Before or After? The Effects of Payment Decision Timing in Pay-What-You-Want Contexts

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Abstract

This research studies how payment decision timing – before versus after product delivery – influences consumer payment under pay-what-you-want pricing. The authors focus on situations where there is minimal change in consumer uncertainty regarding the product before versus after receiving it. The theoretical development suggests that people pay more after (versus before) receiving the product when product value is high, but the effect is mitigated when product value is low and reversed when product value is sufficiently low. Results from a laboratory experiment and a field experiment lend support to the theoretical predictions, with preliminary evidence for the moderating effect of product value. An online experiment demonstrated the predicted payment decision timing effect at high product value and a reversal of the effect at low product value. Another online experiment extended the scope of the previous studies by examining pay-what-you-want transactions in a charitable donation context (which authors label "contribute-what-you-want"): the authors obtained evidence for the predicted payment decision timing effect for high product value and a mitigation of the effect for low product value, as well as process evidence for the theoretical mechanism. This work has implications for the management of pay-what-you-want schemes for firms, including non-profits, social enterprises, and charities.

Keywords: pay-what-you-want pricing; participative pricing; behavioral pricing; charitable donations; payment decision timing; social exchange; value perceptions; obligation

Pay-what-you-want is a pricing mechanism where the consumer can freely decide how much to pay for a product or service. It is a type of participative pricing (Spann et al. 2018) in which the buyer plays a part in setting the price. Radical as the idea of pay-what-you-want may seem, variations of it have been employed widely in the past as well as in recent times. Public museums, such as London's British Museum, have long allowed nominally free entry but with requests for donations at entry and/or exit. New York's Metropolitan Museum of Art practices pay-what-you-want for New York State residents and students from New York, New Jersey, and Connecticut. The Panera Bread bakery-café chain in the US (Eckhardt and Dobscha 2019) and the British band Radiohead (Elberse and Bergsman 2008) have both carried out pay-what-you-want arrangements in highly publicized campaigns in the past. In the domain of finance, the investing social network Public (www.public.com, accessed on June 18, 2021) offers brokerage without a fixed commission rate and earns revenue from optional tipping, which is a form of pay-what-you want. In the domain of information provision, the Guardian newspaper website and Wikipedia have long upheld a successful pay-what-you-want model for their content. The Guardian received contributions from more than one million readers between 2016 and 2018 (Mayhew 2018). Similarly, the Wikimedia Foundation, which hosts Wikipedia, raised more than US$120 million in contributions in the year ended June 30, 2020 (KPMG 2020). Web Appendix A summarizes more samples of pay-what-you-want practices across the world, and the list is far from exhaustive.

Pay-what-you-want schemes have also been employed by smaller or more local businesses. For example, the restaurants, cafeteria, and delicatessen studied by Kim et al. (2009), Riener and Traxler (2012), and Kim et al. (2014b), respectively, as well as the online music store studied by Regner and Barria (2009), had all instituted some form of pay-what-you-want mechanism and earned revenues that were significantly above zero, contradicting standard economic assumptions of self-interest maximization.

In addition, many corporate appeals involve a pay-what-you-want request for a product or service offered, where part or all of the payment would go to a charity (e.g., Gneezy et al. 2010 and Jung et al. 2017). For example, Burger King offered a pay-what-you-want arrangement for its Whopper burgers for one day in September 2020, with all proceeds going to a charity (Salaky 2020).

As a pricing model, pay-what-you-want involves the consumer voluntarily paying the seller any amount of money (including zero) in return for being unconditionally offered some benefits, such as a product or service. As a voluntary give-and-take between the seller and the consumer, the pay-what-you-want pricing model is an instance of a social exchange (see e.g., Fiske 1992), which is a bedrock of interpersonal interactions in society. The pay-what-you-want mechanism has thus become important in recent years with the proliferation of business models based on social exchange (Farrell 2017). These businesses often refrain from charging fixed prices that might drive away customers who cannot afford to pay them.

Despite the widespread adoption of pay-what-you-want, the success of this pricing mechanism is not guaranteed. Panera's use of pay-what-you-want is one of many examples where the mechanism did not attain its desired results and was eventually discontinued (Dholakia 2017). Sellers implementing pay-what-you-want pricing should therefore carefully align factors that could psychologically affect payments.

Research Objectives and Contributions: Payment Decision Timing in Pay-What-You-Want with Minimal Change in Uncertainty

The present research is concerned with the *timing* of payment decisions under pay-what-you-want, in the sense of whether consumers' payments would differ depending on when they are asked to make their payment decision – before or after receiving the unconditionally offered product – and, if there can be such a difference, why it occurs and under what conditions. Notably, in practice,

both “before” and “after” payment timing arrangements can be found in business examples of pay-what-you-want pricing (see Web Appendix A).

Research on the timing of payment decisions under pay-what-you-want is a very recent development (e.g., Christopher and Machado 2019; Viglia et al. 2019). Existing work on this topic focuses on differences in payments before versus after the resolution of significant consumer uncertainty, such as uncertainty regarding the benefits of the offer. By contrast, in this research, we focus on scenarios with minimal, if any, change in consumer uncertainty regarding the value of the product, and with a minimal time-period separating the payment decision and the receipt of the product. Existing research is silent on such scenarios, and one key aim of our paper is to close this gap in the literature. Intuitively, decision timing should make little difference under such scenarios. We explore whether this is indeed the case. In addition, existing work on payment decision timing does not study how product value might impact the payment decision timing effect. Our research also addresses this gap in the literature by showing that product value can significantly moderate decision timing effects, with the possibility of a reversal when product value decreases from a high level to a sufficiently low level. As such, our work adds to existing knowledge on payment decision timing in areas that have not been addressed before, but that have substantive practical implications for the management of pay-what-you-want schemes. Table 1 and Figure 1 provide comparisons between previous related work and the current studies, which highlight our contributions.

– Insert Table 1 and Figure 1 around here –

We propose that people pay different amounts depending on the timing of their payment decision, even when there is minimal change in uncertainty regarding the value of the product at different timings. In more detail, our theoretical development, which invokes a social exchange perspective, suggests that people pay more after (versus before) receiving the offering when

product value is high. This is because receiving the offering makes the social exchange nature of the transaction salient and leads to more elaboration on the social factors involved, which in turn leads to people experiencing higher felt obligation towards the seller and hence to higher payment. But this payment decision timing effect is mitigated when product value is low– although the social exchange nature of the transaction is salient after delivery of the offering, the social exchange is perceived as less substantive and will not lead to as much elaboration on social factors as when product value is higher. As a result, payment will not increase as much too. The effect is even reversed when product value is sufficiently low, as salience of the social exchange nature of the transaction after delivery only makes more prominent the fact that the exchange is not substantive. This, in turn, leads to less elaboration on the social factors followed by lower felt obligation and lower payment after (versus before) receiving the low-value offering. As such, our theoretical development leads to our consideration of product value as a crucial moderator of the payment decision timing effect, with novel theoretical predictions and managerial implications that have not been noted in previous related literature.

Results from a laboratory experiment and a field experiment (Studies 1 and 2) lend support to our theoretical predictions, with preliminary evidence for the role of product value (Study 1 also showed that the effects we investigate are robust to the presence or absence of explicit reference prices). A subsequent online experiment (Study 3) demonstrated, across treatment conditions, the predicted payment decision timing effect for high product value and a reversal of the effect for low product value. Another online experiment (Study 4), in which the pay-what-you-want transaction was in a charitable donation context (which we label “contribute-what-you-want”), demonstrated again the predicted payment decision timing effect for high product value, as well as a mitigation of the effect for low product value; the experiment also provided process evidence for our theoretical development.

Note that the products and scenarios we investigated are all practically relevant to pay-what-you-want and befit our objectives of studying payment decision timing effects with minimal change in uncertainty. These include the delivery of an Amazon voucher in Study 1, familiar non-alcoholic beverages (such as Coca-Cola) in Study 2, or a raffle ticket (where delivery in the experiment always took place long before the raffle draw results were announced) in Studies 3 and 4. It is also notable that we examine pay-what-you-want in the context of a buyer-seller transaction without a charitable donation component (Studies 1-3) as well as with a charitable donation context (contribute-what-you-want; Study 4). Our findings on payment decision timing effects are consistent across contexts. Our process evidence (Study 4) suggests that our observed effects are partly driven by differences in felt obligation, over and above differences in a parallel process of felt ownership, across payment decision timing conditions. Our work thus offers a much more nuanced delineation of the forces at play than captured in prior work.

Literature Review

Research on pay-what-you-want, as a topic in behavioral pricing and a type of participative pricing mechanisms, has developed into a sizeable literature since the late 2000s. Greiff and Egbert (2018) and Gerpott (2017) provide excellent summaries of a range of relevant past work. Table 1 provides an updated review of this literature. Earlier research established that, contrary to standard economic assumptions of self-interest maximization, consumers often pay significant positive amounts under pay-what-you-want. These findings were based on field experiments (e.g., Gneezy et al. 2010; Kim et al. 2009) as well as empirical data (e.g., Regner and Barria 2009; Riener and Traxler 2012). Those studies also established social motivations behind pay-what-you-want payments such as reciprocity (Regner and Barria 2009), fairness (Kim et al. 2009), and altruistic charitable giving (Gneezy et al. 2010). Later studies examined further social motivations, such as communal norms (Santana and Morwitz 2015, 2021), or attempted to unify a number of

known major social motivations, such as consideration of fairness norms and social image signaling, into a richer theoretical framework (Lee et al. 2021).

Other works examined broader contexts. A number of studies (e.g., Johnson and Cui 2013; Kunter 2015) looked at how reference prices or cost information impact pay-what-you-want payment. Gneezy et al. (2012) studied the impact of self-signaling motives. Schmidt et al. (2015) set up laboratory markets and identified how pay-what-you-want can be a useful competitive strategy. Mak et al. (2015) examined the long-term viability of pay-what-you-want when consumers establish a "social contract" to financially sustain the seller. Chen et al. (2017) used analytical modelling to understand the strategic implications of fairness concerns in pay-what-you-want. Examples of development in recent years include Santana and Morwitz (2021), who looked at gender differences in payment under pay-what-you-want. Wang et al. (2021) pointed out that pay-what-you-want might demotivate purchase because of the effort required in deciding how much to pay. Roy and Das (2022) investigated the role of contextual factors such as salesperson presence, loose change, and music, on pay-what-you-want payments.

