we next tested a boundary condition to

provide further evidence that the “gestalt” impression caused by bundling is the mechanism by which the asymmetry in valuation arises.

#### *STUDY 6: SET COMPLETION AS A BOUNDARY CONDITION*

We designed Study 6 to test a boundary condition for our proposed asymmetry in valuation (H5). In particular, whenever the impression of a “whole” depends on the completeness of a set, consumers should value the “whole” of the set irrespective of whether items are offered as a bundle or separately, and the asymmetric effect of bundling on compensation demanded and WTP should be attenuated. Therefore, in Study 6, we manipulated whether a state of completion was an objective property of the target items. Specifically, participants considered purchasing baseball cards, which either formed a complete set (e.g., the baseball cards represented each player on a specific team) or did not form a complete set (e.g., the baseball cards represented the top players in the league). We predicted that the effect of bundling on valuation would persist only when the baseball cards did not form a complete set.

#### *Method*

We recruited 800 U.S.-based MTurk workers in exchange for \$0.50. Seven hundred sixty-one participants ( $M_{\text{age}} = 34.42$ ,  $SD_{\text{age}} = 11.28$ ; 406 females, 354 males, one undisclosed) remained in the study after applying the exclusion criteria.

Study 6 employed a 2 (scenario: *lose* vs. *add*)  $\times$  2 (presentation: *bundled* vs. *separate*)  $\times$  2 (set relationship: *no-set* vs. *set*) between-subjects design. Participants read that they had purchased baseball cards as a gift for their nephew, either as a bundle or separately, and we described an opportunity to either sell one of the baseball cards or acquire an additional baseball

card. We manipulated whether the baseball cards formed a complete set (such that losing a card would render the set incomplete and adding a card would complete the set) or consisted of unrelated players. The dependent variable of interest was valuation of a baseball card.

In the *no-set* condition, participants read that they had purchased a variety of baseball cards, either as a bundle (“the Top Stars Baseball Card Bundle”) or separately (“a variety of baseball cards for the top players in the league”). In the *set* condition, participants read that they had purchased a set, either as a bundle (“the World Series Championship Complete Set”) or separately (“a baseball card for each of the players on the World Series winning team”).

Participants assigned to the *lose* condition considered selling one of the baseball cards and listed their WTA to sell a baseball card, either from a bundle or separately. Those in the *set* condition also read: “Selling a card would mean that one of the players on the World Series team would be missing (i.e., the set would be incomplete).” Participants assigned to the *add* condition considered purchasing an additional baseball card and listed their WTP to purchase a baseball card and either add it to a bundle or add it separately. Those in the *set* condition also read: “Suppose that before you give the gift to your nephew, you discover that one of the players on the World Series team is missing (i.e., the set is incomplete). You have the opportunity to buy a replacement baseball card.” All participants read that “baseball cards typically cost between \$1–\$10” and indicated their WTA or WTP on a 12-point scale (“less than \$1.00” = 1; “\$1.00” = 2; “\$2.00” = 3; up to “\$9.00” = 10; “\$10.00” = 11; “more than \$10.00” = 12).

### *Results and Discussion*

An ANOVA of valuation on scenario (*lose* vs. *add*), presentation (*bundled* vs. *separate*), and set relationship (*no-set* vs. *set*) revealed a main effect of scenario ( $F(1, 753) = 466.08, p < .001$ ), such that that WTA to sell a baseball card exceeded WTP to acquire a baseball card,

consistent with loss aversion and previous research demonstrating the endowment effect. The ANOVA further revealed a main effect of set relationship ( $F(1, 753) = 33.11, p < .001$ ), such that valuation in the *set* condition exceeded valuation in the *no-set* condition.