The nature of pay-what-you-want, being a type of voluntary payment, can be readily adapted to solicit voluntary donation for charities. A pay-what-you-want transaction where part or all the payment goes to a charity can be called *contribute-what-you-want*. The possibility of contribute-what-you-want has been noticed since early research on pay-what-you-want, such as Gneezy et al. (2010) who found in their field study that the presence of a charitable component could increase payment. Jung et al. (2017) also found in their field studies that consumers paid more under pay-what-you want if they knew that a portion of their payment was allocated to a charity. It thus appears that contribute-what-you-want could be driven by similar social factors as pay-what-you-want without a charitable component, but that the presence of a charitable component could reinforce those motivations. In relation, research has also found that the salient

presence of a souvenir gift offered in return for a charitable donation could be beneficial to donations, as long as the value of the souvenir is not too low (Chao 2017).

Despite the breadth of issues studied, prior research predominantly held constant the timing of the payment decision within the same study. Some recent research on pay-what-you-want has begun to examine differences between payments before versus after consumption. A conceptual investigation of experience goods (Egbert et al. 2015) suggested the possibility that pay-what-you-want payment could be higher because consumer uncertainty was resolved after (versus before) consumption. The snack sale experiment in Christopher and Machado (2019) examined pay-what-you-want payment before versus after consumption (when in both cases the consumer has already received the product). They found that payment was higher after (versus before) consumption. Viglia et al. (2019) found that pay-what-you-want payment for service consumption was higher after (versus before) consumer uncertainty was resolved.

Theoretical Development

In the context of the payment decision timing studies discussed above (see also Figure 1), the present research explores a different set of research questions by focusing on scenarios with minimal, if any, change in consumer uncertainty between "before" and "after" product delivery, and a minimal time-period in-between. We use a novel psychological process that allows us to investigate the moderating role of product value that has not been previously examined. Our findings are thus driven by a different psychological process and have different practical implications compared with prior works.

In the following theoretical development, we first present a perspective of pay-what-you-want pricing as an instance of social exchange. We then propose that, when the payment decision takes place after (versus before) delivery, there is an increase in the consumer's elaboration on the social factors associated with pay-what-you-want (including normative and emotional factors)

with implications on felt obligation, which result in a decision timing effect on payment. In addition, we propose product value as a moderating factor that can affect this psychological process, to the point of reversing the effect. Our theoretical development enables us to posit hypotheses regarding the impact of payment decision timing, along with product value, on pay-what-you-want payment, which we examine in our studies.

Pay-What-You-Want as a Social Exchange

Many aspects of daily life revolve around people receiving and voluntarily returning favors. These activities, which can be broadly subsumed under the rubric of social exchange (e.g., Belk 2010; Fiske 1992), represent a major domain of social interactions among individuals and organizations. They constitute a *social market* that is distinct from the *economic market* (Heyman and Ariely 2004; see also Clark and Mills 1979, 2012, and Aggarwal 2004 for an application involving consumers and brands). A social exchange typically begins with a party offering a benefit to another party without any legally binding conditions. The offering party generally expects that the recipient will return the favor, and the recipient will often do so (see, e.g., Zhang and Epley 2009).

A consumer in a pay-what-you-want transaction can be seen as the recipient in a social exchange, since the consumer is prompted to consider a voluntary payment in return for the unconditional offer of a product or service by the seller. A range of thoughts could go through the consumer's mind as they elaborate on the transaction in order to determine how much to pay. These thoughts can be directly related to the social factors associated with pay-what-you-want as a social exchange. They can be elaborations on normative or emotional aspects. Examples include consideration of fairness, such as norms of equitable distribution (Kim et al. 2009) or reciprocity (Zhang and Epley 2009). Kim et al. (2009) highlight emotional aversion to distress and social disapproval by other people – i.e., impression management – as a motivating factor in determining pay-what-you-want payment; see also Kunter (2015) on guilt as another important emotional

factor in this context. Alternatively, there can also be thoughts that are economic in nature, such as considerations of the consumer's benefits from the product or service and the consumer's out-of-pocket cost from the pay-what-you-want payment.

Furthermore, Santana and Morwitz (2021) point to how a communal orientation – a value for harmony, compassion, trust, cooperation, and connection – could lead to social motives being more salient during pay-what-you-want decisions, which then drives up payments. On the other hand, an agentic orientation – a value for power, self-sufficiency, competence, status, dominance, and independence – could lead to economic motives being more salient during pay-what-you-want decisions, which then drives down payments.

Elaborations on both social and economic factors could respectively influence the social and economic motives behind pay-what-you-want payments. Here, we propose that the timing of the payment decision (before versus after product delivery) mainly affects elaboration on social factors, because the relevance of these thoughts to the inherent social exchange taking place could depend on such timing. In detail, we posit that the delivery of a product in a pay-what-you-want setting signifies that the seller has completed their part in the social exchange by supplying the product or service. As such, the seller has fulfilled their commitment in providing value to the recipient. In turn, this marks the stage where the recipient is expected to fulfill their part, and therefore makes the social exchange nature of the pay-what-you-want transaction more salient to the consumer. This would result in an increase in the amount of elaboration on the social factors that underpin the social exchange aspect of the transaction. That is, the increased elaboration after delivery focuses on social factors – including the normative and emotional considerations described above – which influences the consumer's felt obligation to pay in return as in a social exchange (see also, e.g., Pillutla et al. 2003, for similar arguments in the context of trust and reciprocity). In sum, after (versus before) product delivery, the consumer engages in more

thoughts about social factors, as they determine the amount to pay in order to fulfill their end of the social exchange.[1]

Mechanisms Toward a Payment Decision Timing Effect

Further theoretical development around these ideas leads to three mechanisms that converge on a decision timing effect on payment (see Figure 2 for a schematic of the proposed effect mechanisms at play):

– Insert Figure 2 around here –

(1) *Payment decision timing → elaboration on social factors → felt obligation → payment*. After product delivery, the consumer realizes that the seller has already completed their part of the social exchange and fulfilled their commitment by providing value; and that at this stage the seller is likely expecting something in return. This realization will lead to higher elaboration on social factors after (versus before) product delivery. In turn, as discussed above, this will lead to an increase in the consumer's felt obligation toward the seller when deciding on the amount to pay, resulting in higher payment.

The above is our primary posited effect mechanism for a payment decision timing effect. In parallel to this effect path, we also note that the increased elaboration on social factors after (versus before) delivery could contribute to a stronger awareness of the fact that the product is already in the consumer's *possession*. This can then lead to higher felt ownership, which results in

[1] Note that, while economic factors and economic motives typically influence pay-what-you-want payment, we do not surmise that they could be directly influenced by the timing of payment decision in terms of before versus after product delivery in our context. As discussed, delivery of the pay-what-you-want product makes the social exchange nature of the transaction salient to the consumer. This, per se, should not have a direct impact on factors related to the economic aspects of the transaction. However, a secondary effect is possible in that the salience of the social exchange nature of the transaction might suppress the salience of the economic aspects of the transaction, leading to less elaboration on economic factors. This is indeed observed in our more detailed analysis of the coded thoughts in Study 4 (see Web Appendix F). Nevertheless, we expect this to be a secondary effect; in the interest of parsimony, we do not involve it in our theorizing. Further analysis of the Study 4 data also suggests that elaboration on economic factors could not account for the major results of that study.

more positive value perceptions of the product – an effect that has been extensively established in previous research on the ownership effect (see Morewedge and Giblin 2015 and the cites therein).

Meanwhile, perceptions of the value being transferred have been shown to play a role in influencing involved parties, in particular their motivations to reciprocate, in social exchange contexts (see, e.g., Zhang and Epley 2009). Hence, due to the impact on value perceptions, we posit that increased felt ownership after (versus before) delivery could also play a mediating role in the payment decision timing effect. This can be a direct impact on payment as well as an indirect impact via felt obligation, which operate in parallel to the primary effect mechanism (1) proposed above. As a result, we propose two possible additional effect mechanisms:

(2) *Payment decision timing → elaboration on social factors → felt ownership → payment.*

(3) *Payment decision timing → elaboration on social factors → felt ownership → felt obligation → payment.*

Effect mechanisms (1) to (3) converge on a payment decision timing effect, due to which pay-what-you-want payment is higher after (versus before) delivery. We call this the *standard* payment decision timing effect, and we tested it throughout our studies.

Product Value as Moderating Factor

The above psychological process assumes that the delivery of a product or service in a pay-what-you-want setting causes the social exchange nature of the interaction to become more salient to the consumer. The immediate direct consequence is a higher amount of elaboration on social factors. We posit that this will indeed occur when the seller is providing a product of sufficiently high value, so that the social exchange will be perceived as substantive and the recognition of the seller having completed their part after delivery will cause a higher amount of elaboration on social factors. This leads to the effect described above, namely that payment after delivery is higher than before delivery.

Consider, now, what might happen when product value is low. In that case, increased salience of the social exchange nature of the pay-what-you-want transaction after delivery will translate to less increase in elaboration on social factors, because the low value will lead to the social exchange being perceived as less substantive. As a result, payment "after" is not expected to be much higher than payment "before" compared to when product value is high. That is, the payment decision timing effect is mitigated when product value is low, relative to when product value is high.

Furthermore, when product value is sufficiently low, we surmise that delivery will make the consumer especially aware that the exchange taking place is not substantive, and that the seller has not incurred much cost or effort in connection with offering the product or service. As a result of this awareness upon delivery, a sufficiently low-value product would entail *less* elaboration on social factors after (versus before) its delivery to the consumer. This reduction in elaboration after delivery should have downstream implications that lead to a reversal, i.e., payment after is *less* than payment before product delivery.[2] Notably, we do not expect a corresponding change in elaboration on social factors before delivery across different product values, as in this case (regardless of product value) no additional awareness of the social exchange nature of the transaction is triggered.

In sum, we propose the following hypotheses. Let Payment_{before} and Payment_{after} be the pay-what-you-want payment before and after delivery, respectively. Then:

H_1 (the standard payment decision timing effect): When the value of the pay-what-you-want product is high, payment after delivery is greater than payment before delivery,

[2] In economic exchanges, an analogous phenomenon is the reversal of the endowment effect in the case of an object with negative valence or a "bad" (as opposed to a "good"; see Brenner et al. 2007, Shu and Peck 2011; Morewedge and Giblin 2015, p.343-344). A relatable result is that including a thank-you souvenir gift of very low value in a charitable donation campaign could reduce donations (Chao 2017).

that is, $Payment_{after} > Payment_{before}$.

H_2: As product value decreases, the difference between payment after and before delivery, i.e., $Payment_{after} - Payment_{before}$, decreases, so that the payment decision timing effect in H_1 is mitigated when product value is lower compared with when product value is high.

H_3: When product value is sufficiently low, payment after delivery is smaller than payment before delivery, that is, $Payment_{after} < Payment_{before}$.

Given that pay-what-you-want would appear to be a generous pricing mechanism to consumers, we expect that many products pass muster for "high value", so that H_1 applies and payment "after" will generally be higher than payment "before". Yet we posit that when the value of a product is low, a mitigation of the standard payment decision timing effect will occur, following H_2; and when product value is sufficiently low, a reversal will occur, in accordance with H_3.

Outline of the Studies in Relation to the Theoretical Process

In the following sections, we report four experimental studies that were conducted to test our predicted standard payment decision timing effect at high product value, the mitigation or possible reversal of the effect at low product value, as well as our proposed psychological process. In all the studies, we focus on scenarios in which there should be minimal, if any, change in consumer uncertainty before versus after product delivery. These products include an Amazon voucher of explicitly specified monetary value (Study 1); familiar non-alcoholic beverages (Study 2); and a raffle ticket for a future draw with clearly defined chances of winning an Amazon voucher (Study 3) or a cash prize (Study 4). Results from Studies 1 and 2 lend support to our theoretical development with preliminary evidence for the moderating effect of product value. Study 3 demonstrated, across treatment conditions, the standard decision timing effect at high product value and also a reversal of the effect at low product value. Study 4 extended our findings to a

charitable donation context, i.e., a contribute-what-you-want setting. Data from Study 4 also allow us to estimate a mediation model that maps onto the process described in this section.

Study 1: Amazon Voucher Laboratory Experiment

Study 1 was a controlled laboratory experiment with pay-what-you-want for an Amazon voucher. Our use of an Amazon voucher meant that there was very little uncertainty to participants regarding the product's value in either of the payment decision timing conditions. We also intuited that a £5 voucher (£1 ≈ US$1.3) would be considered as a sufficiently high value offering to participants relative to the typical compensation for participating in lab experiments of this nature and duration. Hence, we expected a higher payment after (versus before) product delivery, following hypothesis H1 in our theoretical development.

Method

A sample of 77 participants, recruited from the participant pool of the behavioral laboratory at a major UK business school, took part in response to a recruitment notice for participation in a 30-minute study. After excluding four participants who refused the experimental pay-what-you-want offer or reported a complete misunderstanding of the instructions (e.g., assuming that paying nothing would mean not being able to obtain the voucher), the analyzed data included 73 participants, in roughly equal proportions of males (53.42%) and females (47.58%), and who were mostly between the ages of 18 to 35 (90.41%). Prior to the experiment, ethical clearance was obtained from the second author's institution. Consent was obtained from all participants on paper at the beginning of the study. Irrespective of condition, each session lasted approximately 30 minutes on average, as stated in the original recruitment notice.

The experiment had a two condition (decision timing: "Before" vs. "After") between-subjects design. Procedurally, the experimenter first provided every participant with an upfront participation payment of £5 in cash in the form a stack of 10 coins in £0.5 denomination.

Afterwards, the participants were asked to complete a filler questionnaire (through an online Qualtrics interface that was used for most of the experimental procedures) on lifestyle and consumption preferences, in order to justify and internalize the participation payment. The experimenter then showed a physical sample of a £5 Amazon voucher to the participants. Concurrently, the online interface informed all participants that the experimenter would be offering one such voucher to each participant on a pay-what-you-want basis. Participants could pay the experimenter any amount they wanted (including nothing) for the Amazon voucher, using the £5 cash payment that had been provided to them upfront.

Immediately following that, in the "Before" condition, participants were asked to pay what they wanted (including nothing) for the voucher, using their £5 participation payment; participants in the "After" condition skipped this step. At this point, all participants received the Amazon voucher (in the form of a physical card), subsequent to which they were given a second online filler questionnaire that typically took a few minutes to complete. Participants in the "After" condition were then asked to pay what they wanted for the voucher (which they had already received) from their participation payment. Participants in the "Before" condition skipped this step. Finally, all participants completed a third online filler questionnaire, after which they were dismissed.

Results

We find that the pay-what-you-want payment for the Amazon voucher was higher in the "After" condition (M = £0.81, SD = £1.23, 95% CI: [£0.39, £1.22]; N = 36) than in the "Before" condition (M = £0.32, SD = £0.67, 95% CI: [£0.10, £0.55]; N = 37) with $t(71) = 2.09$, $p = .04$ using a between-subjects *t*-test. In fact, the mean "After" payment was over 2.5 times that of the mean "Before" payment, even though the only difference between the two conditions was whether the participants were asked to pay before or after receiving the voucher.

Discussion

Study 1 provided initial evidence for our theorized standard payment decision timing effect (hypothesis H_1 in our theoretical development). Note that, consistent with our focus in this paper, there was no change in uncertainty about the value of the product before and after product delivery. Thus, the observed effect could not have been due to any resolution of consumer uncertainty, the main factor investigated in previous research on the timing of payment in pay-what-you-want pricing.

Study 2: Restaurant Field Experiment

Study 2 was a field experiment with a pay-what-you-want scheme for non-alcoholic beverages at a restaurant in Nepal. The non-alcoholic beverages included bottled and pre-packaged beverages of highly familiar brands with low (if any) uncertainty to customers (e.g., Coca-Cola, Fanta, Sprite). These familiar branded beverages are well-known in the market in which the experiment took place. Non-alcoholic beverages also included house-prepared beverages such as milkshakes; we categorized these as unfamiliar beverages in our analysis since our study's focus was on familiar beverages in keeping with our research objectives. The restaurant's management agreed to partake in the experiment recognizing it as a low-cost, low-risk marketing initiative with potential upside.[3]

Following the hypotheses established in our theoretical development, we predicted that, across the pay-what-you-want products in the field experiment, we would observe the standard payment decision timing effect for high value products (H_1), but a mitigation effect when value became low (H_2), resulting in a reversal when value was sufficiently low (H_3). In addition, we manipulated the provision of reference menu prices across conditions – our motivation being that

[3] This intuition was largely justified. According to figures obtained from the management team, the average amount spent per table (inclusive of all food and beverages) over the 16-day period of the experiment was 701 Rupees per table across 386 tables, compared with 678 Rupees per table across 371 tables in the 18-day period immediately prior to the experiment.

previous research (e.g., Johnson and Cui 2013, Kim et al. 2014a, Kunter 2015) suggests that reference prices could impact pay-what-you-want payments. As such, we aimed to examine the robustness of the decision timing effect with respect to reference price provision.

Method

The field experiment had a 2 (payment decision timing: "Before" vs. "After") × 2 (reference prices: presented vs. withheld) between-subjects design. It was conducted over 16 days at a Chinese restaurant in a mixed-demographic, mid-income neighborhood in Kathmandu, Nepal. The experiment was exempt from informed consent at the second author's institution, from where ethical clearance was obtained prior to the experiment.

During the period of the experiment, customers could choose to pay any amount they wanted (including nothing) for non-alcoholic beverages on the menu. Other items on the menu were sold at fixed prices as usual. The pay-what-you-want scheme for non-alcoholic beverages was not advertised over social media or outside the venue. Once inside the restaurant, however, customers received ample information about the pay-what-you-want scheme on the menu, from a dedicated table stand, and from the waiter at the time of ordering. The information provided by the waiter, and the relevant procedure that the waiter had to follow, were scripted and rehearsed before the field experiment took place.

The decision timing manipulation in the "Before" conditions was operationalized by requiring each table of customers to state, on a sheet at the time of the order, their non-alcoholic beverage selections *and* the amount they would like to pay for each of them (see Web Appendix C). Customers in the "Before" conditions were made fully aware at the time of order that they would be required to pay the stated amounts later, when the bill was requested at the end of the meal (no customer violations of this requirement were observed).

In the “After” conditions, a sheet was also presented to each table of customers at the time of order (see Web Appendix C). However, in this case customers were only required to state on the sheet their non-alcoholic beverage selections without the amounts they would like to pay for them. When the customers requested the bill after the meal, they were asked to state, on a carbon copy of the sheet that listed the non-alcoholic beverages they had ordered earlier, the amounts they would like to pay for each of the beverages on the list. Note that, at the time of ordering, the customers were informed that they would be asked to decide on their pay-what-you-want payments when they received the bill. These amounts were added to the total bill and the payment was made.

The reference price manipulation was operationalized by using a menu for non-alcoholic beverages with prices shown (in the reference-prices-presented conditions) or hidden (in the reference-prices-withheld conditions). For logistical reasons, on any single day over the course of the experiment, only one of the four conditions took place. The dates for the different conditions interleaved with each other in order to achieve better experimental control. The number of weekend days and the duration of the meals (approximately one hour on average) were not significantly different across conditions. In all conditions, customers were required to state whether they had already participated in this field experiment; the research assistants also made a note, upon cross-checking with management, if they observed customers who had participated on a previous occasion. To achieve conservative experimental control, any table with customers who stated they had (or were observed to have) previously participated in the field experiment were removed from the main analyzed data.