More importantly, as predicted (H5), the ANOVA also yielded a three-way interaction ( $F(1, 753) = 3.81, p = .051$ ), confirming set completion as a boundary condition for the asymmetry in valuation (see Figure 6). Specifically, within the *no-set* condition, we observed a significant scenario (*lose vs. add*) by presentation (*bundled vs. separate*) two-way interaction ( $F(1, 753) = 10.11, p = .002$ ), replicating the asymmetry in valuation (H1). Participants who sold a baseball card from a bundle demanded more compensation ( $M = 11.42, SD = 1.79$ ) than did participants who sold a baseball card in isolation ( $M = 9.93, SD = 3.21; F(1, 753) = 11.70, p < .001$ ). For acquisition, however, the pattern reversed, though not significantly so: Participants who added a baseball card to a bundle offered lower WTP ( $M = 4.97, SD = 3.29$ ) than did participants who added a baseball card separately ( $M = 5.45, SD = 3.69; F(1, 753) = 1.20, p = .274$ ). Critically, as predicted, within the *set* condition, we did not observe a scenario (*lose vs. add*) by presentation (*bundled vs. separate*) two-way interaction ( $F(1, 753) = .19, p = .661$ ), confirming that the asymmetric effect of bundling on valuation persisted only when the baseball cards did not form a complete set.

[Insert Figure 6 here]

These results suggest that the asymmetry in valuation is attenuated when a state of completion is an objective property of the target items. In these contexts, consumers perceive a “whole” irrespective of whether the items are offered as a bundle or separately. Study 6, therefore, further suggests that the “gestalt” impression caused by bundling is the mechanism by which the asymmetry in valuation arises.

## *GENERAL DISCUSSION*

Products and services as diverse as clothes, television and Internet service, real estate, healthcare, books, cell phone plans, and even education are all offered as bundles, as well as separately (often simultaneously). Given the prevalence of bundling in the marketplace, understanding its psychological consequences is both theoretically and practically important. To that end, this research, which documents the asymmetry hypothesis in the valuation of bundles, advances the current literature on the psychology of bundling. In particular, we find that (1) consumers demand more compensation for and experience greater dissatisfaction from the loss of items from bundles, compared to the loss of the same items in isolation, and (2) consumers offer lower willingness-to-pay (WTP) for and experience less satisfaction from items acquired as or added to bundles, compared to the same items purchased separately.

This asymmetry in valuation persists because bundling leads consumers to see multiple items as a single, inseparable “gestalt” unit. Thus, consumers are reluctant to both remove items from and add items to bundles. Specifically, when losing an individual component from a bundle, consumers suffer not only the loss of the item itself, but also the ruin of the “whole” of the bundle—and, hence, demand greater compensation. However, in acquisition, adding an additional component to a bundle alters and therefore compromises the preexisting “whole.”

We examined the asymmetric effect of bundling on valuation across six studies. In these studies, we triggered the perception of a bundle by physically binding the items together (Study 1), placing the items in a container labeled as a bundle (Studies 2 and 3), displaying the items in close proximity (Study 5) and simply referring to a “bundle” (Studies 4 and 6). In addition to

offering evidence for our hypotheses, we also ruled out alternative explanations. While, for example, pricing inferences in the marketplace could potentially explain the effect of bundling on valuation in acquisition, our asymmetry hypothesis accounts for the opposite patterns of valuation for losses. Further ruling out competing explanations based on pricing inferences, we documented the corresponding subjective experience of loss and acquisition (i.e., dissatisfaction and satisfaction), depending on whether items were offered as a bundle or separately.

### *Theoretical and Practical Implications*

Prospect theory's most basic prediction is that losses loom larger than gains. Our paradigm allows us to test for loss aversion and, indeed, we consistently find that WTA is higher than WTP (regardless of whether items are bundled or presented separately), as work on the endowment effect suggests. Admittedly, our paradigm does not always provide a clean test of the disparity between WTA and WTP. For example, in Study 5, compensation for loss included both a refund and additional compensation for the unavailability.

Interestingly, in Study 2, we found evidence for the endowment effect in the *bundled* condition, but not in the *separate* condition. One possibility for this result is that people experience diminishing marginal sensitivity for losses and gains (Kahneman and Tversky 1979). Therefore, when consumers hold multiple, separate items and buy or sell one item at the margin, the endowment effect may be attenuated, compared to when consumers buy or sell a single item in isolation.