Results

Excluding 80 tables with customers who had already participated in the same field experiment, the restaurant served 752 customers at 306 tables over the period of the experiment. Of these, 655

customers at 264 tables ordered non-alcoholic beverages. In accordance with our research objectives, we focus on analyzing orders of familiar non-alcoholic beverages (see also the Note under Table 2), so that there was little uncertainty even before consumption. The final dataset involves 419 customers at 161 tables, comprising 76 tables in the "Before" conditions (of which 44 were presented with reference prices) and 85 tables in the "After" conditions (of which 48 were presented with reference prices). Additional analysis found no significant selection issues, such as in terms of the proportions of data being screened out across conditions (see Web Appendix D).

The unit of observation in our data analysis is a table of customers. This is because the customers of each table came as a group and each table produced one receipt, typically with multiple beverages. It was therefore not clear which beverage was ordered for which customer and how the customers at the same table might have distributed the pay-what-you-want payments among the ordered beverages, rendering customer-level analysis infeasible.

– Insert Table 2 around here –

Main analysis. Table 2 presents summary statistics of the major variables in each condition. Averaging across all conditions, the mean pay-what-you-want payment for familiar beverages per table was 109.91 Rupees (SD = 80.18 Rupees). A table's pay-what-you-want payment for familiar beverages is expected to be highly dependent on the actual value of the ordered beverages (based on their menu prices). In fact, the correlation coefficients between the two are consistently significant in all four conditions, with an overall $r = .79$ ($p < .01$).

– Insert Table 3 around here –

In order to test our predicted effects of payment decision timing, we perform a regression analysis that controls for the number of familiar beverage items ordered, the number of customers at the table, and whether the day was a weekday or a weekend (see Table 2 for summary statistics of these variables across conditions). Table 3 summarizes our regression analysis and results.

Since our theoretical development predicts that the payment decision timing effect would be moderated by product value, our regression analysis includes an interaction term between payment decision timing and product value, which is proxied by the sum of the menu prices of the beverages ordered.

Our results show that the interaction effect between payment decision timing and the presence/absence of reference prices, as well as the main effect of the presence/absence of reference prices, are both non-significant. It thus appears that the reference price manipulation did not have any significant impact on our main payment results.

On the other hand, importantly, the pay-what-you-want payment at a table was different depending on the payment decision timing, and this difference depended on product value. To illustrate, if we consider only regression coefficients that are statistically significant at the 95% significance level, then the payment after receiving the beverages was *higher* by (see the column with Model 3 results in Table 3):

$$-42.37 + .41 \times \text{product value (in Rupees)},$$

compared to when customers indicated their payment amount before receiving the beverages. The effect of product value is positive (.41) as theorized (hypothesis H_2 in our theoretical development). However, the negative constant term -42.37 suggests an overall higher amount (only) when product value was high (H_1) – specifically, higher than 42.37/0.41 = 103.34 Rupees per table. But if the customers at a table ordered familiar non-alcoholic beverages at a total value that was sufficiently low (e.g., only a 250 ml bottle of Sprite that cost 60 Rupees according to the menu), it is possible that the pay-what-you-want payment from the table would be higher before (versus after) receiving the beverages (H_3). This is consistent with our theoretical development. We explore the possibility of reversal at low product value more directly in Study 3.

Discussion

Study 2 provided field evidence for our theorized payment decision timing effects – as summarized in H_1 to H_3 – in the form of pay-what-you-want payment in return for non-alcoholic beverages that were expected to be highly familiar to customers. We also find that the pay-what-you-want payment did not differ significantly according to whether reference prices were presented. These findings could be partly due to the fact that customers across conditions might have their own internal reference prices for these familiar beverages (e.g., based on their past experiences). We also perform a follow-up analysis that included all the non-alcoholic beverages (i.e., including house-prepared beverages). The results are consistent with our theoretical development and the key findings reported (see Web Appendix D for details).

Note that the decision on how much to pay and the payment itself were decoupled in the "Before" conditions, thus we controlled for actual payment timing (i.e., bill remittance) across conditions. This enables us to examine the effect of decision timing on payment amount without potential confounds with the act of payment itself. In Web Appendix D, we offer an additional discussion on how norms of payment in the market might impact our results. Our conclusion is that, while there could be an impact, its direction is ambiguous to hypothesize.

Study 3: Raffle Ticket Online Experiment with Product Value Manipulation

Studies 1 and 2 provided a set of consistent findings from the laboratory and the field. The results together suggest that, upon being offered a product of sufficiently high value, people pay more under pay-what-you-want after (versus before) receiving the product – despite there being minimal, if any, change in their uncertainty level about the product's value across the two conditions. In addition, the regression analysis for Study 2 provides preliminary evidence for the moderating effect of product value, as discussed in our theoretical development. In particular, the analysis suggests that when product value was sufficiently low, there could be a reversal in the

payment decision timing effect, in that payment would be higher before (versus after) product delivery.

Building on these results, Study 3 served a number of objectives. First, it had a decision setting that complemented the previous studies. While Study 1 was a laboratory experiment in the UK and Study 2 was a field experiment in Nepal, Study 3 was conducted entirely online with participants recruited from the US-based Amazon Turk (MTurk) population.

Second, in the previous studies, there was minimal uncertainty among participants regarding the value of the focal products, namely the Amazon voucher in Study 1 and the familiar packaged beverages in Study 2. However, our theoretical account is applicable to any scenario in which there is minimal, if any, *change* in consumer uncertainty before and after product delivery. The theoretical account is therefore applicable to settings with high consumer uncertainty as long as the uncertainty changes minimally before versus after product delivery. Study 3 explored this more general possibility using a raffle ticket for an Amazon voucher as its pay-what-you-want product, with the raffle draw results to be announced well beyond the timeframe of the transaction in all conditions. That is, each participant was equally uncertain about the ultimate realized gains they would derive from the pay-what-you-want product, whether their payment decision was solicited before or after product delivery – which effectively amounted to receiving their unique raffle ticket number.

Lastly, in Study 3 we manipulated, across treatment conditions, the value of the product (the cash amount of the Amazon voucher raffle prize) such that it was of high value in one pair of between-subjects "Before"/"After" conditions – which we call the standard conditions – and an intentionally much lower value in another pair of between-subjects "Before"/"After" conditions. Following the discussion in our theoretical development, we expected that payment in the "After" condition would be higher than in the "Before" condition under the high-value product treatment

(hypothesis H_1 in our theoretical development), while the effect would be mitigated (H_2) to the point of reversal (H_3) under the low-value product treatment.

Method

We recruited 624 participants for Study 3 from the US MTurk participant pool. We exclude 5 participants based on an attention check and 41 participants based on a repeated participation check at the end of the study (see Web Appendix E1 for the screening questions). The actual analyzed data included 578 participants, of which 233 were females (40.31%) and 344 were males (59.52%) (one participant did not report their gender). Most participants (89.97%) were between the ages of 18 to 54. Prior to the experiment, ethical clearance was obtained from the first author's institution. Consent was obtained from all participants at the beginning of the study using an online form. Participants took approximately 3 minutes on average to finish the study. Not including the raffle prize that only a few participants won, each participant on average earned US$0.92 in total from taking part in the study.

The study had a 2 (payment decision timing: "Before" vs. "After") × 2 (High-value product vs. Low-value product) between-subjects design. Participants were provided US$0.75 as an upfront participation payment. In addition, every participant was given access to an expense account with 50 tokens. As detailed in the sample interface in Web Appendix E1, each participant was instructed that they could use the tokens in the expense account towards buying a raffle ticket with a 1 in 100 chance to win a raffle prize. In the high-value-product conditions, the raffle prize was a US$50 Amazon voucher (called "Amazon Gift Card" in the study interface); in the low-value-product conditions, the raffle prize was a US$5 Amazon voucher. To enhance assimilation of the value of the Amazon voucher raffle prize, participants were also shown an on-screen figure of the voucher with the relevant value and asked in a multiple-choice format how they intended to

use the voucher if they won the raffle followed by a text box.[4] Chi-squared tests comparing the distributions of these responses in every pair of conditions yield non-significant differences at the 95% significance level).

Subsequently, in the "Before" conditions, participants were asked how much (in tokens) they wanted to pay for the ticket, before product (i.e., raffle ticket) delivery. Once they indicated their payment amount, subjects received the raffle ticket on a page that included a figure representing the ticket, the participant-specific ticket number that was randomly generated by the interface, and the URL of an external webpage that would eventually (long after the participant's decision in all conditions) display the winning ticket numbers. In the "After" conditions, this order was reversed: only after reaching the page that signified product (raffle ticket) delivery were participants asked how much (in tokens) they wanted to pay for the ticket.

Results

– Insert Table 4 around here –

Table 4 summarizes our main findings. A between-subjects 2 (payment decision timing: "Before" vs. "After") × 2 (High-value product vs. Low-value product) ANOVA of the Study 3 data reveals a significant interaction ($F(1,574) = 11.55$, $p < .01$) but no significant main effects in product value ($p > .1$) and payment decision timing ($p > .8$). The significant interaction is consistent with our theorized moderating effect of product value on the payment decision timing effect (hypothesis H_2 in our theoretical development). This is borne out by further pairwise contrasts of payment decision timing conditions at each level of product value within the ANOVA design. As indicated in Table 4, in the conditions with high product value (raffle prize = US$50), the mean pay-what-you-want payment was *higher* by 12.30% - comparing the "After" condition (35.87

[4] The options included "I will use it to purchase something for myself"/"I will use it to purchase something for my household"/"I will gift it to someone else"/"I will use it to buy a present for someone else"/"I am not sure how I will use it"/"Other (please specify)".

tokens) with the "Before" condition (31.94 tokens) ($F(1,574) = 5.16$, $p = .024$ according to a pairwise contrast), which is consistent with hypothesis H_1 in our theoretical development. However, in the conditions with low product value (raffle prize = US$5), the mean pay-what-you-want payment was *lower* by 12.60% - comparing the "After" condition (29.83 tokens) with the "Before" condition (34.13 tokens) ($F(1,574) = 6.44$, $p = .011$). This is therefore a reversal of the standard payment decision timing effect in accordance to H_3 in our theoretical development.

Another perspective in understanding these results is that product value led to a significant difference in payment in the "After" conditions ($F(1,574) = 12.43$, $p < .01$), but not so in the "Before" conditions ($p > .2$ in the relevant pairwise contrast). That is, payment after product delivery rises with increasing product value, but this relationship is not significant for payment before delivery. This is also consistent with our theoretical development.