To examine this possibility, we conducted a posttest with 191 MTurk participants, based on the Study 2 procedure. We employed a 2 (scenario: *lose* vs. *add*)  $\times$  2 (quantity: *single unit* vs. *multiple units*) between-subjects design. Participants in the *lose* condition assumed that they had either one or four candy bars and listed their selling price (WTA) for a single candy bar (e.g., one

of one vs. one of four). Participants in the *add* scenario assumed that they had either zero or three candy bars and listed their WTP for another candy bar (e.g., added to zero vs. added to three). Participants then indicated their valuation of the candy bar on a ten-point scale (“\$0.00–\$0.99” = 1; “\$1.00–\$1.99” = 2; up to “\$9.00–\$9.99” = 10). An ANOVA of valuation on scenario (*lose* vs. *add*) and quantity (*single unit* vs. *multiple units*) yielded a main effect of scenario, such that selling prices exceeded purchase prices ( $F(1, 187) = 20.19, p < .001$ ), consistent with loss aversion, and a main effect of quantity (*single unit* vs. *multiple units*), such that valuation in the *single unit* condition exceed valuation in the *multiple units* condition ( $F(1, 187) = 15.99, p < .001$ ). Critically, the ANOVA further yielded a two-way interaction ( $F(1, 187) = 8.75, p = .003$ ). Specifically, in the *single unit* condition, we observed an endowment effect: WTA ( $M = 3.09, SD = 1.70$ ) exceeded WTP ( $M = 1.80, SD = .66; F(1, 187) = 28.50, p < .001$ ); however, in the *multiple units* condition, WTA ( $M = 1.89, SD = 1.11$ ) and WTP ( $M = 1.63, SD = 1.06$ ) were similar ( $F(1, 187) = 1.15, p = .285$ ). It appears that the endowment effect can be attenuated when consumers hold multiple units and buy or sell one unit at the margin.

We conclude that differences in marginal utility, therefore, may account for the absence of an endowment effect in the *separate* condition of Study 2. We also note that this result is somewhat consistent with previous work demonstrating that the endowment effect is attenuated for multiple-unit holdings (e.g., buying and selling 25 separate pieces of chocolate), compared to singleton holdings (e.g., buying and selling one box containing 25 chocolates; Burson, Faro, and Rottenstreich 2013), although we tested losses *from* bundles, rather than losses *of* bundles.

A more important question might be whether prospect theory makes any prediction for the effect of bundling (vs. offering items separately). This comparison, after all, underlies our key prediction. We note that because both the gain and loss functions described by prospect

theory display diminishing marginal sensitivity, it is possible that the loss of a single item from multiple items (i.e., from a bundle) and the addition of a single item to multiple items (i.e., to a bundle) are experienced farther from the relevant reference point (i.e., with diminished marginal sensitivity). This interpretation of prospect theory argues for a main effect of bundling:

Consumers should pay more for an item in isolation, compared to the same item added to a bundle, and demand more for a loss in isolation, compared to the same loss from a bundle. Our results, however, demonstrate that this is not the case, and we provide evidence suggesting that consumers' "gestalt" impressions of bundles lead to the opposite prediction for losses.

Our results further diverge from the principles of hedonic editing, which describe how people might edit or parse multiple outcomes in a way maximizes happiness (Thaler 1999; Thaler and Johnson 1990). Specifically, the hedonic editing hypothesis suggests that people should (1) segregate gains, (2) integrate (or bundle) losses, (3) integrate (or bundle) smaller losses with larger gains, and (4) segregate smaller gains from larger losses. For example, suppose an appetizer, entrée, and dessert are purchased as a bundle, and the dessert is unavailable. Based on the third principle, a diner should be less upset (and, hence, demand less compensation), when a larger gain (i.e., the appetizer and entrée) is bundled with and, therefore offsets, the smaller loss (i.e., the dessert). However, this account overlooks the ruin of the "whole" of the bundle. As such, our theorization predicts the opposite pattern of results for losses, compared to the hedonic editing hypothesis. Note that in acquisition, however, segregation of gains (i.e., the first of the hedonic editing principles) is consistent with our account—that consumers will offer lower WTP for separate, rather than bundled, items.

This work also yields meaningful practical insights for marketers, given the predominance of bundling as a marketing strategy (Estelami 1999; Heeler, Nguyen, and Buff

2007; Yadav 1994). First, pricing decisions should be informed by this asymmetry in valuation. Second, to the extent that bundles are offered because marketers wish to entice consumers with discounts, firms should be aware that when a component of a bundle fails or is unavailable, consumers can become more dissatisfied and demand more compensation than those who experience identical losses for non-bundled products or services. Finally, it is worth noting that consumers sometimes prefer bundles, in part, because they communicate that the component items fit or belong together (i.e., they form a “whole”). Ironically, despite our finding that consumers expect to pay less for bundles, marketers should be cognizant of the fact that consumers may find them quite attractive—and hence, are reluctant to dissolve them.

### *Conclusion*

In short, we find that while consumers demand more compensation for the loss of items from bundles, compared to the loss of the same items in isolation, they nevertheless offer lower WTP for items acquired as or added to bundles, compared to the same items purchased separately. This asymmetry in valuation persists because bundling causes consumers to perceive multiple items as a single, inseparable “gestalt” unit. Thus, for bundles, consumers both pay less and yet demand more. So, while the old adage *caveat emptor* (“buyer beware”) is likely more familiar, for bundles, *caveat venditor* (“seller beware”) might be more apt.

TABLE 1

MEAN (SD) AND PAIRED T-TEST RESULTS FOR MANIPULATION CHECKS (ITEMS "FORM A BUNDLE") AND "GESTALT" IMPRESSIONS (ITEMS "BELONG TOGETHER" AND "GO WELL TOGETHER"): STUDIES 1–3, AND 5

Study	Stimuli	Manipulation Checks					
		Bundled	Separate	Difference	N	Paired t-test	Sig.
Study 1	Clif Bars	6.13 (1.63)	2.20 (1.56)	3.94 (2.25)	31	t(30) = 9.74	***
Study 2	Chocolate truffles	6.57 (1.33)	2.13 (1.91)	4.43 (2.49)	30	t(29) = 9.76	***
Study 3	Christmas cards	6.37 (1.19)	2.33 (1.86)	4.03 (2.57)	30	t(29) = 8.61	***
Study 5	Suitcases	6.48 (1.12)	2.10 (1.85)	4.39 (2.50)	31	t(30) = 9.77	***