Discussion

As demonstrated in Study 3, product value is such a moderating factor of the payment decision timing effect that it could lead to a reversal of the effect when product value is low. This is consistent with our theoretical development (in particular, hypotheses H_1 to H_3) and with the moderating effect of product value we detect in our regression analysis of the data from Study 2.

Study 4: Raffle Ticket Online Experiment in a Charitable Donation Context with Product Value Manipulation and Mediation Measures

Study 4 was a raffle ticket online experiment like Study 3, but with a number of important differences. The study serves two major purposes. First, the pay-what-you-want proceeds in Studies 1 to 3 went to the seller and the participants were well-informed about this fact. By contrast, participants in Study 4 were informed that their payments would be donated to a charity (The American Red Cross). This contribute-what-you-want context, with its charitable donation nature, extends the application scope of our results to charity appeals (see e.g., Gneezy et al. 2010,

Jung et al. 2017). As with Study 3, we also manipulated the value of the product in Study 4 (value of the bonus payment raffle prize) across conditions. Given that our theoretical development does not make a distinction between pay-what-you-want with and without a charitable component, we expect a similar moderation effect for Study 4: payment should be higher after (versus before) product delivery when product value was high (hypothesis H_1 in our theoretical development), but the effect would be mitigated (H_2) when product value was low, and potentially reversed (H_3) when product value was sufficiently low.

Secondly, in Study 4 we measured a number of variables that potentially mediated the predicted effects in accordance with our theoretical development. These variables included felt ownership and felt obligation. In addition, we asked participants to list the thoughts that came to their mind when making their decisions, on which we conducted thought coding analysis to form a measurement of the amount of elaboration by participants on economic and social factors during their decision process – as discussed in our theoretical development, these correspond to economic and social motives that drive payment, while elaboration on social factors specifically influences the payment decision timing effect through the posited effect paths in Figure 2. The data thus collected, together with the main dependent variable of pay-what-you-payment, allow us to conduct process analysis to examine our theoretical account.

Method

We recruited 342 participants for Study 4 from the US MTurk participant pool. We exclude 19 participants based on an attention check and 4 other participants based on a repeated participation check using the same questions as in Study 3. The actual analyzed data included 319 participants, of which 125 were females (39.18%) and 192 were males (60.19%) (two participants did not report their gender). Most participants (94.04%) were between the ages of 18 to 54. Prior to the experiment, ethical clearance was obtained from the second author's institution. Consent was

obtained from all participants at the beginning of the study. Participants took approximately 6 minutes on average to finish the study. Not including the raffle prize, which only a few participants won, each participant on average earned US$1.05 in total from the study.

Study 4 had a 2 (payment decision timing: “Before” vs. “After”) × 2 (High-value product vs. Low-value product) between-subjects design. Similar to Study 3, each participant was provided US$0.75 as an upfront participation payment, was given access to an expense account with 50 tokens, and was instructed that they could use the tokens in the expense account towards buying a raffle ticket with a 1 in 100 chance to win a raffle prize in the form of an MTurk bonus payment (see the sample interface in Web Appendix E2). The high- and low-value-product conditions had raffle prizes of US$50 and US$5, respectively.

An important difference from Study 3 was that participants were informed at the outset that any number of tokens they paid for the ticket from the expense account would be converted into US Dollars (at the rate of 1 token = 1 US cent) and donated to The American Red Cross; the remaining tokens in the expense account would be converted to US$ at the same rate and added to the participant’s final payment. Participants were next shown a page titled “Raffle to Help The American Red Cross” informing them about the work of The American Red Cross).

Following this page, in the “Before” conditions, participants were asked how much (in tokens) they wanted to pay for the ticket. Then, participants were instructed to respond to a number of questions and asked to complete a thought-listing task for our purpose of collecting mediating variables. These included (see Web Appendix E2 for the exact wording):

(a) Three questions, each on a seven-point scale, that were adapted from Peck and Shu (2009, p. 437) and pertained to felt ownership towards the raffle ticket (Cronbach alpha = .97). In subsequent data analysis, we use the average scores from these three questions as the mediating variable for felt ownership.

(b) Two questions, each on a nine-point scale, that pertained to how obligated the participant felt towards The American Red Cross and "the researchers who are fundraising for The American Red Cross", respectively, when making the payment decision. Although these questions could in principle probe different aspects of the participant's moral obligation, the responses appear to be highly correlated ($r = .74$, $p < .01$) with Cronbach alpha = .85, when treated as measures of a core felt obligation construct. In subsequent data analysis, we use the average scores from these two questions as the mediating variable for felt obligation to pay.

(c) Participants were then provided with eight text-box rows with the following instructions: "You were just asked to state the amount you want to pay for the raffle ticket. Please take a moment to list the thoughts that came to your mind as you were making your decision." Upon collecting this data, two independent coders categorized the thoughts listed by the participants into "Social Thoughts" (elaboration on social factors), "Economic Thoughts" (elaboration on economic factors), and "Undefined" (listed thoughts that the coders could not categorize into either category, see Web Appendix F for details). After working on their own, the coders resolved their differences through discussion to arrive at a final dataset of the coded thoughts. In our main analysis, we focus on each participant's number of "Social Thoughts," i.e., their amount of elaboration on social factors, as a major mediation variable, as the construct plays a key role in our theoretical process (see Figure 2).

Participants then reached a page that signified product (raffle ticket) delivery. The page included a figure representing the ticket, the participant-specific ticket number that was randomly generated by the interface, and the URL of an external webpage that would eventually (long after the time of the participant's decision in all conditions) display the winning ticket numbers.

In the "After" conditions, participants reached the page providing them with their raffle ticket number immediately following the "Raffle to Help The American Red Cross" description

page, i.e., they received the ticket at this stage. They were subsequently asked to make their payment decision followed by questions pertaining to mediating variables, as described above. The study ended with the same attention check and participation check as Study 3.

Results

– Insert Table 5 around here –

Pay-what-you-want payment. A between-subjects 2 (payment decision timing: "Before" vs. "After") × 2 (High-value product vs. Low-value product) ANOVA on pay-what-you-want payment reveals a significant interaction ($F(1,315) = 4.87$, $p = .028$) but no significant main effects ($p > .1$ for both main effects). As indicated in Table 5, the interaction is due to payment being significantly higher in the standard (high product value) "After" conditions than in the standard "Before" conditions, but not in the low-value product conditions. Hence, product value in Study 4 moderated the payment decision timing effect as we have theorized (hypothesis H_2 in our theoretical development). Notably, although numerically in Study 4 we do observe payment in the Before condition to be higher than in the After condition for low product value, statistically we only find mitigation of the effect; meanwhile, we obtain evidence of reversal in Studies 2 and 3.

Specifically, as indicated in the table, in our standard conditions with high product value (raffle prize = US$50), the mean pay-what-you-want payment was higher by 41.8% in the "After" condition (M = 25.22 tokens) than in the "Before" condition (M = 17.79 tokens) ($F(1,315) = 7.25$, $p < .01$ according to a pairwise contrast within the ANOVA design). This is consistent with the results in Studies 1 to 3 and follows hypothesis H_1 in our theoretical development. Table 5 also indicates that pay-what-you-want payments for the low value product did not differ significantly before versus after product delivery. This suggests that, in the context of this experiment, even when the product value was low, it was not sufficiently low to cause a reversal in the payment decision timing effect suggested by hypothesis H_3 in our theoretical development. Another

perspective for understanding these results is that changing the product's value led to a significant difference in the "After" conditions ($F(1,315) = 6.25$, $p = .013$), but not so in the "Before" conditions ($p > .5$ in the relevant pairwise contrasts). This is consistent with our theorizing that product value is a moderating factor that affects participants' elaboration on social factors in the "After" conditions.

– Insert Figures 3A and 3B around here –

Mediation variables. A between-subjects 2 (payment decision timing: "Before" vs. "After") × 2 (High-value product vs. Low-value product) ANOVA on the elaboration on social factors reveals a significant main effect in product value ($F(1,315)=4.58$, $p = .033$) and interaction ($F(1,315)=4.03$, $p = .046$) but no significant main effect in payment decision timing. As indicated in Table 5, pairwise contrasts within the ANOVA design show that, in the standard (high product value) conditions, the mean elaboration on social factors in the "Before" condition is significantly lower than in the "After" condition (M = 2.15 "Before" versus M = 3.03 "After", $F(1,315) = 6.27$, $p = .013$). The low product value manipulation did not induce any significant differences in these variables across different payment decision timings. In the "After" conditions, the mean elaboration on social factors was lower in the low-value product condition than in the high-value product condition ($F(1,315) = 8.77$, $p < .01$). The corresponding comparison in the "Before" conditions did not reveal a significant difference. These results parallel the pay-what-you-want payment comparisons (see the previous two paragraphs) and are consistent with our theoretical account as summarized in Figure 2.

In addition, an ANOVA with the same design on the felt ownership variable reveals a significant main effect in payment decision timing as well ($F(1,315) = 6.52$, $p = .011$) but no other significant main or interaction effects at the 95% significance level. Pairwise contrasts within the same ANOVA design show that there was higher felt ownership after (versus before) product

delivery (M = 4.16 in the "Before" condition versus M = 4.75 in the "After" condition; F(1,315) = 4.13, p = .043).

The felt obligation variable was numerically higher after (versus before) product delivery, especially when the product value was high (see Table 5). But the differences were not statistically significant at the 95% significance level according to pairwise contrasts within the ANOVA design for this variable.

Process analysis. The importance of these mediation variables is further established upon conducting a process analysis. We first estimate a moderated mediation model using the SAS PROCESS macro (Hayes 2018, Model 85) with 10,000 bootstrapped samples. The model is depicted in Figure 3A. In accordance with our theoretical account and process summarized in Figure 2, the model posits that the payment decision timing manipulation will cause differences in elaboration on social factors. This can cause a difference in felt obligation, which in turn would lead to an effect on pay-what-you-want payment. The model also allows for felt ownership to play a mediation role and possibly (but not necessarily) be driven by elaboration on social factors. Lastly, the model allows for product value to have a moderating impact on the direct and all the indirect effects.

We find that, only for our posited primary effect mechanism, namely *Payment decision timing → elaboration on social factors → felt obligation → payment* (see our theoretical development), the index of moderated mediation for the corresponding indirect effect is significant at the 95% significance level (index = .55, SE = .35, 95% CI: [.01,1.37]). This offers consistent evidence for our theoretical development, in particular the primary effect mechanism for a payment decision timing effect that is moderated by product value. All other indices of moderated mediation in the analysis are not significantly different from zero at the 95% significance level. These include the two posited effect mechanisms in our theoretical development that operate in

parallel to the primary mechanism and are driven by felt ownership, namely, *Payment decision timing → elaboration on social factors → felt ownership → payment* (index = .32, SE = .22, 95% CI: [-.001,.86]) and *Payment decision timing → elaboration on social factors → felt ownership → felt obligation → payment* (index = 0.22, SE = 0.15, 95% CI: [-.001,.57]).

The moderated mediation model analysis also shows that, at high product value, all three of the possible indirect effects in the model are significantly positive at the 95% significance level. These three indirect effects, which are listed in the Note under Figure 3A, completely mediated the decision timing effect on payment (i.e., the conditional direct effect is not significant) at high product value and mapped onto all the effect mechanisms in Figure 2. In addition, the conditional direct effect and all the indirect effects at low product value are not significantly different from zero, in line with the observed moderating effect of product value on payment.

Figure 3A also includes the numerical estimations of the effect along every path of the model under high product value (i.e., the standard conditions); these estimations are obtained by analyzing a serial mediation model using the SAS PROCESS macro (Hayes 2018, Model 6) with 10,000 bootstrapped samples. Overall, the serial mediation model results are in line with the rest of our process analysis and offer support to the Theoretical Development.

Figure 3B summarizes the results of a serial mediation analysis for the low-value product conditions that is similar to the one just reported regarding the high-value product conditions. The results show that the mediation effects are similar in the low-value product conditions as in the high-value product conditions. However, payment decision timing did not have a significant impact on the amount of elaboration on social factors, leading to the lack of significant payment decision timing effect under low product value. This offers further evidence to our theorizing.

Additional analysis. In Web Appendix F, we offer a more detailed analysis on the coded thoughts with results that are consistent with the main findings reported here. In Web Appendix

W7, we report a test of whether the responses to the mediating variables could be driven by the payment rather than the other way around. Our analysis provides support that the process evidence we obtained was not due to such reverse causality.

Discussion

The standard conditions in Study 4 provide further evidence in support of the payment decision timing effects observed in Studies 1 to 3 in an extended domain of application – a contribute-what-you-want context where the payment goes to a charity. As we have theorized and observed in Studies 2 and 3, product value also moderated the effect of payment decision timing on pay-what-you-want payment in Study 4, following hypotheses H_1 and H_2 in our theoretical development. Nevertheless, the product value in the context of this study in the low-value product condition was apparently not sufficiently low to lead to the reversal described in H_3 (see also the "Further Research Directions" subsection in the next section). Our process analysis offers evidence that payment decision timing affected the amount of elaboration on social factors, which in turn affected felt obligation, felt ownership, and ultimately payment.

Concluding Discussion

This research investigates the effects of payment decision timing in pay-what-you-want settings. To address gaps in recent literature on this topic as discussed in the introduction section, we focus on scenarios when there is minimal, if any, difference in consumer uncertainty regarding the value of the product before versus after its delivery. Moreover, we investigate how product value can significantly moderate decision timing effects; with the possibility of a reversal when product value decreases from a high level to a sufficiently low level.

Our theoretical development is based on a social exchange perspective on pay-what-you-want and leads us to propose that (hypotheses H_1 to H_3) people pay more after (versus before) receiving the product when product value is high, but this effect is mitigated when product value is

low and reversed when product value is sufficiently low. Results from a laboratory experiment (Study 1) and a field experiment (Study 2) lend initial support to these predicted effects with preliminary evidence for the moderating role of product value; Study 2 also showed that these effects are robust with respect to the presence or absence of explicit reference prices. Study 3 was an online experiment that demonstrated that payment was higher after (versus before) delivery in the conditions with high product value, but the effect was reversed in the conditions with low product value. An online experiment (Study 4) extended our major findings to a charitable donation context (contribute-what-you-want); it also showed, with process evidence, the predicted standard payment decision timing effect at high product value, and mitigation of the effect at low product value.

Marketing Implications

Our findings are relevant to businesses that offer products with a pricing model that has a strong pay-what-you-want or, more generally, a voluntary payment element; as well as to non-profits, social enterprises, and charities where donations in exchange for a good or service are common. While pay-what-you-want for these businesses could be successful, they are also prone to failure (Dholakia 2017). It is thus important to highlight measures that could raise pay-what-you-want payments, including the timing of solicitation of these payments (see also Web Appendix A for examples of payment decision timing practices):

(a) *If the pay-what-you-want product is of high value, the seller should solicit pay-what-you-want payment after the product has been delivered to the consumer.* All of our studies (Studies 1-4) suggest a payment decision timing effect in favor of after delivery when product value is high.

(b) *If the product is of sufficiently low value, the seller should solicit pay-what-you-want payment before the product has been delivered to the consumer.* Studies 2-3 suggest a payment decision timing effect strictly in favor of before delivery when product value is low. Study 4 suggests

directional difference in payment decision timing in a charitable donation context (contribute-what-you-want) and is consistent with a recommendation to solicit payment before delivery.

For example, some pay-what-you-want eateries request that a payment be made before the customer receives the food or drink. An instance is the Burger King campaign described at the beginning of this article. Relatedly, some restaurants request an upfront tip commitment for large groups. In both cases, the operator in effect asks customers to decide on a payment before receiving any product. Our findings suggest that these practices are recommendable depending on consumers' perception of the value of the product they are going to receive. If consumers generally perceive that the product is of a high value, it is more desirable to request a decision on a pay-what-you-want payment or a tip after product delivery. But if consumers largely perceive that the product is of a low value, it is indeed more desirable to solicit a pay-what-you-want payment or a tip before product delivery.

Another possible example is a community theater that employs pay-what-you-want when staging performances in an auditorium. The theater might opt to solicit payments before the performances at the entrance. However, noting that community attendees would tend to value the theater highly, it might be preferable to solicit payments from attendees after the performance.

Future Research Directions

A number of future directions (see Table 6 for a summary) are worth investigating. First, it would be highly worthwhile to test our marketing implications in the field, including our recommendations that payment decision timing should be after product delivery in cases with high product value but before delivery in cases with sufficiently low product value.

Second, several situational factors might moderate the payment decision timing effects we investigate. Note, in particular, that there is evidence of reversal of the standard payment decision timing effect (H_3) at low product value in Studies 2 and 3 but not in Study 4 (where low product

value mitigated the effect but did not reverse it). We surmise that a reason for such difference could be the different contexts in which the studies were conducted, with their different situational factors and therefore different thresholds for "sufficiently low" product value that qualifies for the reversal described in H_3. Importantly, the pay-what-you-want transaction was conducted in a charitable donation context in Study 4 but not so in Studies 2 and 3. Perhaps a charitable donation context increases the salience of social exchange overall and attenuates any payment decision timing effect or its moderation by product value. More theoretical development is warranted for an investigation into these possibilities, which have important managerial implications on whether payment should be solicited before or after product delivery. Other possibilities of situational factors include search versus experience goods and products versus services, or the established norms of payment, such as whether payment is customarily made before or after product delivery in conventional economic transactions for the type of product or service in question (see, e.g., the discussion in Web Appendix D regarding the field setting in Study 2). It would also be interesting to explore how social settings, such as whether the consumer is being observed or not when making the payment decision (see, e.g., Gneezy et al. 2012), interact with the payment decision timing in influencing payment.

Another direction is to examine dimensions of endogeneity in decision timing: what might happen if the consumer were given the choice of when to decide on their pay-what-you-want payment? Or, if, after receiving the product, the consumer could renege on the agreed payment?

Our findings also have broader implications for social exchange that can be explored in future studies. These can include, for example, more general dyadic reciprocity. In a dyadic reciprocal exchange, a party offers a favor to another party in expectation of reciprocal behavior, which can be monetary but can also be in the form of help (e.g., time, effort) on a task. Would the extent of reciprocation be different depending on whether commitment to the reciprocal behavior

is required before or after the original favor is received? Future explorations in this direction might yield fruitful insights on these questions and related issues.

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Table 1. A Sample of Research on Pay-What-You-Want: Studies in Which Payment Decision Timing is a Research Focus

Authors	Study type	Pay-what-you-want product	Main findings	Additional remarks
Egbert, Greiff and Xhangolli (2015)	Conceptual paper	Experience good	Payment decision post-consumption can be beneficial to businesses, due to lack of information asymmetry at the time of payment.	In both conditions, payment decision was made after product delivery.
Christopher and Machado (2019) Study 2	Lab study	A snack	Marginal increase in pay-what-you-want payment after (versus before) product consumption.	
Viglia et al. (2019) Study 1	Field study at a conventional and a fast-food restaurant	A meal (excluding beverages)	Pay-what-you-want payment at a conventional restaurant was significantly higher after (versus before) consumption. No significant differences across conditions at the fast-food restaurant. Interaction between payment timing and uncertainty only for the conventional restaurant.	
Viglia et al. (2019) Study 3	Field study featuring a cruise company	A photo of passengers going on board a cruise	Highest pay-what-you-want payment in the after condition with lower uncertainty, followed by the after condition with higher uncertainty. Lowest pay-what-you-want payment in the before condition.	Three pay-what-you-want conditions at different levels of consumer uncertainty resolution.
The present research Study 1	Lab study	Amazon voucher	Pay-what-you-want payment higher after (versus before) product delivery.	All studies look at payment decision timing before versus after product delivery with minimal change in consumer uncertainty. In Study 4, payment goes to a charity (contribute-what-you-want).
The present research Study 2	Field study at a restaurant	Familiar, non-alcoholic beverages	Pay-what-you-want payment higher after (versus before) product delivery for high product value; evidence of reversal of effect for low product value.	
The present research Study 3	Online study	Raffle ticket with Amazon voucher as raffle prize		
The present research Study 4	Online study	Raffle ticket with bonus payment as raffle prize	Pay-what-you-want payment higher after (versus before) product delivery at high product value; mitigation of effect at low product value.	