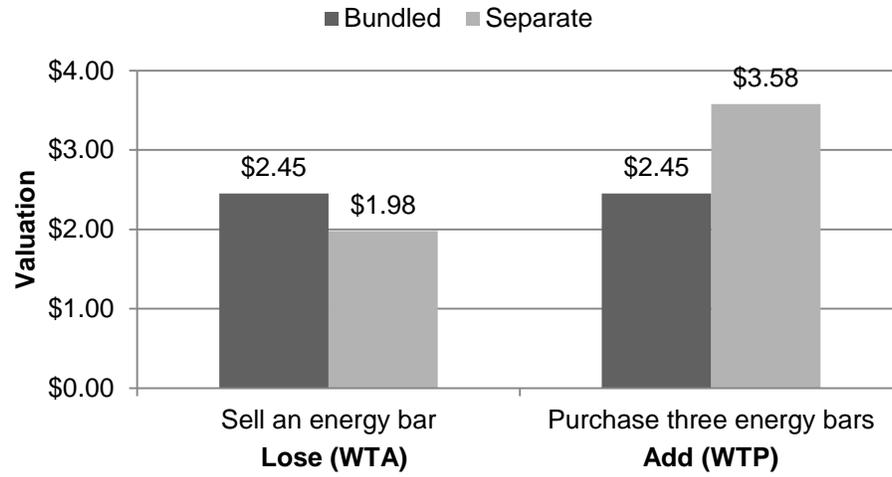
  

Study	Stimuli	"Gestalt" Impressions					
		Bundled	Separate	Difference	N	Paired t-test	Sig.
Study 1	Clif Bars	6.34 (1.17)	5.84 (1.25)	.50 (.70)	31	t(30) = 4.00	***
Study 2	Chocolate truffles	6.83 (.44)	6.17 (1.19)	.67 (1.11)	30	t(29) = 3.29	**
Study 3	Christmas cards	6.53 (1.16)	6.25 (1.34)	.28 (.89)	30	t(29) = 1.75	†
Study 5	Suitcases	6.56 (.91)	6.08 (1.19)	.48 (.94)	31	t(30) = 2.85	**

† $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

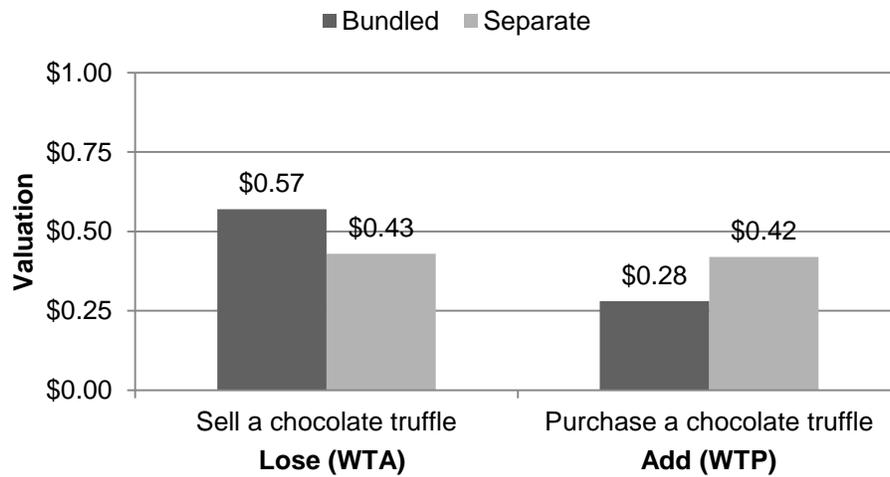
**FIGURE 1**

STUDY 1: OFFERING ENERGY BARS AS A BUNDLE (VS. SEPARATELY) INCREASES COMPENSATION DEMANDED FOR LOSSES (WTA), YET DECREASES PURCHASE PRICES (WTP)