Note: See Web Appendix B Tables B through D for examples of studies in which payment decision timing is not a research focus.

Table 2. Study 2 (Restaurant Field Experiment):

Mean Dependent Variables for Bottled or Pre-Packaged Branded Beverages

Manipulation	Reference price presented	Reference price withheld
	Pay-what-you-want payment (Nepalese Rupees)	
"Before"	104.9 (85.84) [78.79,131.0] $N = 44$	99.69 (62.98) [76.98,122.4] $N = 32$
"After"	117.4 (84.16) [92.96,141.8] $N = 48$	115.0 (82.98) [87.33,142.7] $N = 37$
	Actual value (Nepalese Rupees) according to menu prices	
"Before"	160.1 (148.0) [115.1,205.1]	154.4 (113.7) [113.4,195.4]
"After"	141.1 (80.89) [117.7,164.6]	150.9 (93.40) [119.8,182.1]
	Number of bottled or pre-packaged branded beverage items ordered	
"Before"	2.14 (1.69) [1.62,2.65]	2.06 (1.37) [1.57,2.56]
"After"	2.08 (1.15) [1.75,2.42]	2.16 (1.34) [1.71,2.61]
	Number of customers	
"Before"	2.93 (1.48) [2.48,3.38]	2.19 (1.03) [1.82,2.56]
"After"	2.63 (1.08) [2.31,2.94]	2.54 (1.17) [2.15,2.93]
	Number of tables on weekdays (Monday-Friday)/weekends (Saturday-Sunday)	
"Before"	37/7	22/10
"After"	37/11	27/10

Note: SDs in parentheses; 95% CIs in square brackets. The unit of observation is a table and each measurement is on a per table basis. The beverages included branded soft drinks such as Coca-Cola, Fanta, and Sprite, bottled water, pre-packaged fruit juices of brands that were familiar to the local population, as well as instant coffee and tea brewed with pre-packaged tea bags of familiar brands.

Table 3. Study 2 (Restaurant Field Experiment):

Results of Regression Analysis on Pay-What-You-Want Payment

(in Nepalese Rupees) For Bottled or Pre-Packaged Branded Beverages

	Model 1	Model 2	Model 3
Payment decision timing (0 = Before, 1 = After)		20.93** (7.66)	-42.37** (14.76)
Actual value in Rupees according to menu prices		.62** (0.08)	.58** (0.07)
Reference price (0 = Withheld, 1 = Presented)		8.05 (7.81)	6.66 (10.40)
Payment decision timing × Actual value in Rupees according to menu prices			.41** (0.07)
Payment decision timing × Reference price			5.40 (14.03)
Number of items of bottled or pre-packaged branded beverages ordered	42.85** (3.58)	-1.77 (6.71)	-10.56 (6.25)
Number of customers	-2.99 (4.06)	-3.59 (3.53)	-3.20 (3.23)
Weekend indicator (1 = Saturday-Sunday, 0 = Monday-Friday)	10.71 (10.47)	14.79 (9.03)	10.76 (8.21)
Intercept	24.66* (11.29)	10.39 (11.11)	34.82** (11.40)
R^2	.52	.66	.72
Adjusted R^2	.51	.64	.71
No. of observations (tables)	161	161	161

Note: Standard errors in parentheses. See Table 1 for the beverages included in the analysis. Where the estimate is significantly different from zero, the entry is marked by one or more asterisks (* $p < .05$, ** $p < .01$).

Table 4. Study 3 (Raffle Ticket Online Experiment with Product Value Manipulation): Mean Pay-What-You-Want Payment (Tokens)

	High-value product	Low-value product
"Before"	31.94* (14.69) [29.49,34.38], $N = 141$	34.13* (14.11) [31.84,36.42], $N = 148$
"After"	35.87^{*++} (12.32) [33.82,37.91],,$N = 142$	29.83^{*++} (16.68) [27.11,32.55], $N = 147$

Note: SDs in parentheses; 95% CIs in square brackets. The asterisks indicate that the difference in means between "Before" and "After" in the same column is statistically significant according to pairwise contrasts (* $p < .05$, ** $p < .01$). The plus signs ("$^{+}$") indicate that the difference in means in the same row is statistically significant according to pairwise contrasts ($^{+}$ $p < 0.05$, $^{++}$ $p < 0.01$).

Table 5. Study 4 (Raffle Ticket Online Experiment in a Charitable Donation Context with Product Value Manipulation and Mediation Measures): Mean Dependent Variables

	High-value product (standard conditions)	Low-value product
	Pay-what-you-want payment (tokens)	
"Before"	17.79** (18.40) [13.87,21.72], $N = 87$	19.66 (17.75) [15.42,23.89], $N = 70$
"After"	25.22^{**+} (18.64) [21.26,29.20], $N = 87$	18.05^{+} (17.93) [13.93,22.18], $N = 75$
	Elaboration on social factors	
"Before"	2.15* (2.27) [1.67,2.63]	2.11 (2.22) [1.59,2.64]
"After"	3.03^{*++} (2.55) [2.49,3.58]	1.95^{++} (2.24) [1.43,2.46]
	Felt ownership	
"Before"	4.16* (2.18) [3.70,4.63]	4.24 (1.86) [3.80,4.69]
"After"	4.75* (1.72) [4.38,5.11]	4.75 (1.75) [4.34,5.15]
	Felt obligation	
"Before"	4.32 (2.69) [3.75,4.90]	4.32 (2.63) [3.69,4.95]
"After"	4.93 (2.54) [4.39,5.47]	4.45 (2.58) [3.86,5.05]

Note: The asterisks indicate that the difference in means of the same dependent variable between "Before" and "After" in the same column is statistically significant according to pairwise contrasts (* $p < 0.05$, ** $p < 0.01$). The plus signs ("$^{+}$") indicate that the difference in means of the same dependent variable in the same row is statistically significant according to pairwise contrasts ($^{+}$ $p < 0.05$, $^{++}$ $p < 0.01$).

Table 6. Summary of Potential Future Research Agenda

General direction	Sample research topic/question
Further test of marketing implications in the field	Evidence that solicitation of pay-what-you-want payment should optimally be after (before) product delivery when product value is high (low)
Exploration of situational factors	How do situational factors affect the threshold of low value for reversal of the payment decision timing effect? Examples of situational factors include presence vs. absence of a charitable donation context, search vs. experience goods, products vs. services, norms of payments, whether choice of timing is endogenous or not
Broader implications for social exchange	In a dyadic reciprocal exchange, would reciprocation differ depending on whether commitment to the reciprocal behavior is required before or after the original favor is received?