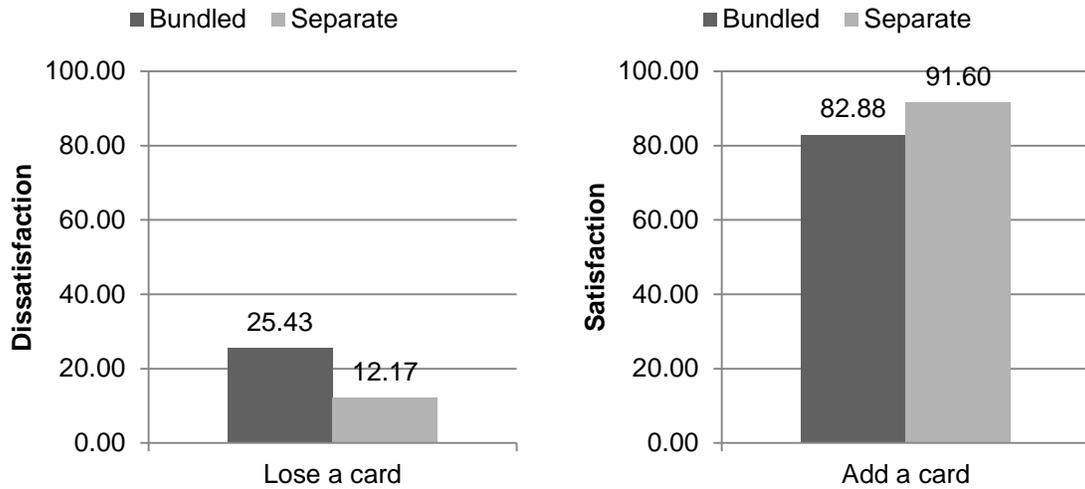
**FIGURE 2**

STUDY 2: WTA IS HIGHER WHEN SELLING A TRUFFLE FROM A BUNDLE (VS. SEPARATELY), YET WTP IS LOWER WHEN ADDING A TRUFFLE TO A BUNDLE (VS. SEPARATELY)



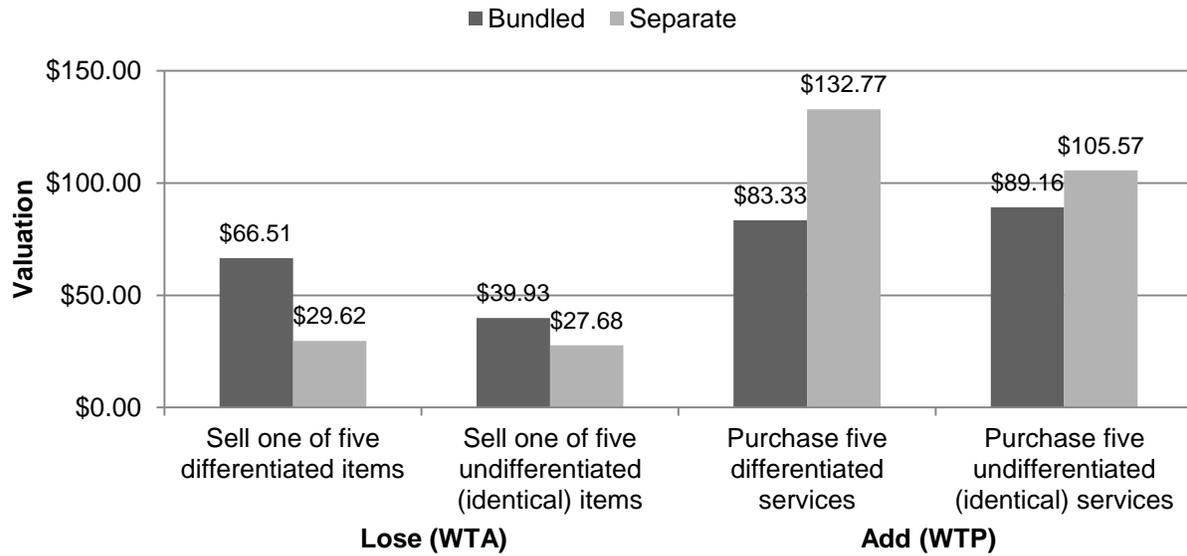
**FIGURE 3**

STUDY 3: DISSATISFACTION IS HIGHER WHEN LOSING A CHRISTMAS CARD FROM A BUNDLE (VS. SEPARATELY), YET SATISFACTION IS LOWER WHEN ADDING THE SAME CHRISTMAS CARD TO A BUNDLE (VS. SEPARATELY)



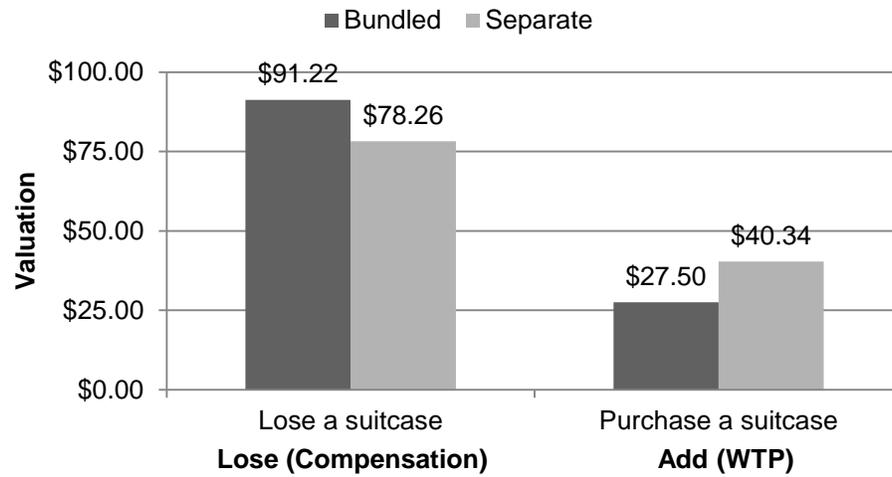
**FIGURE 4**

STUDY 4: OFFERING VEHICLE SERVICES AS A BUNDLE (VS. SEPARATELY) INCREASES COMPENSATION DEMANDED FOR LOSSES (WTA), YET DECREASES PURCHASE PRICES (WTP), BUT THIS PATTERN IS ATTENUATED FOR UNDIFFERENTIATED PRODUCTS, WHICH DO NOT CREATE A "GESTALT" IMPRESSION



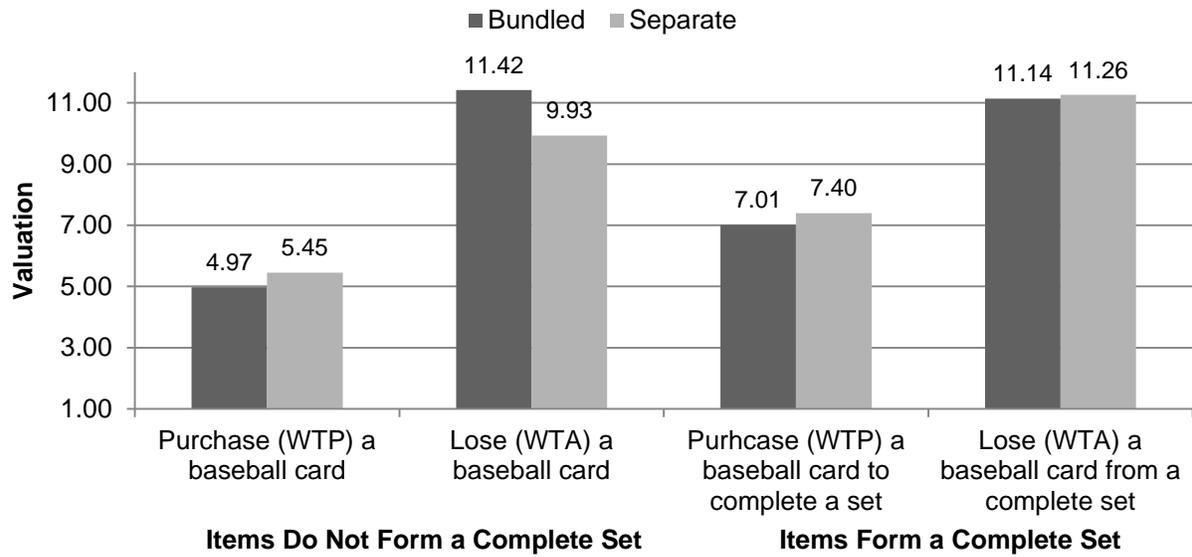
**FIGURE 5**

STUDY 5: COMPENSATION DEMANDED IS HIGHER WHEN LOSING A SUITCASE FROM A BUNDLE (VS. SEPARATELY), YET WTP IS LOWER WHEN ADDING A SUITCASE TO A BUNDLE (VS. SEPARATELY)



**FIGURE 6**

STUDY 6: WTA IS HIGHER WHEN SELLING A BASEBALL CARD FROM A BUNDLE (VS. SEPARATELY), YET WTP IS LOWER WHEN ADDING A BASEBALL CARD TO A BUNDLE (VS. SEPARATELY), BUT THIS PATTERN IS ATTENUATED WHEN ITEMS FORM A COMPLETE SET



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