Figure 1. Schematic of the Present Research in the Context of Related Studies

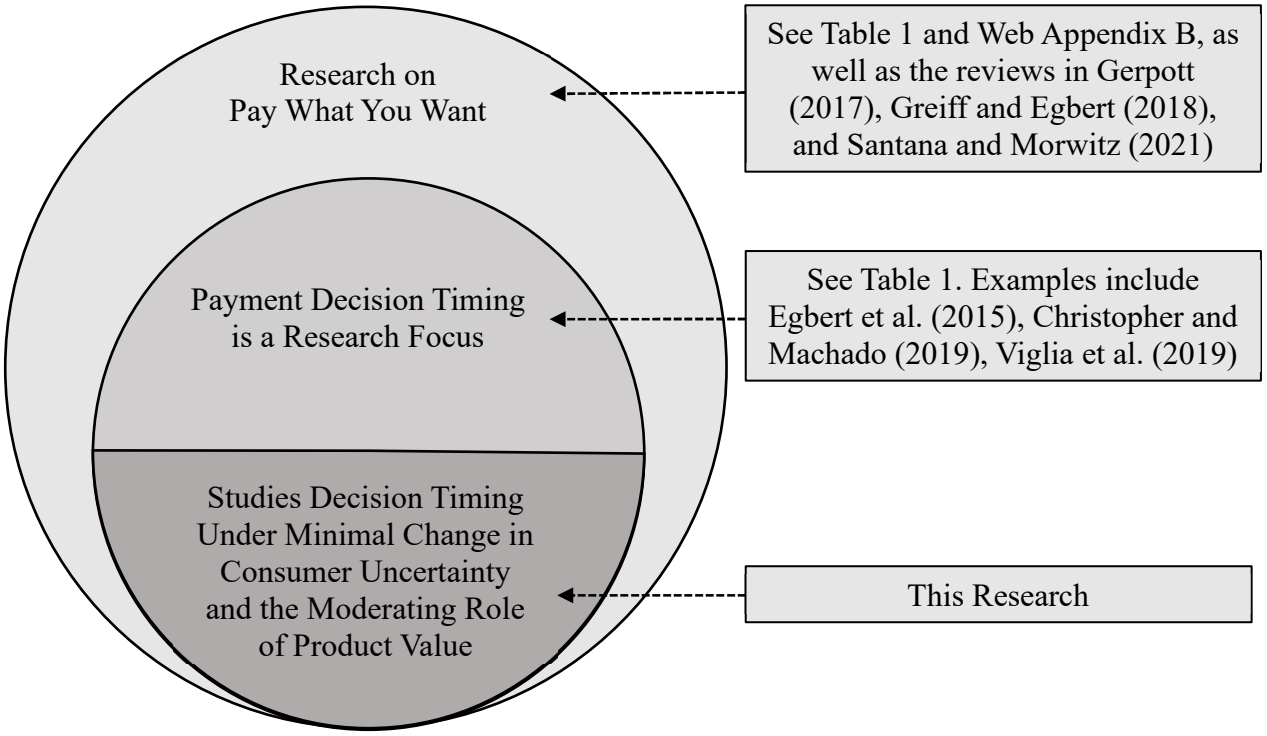
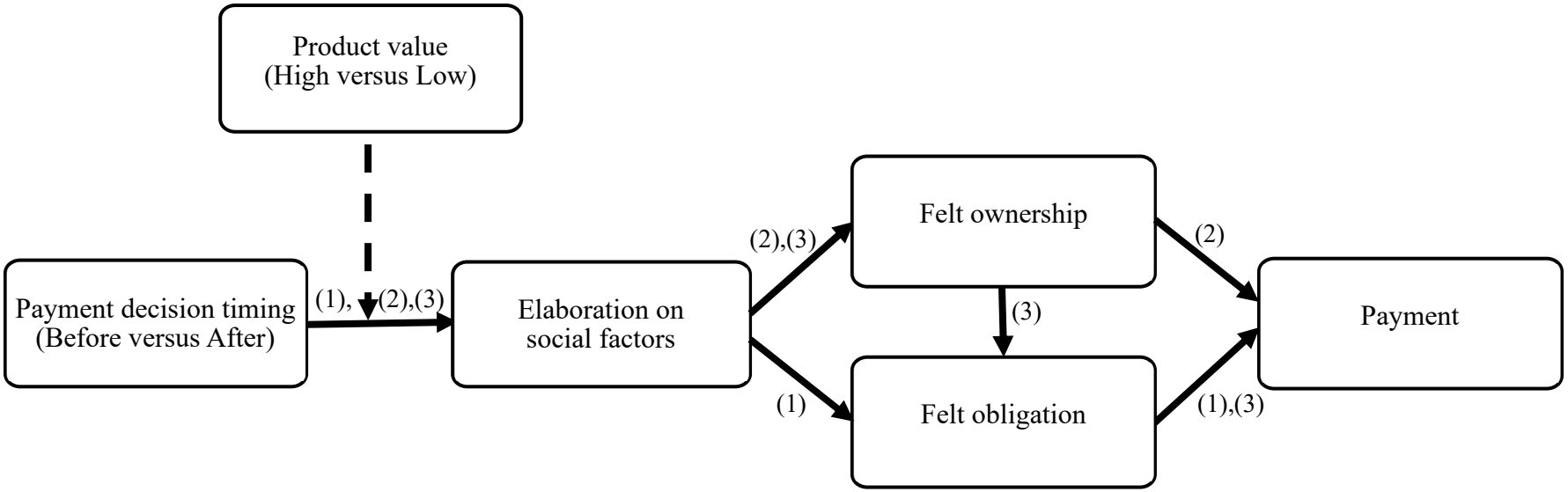
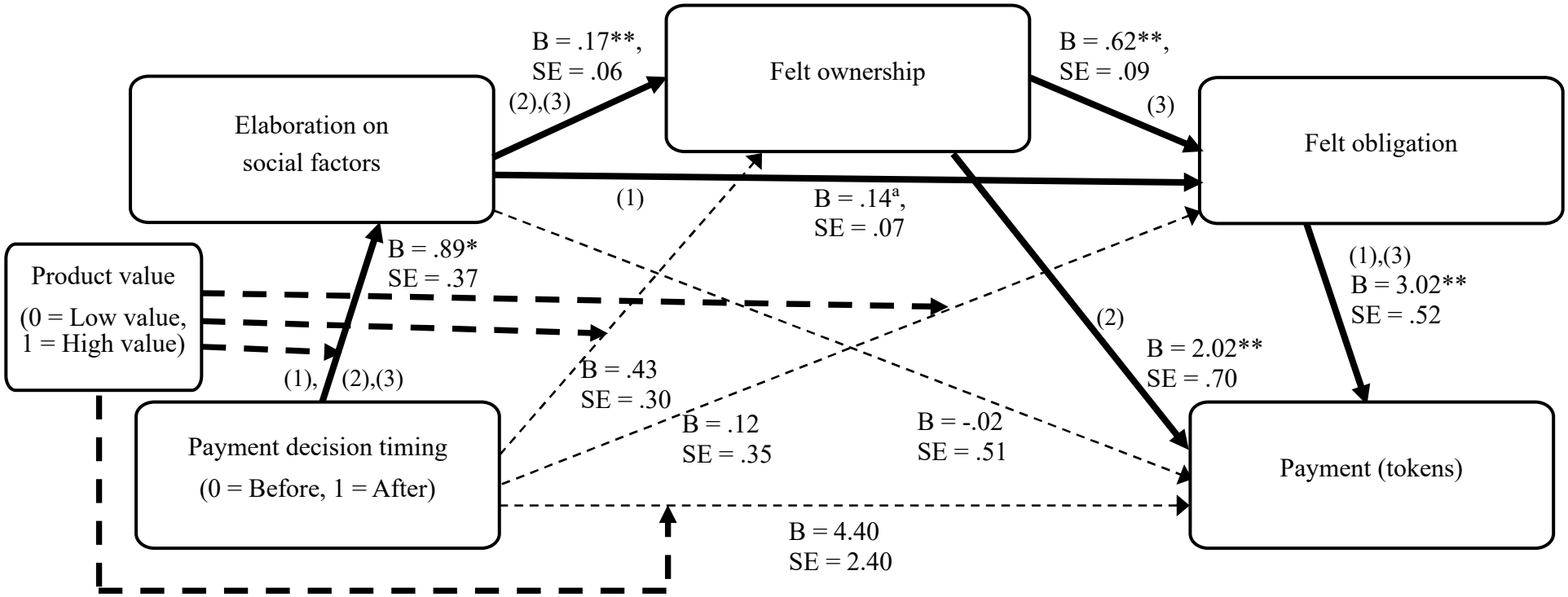


Figure 2. Schematic of the Process and Moderating Factors Discussed in the Theoretical Development Section



Note. Solid lines indicate mediation; the dashed line indicates moderation. The numbers in brackets, i.e., (1), (2), and (3), indicate the effect mechanisms discussed in the Theoretical Development section and, correspondingly, the indirect effects that are estimated in the process analysis for Study 4 (see Figure 3A).

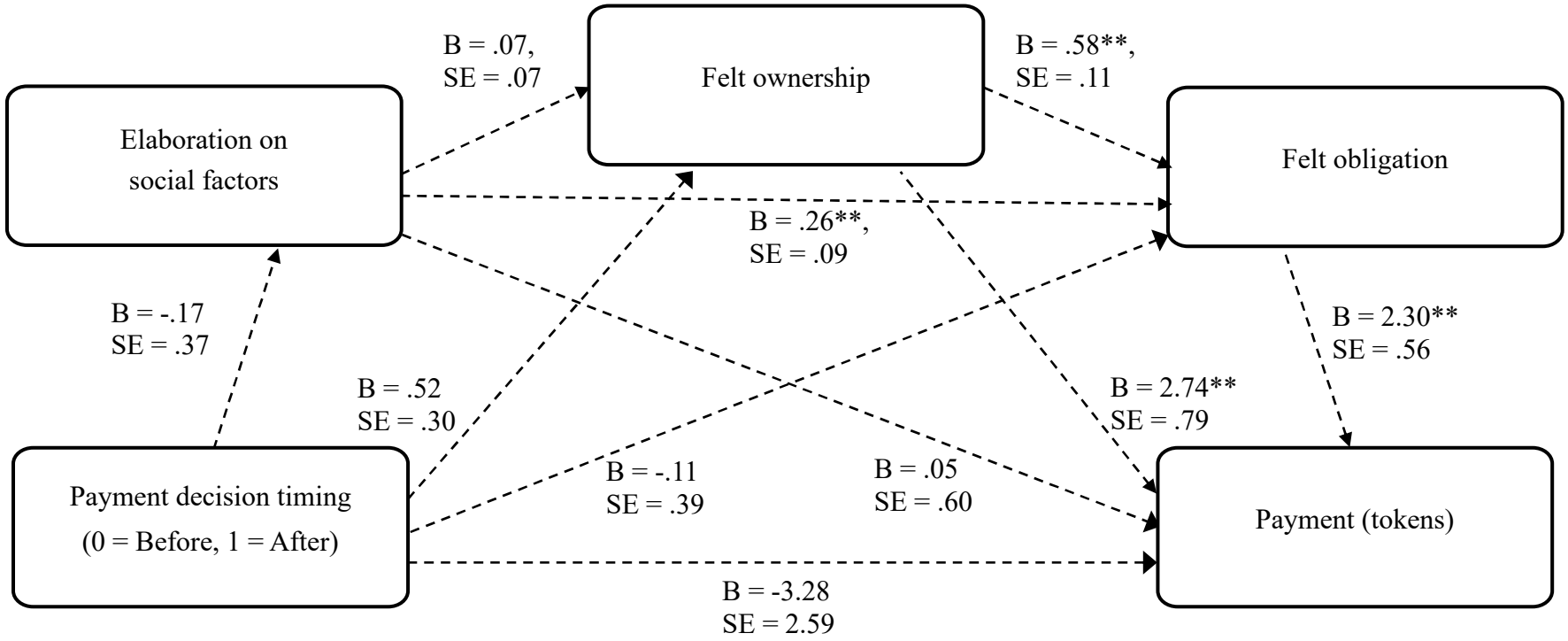
Figure 3A. Process Analysis for Study 4: Flowchart Depicting the Full Moderated Mediation Model, With Estimated Serial Mediation Path Effects for the High-Value Product Conditions



Note. The flowchart depicts the full moderated mediation model including the moderating role of product value (indicated by the thick dashed line). The numbers next to the effect paths refer to the estimated effects for the serial mediation model applied to the high-value product conditions (i.e., standard conditions) only. * $p < .05$, ** $p < .01$, [a] $p = .051$. See Figure 3B for the corresponding results for the low-value product conditions.

Regarding the moderated mediation analysis, the conditional direct effect at high product value is not significant at the 95% significance level. Indirect effects at high product value that are significant from the full moderated mediation model analysis (indicated in the figure above in thick lines) include:
(1) Payment decision timing → Elaboration on social factors → Felt obligation → Payment (B = .46, SE = 0.25, 95% CI: [.08, 1.05]).
(2) Payment decision timing → Elaboration on social factors → Felt ownership → Payment (B = .27, SE = 0.16, 95% CI: [.03, .65]).
(3) Payment decision timing → Elaboration on social factors → Felt ownership → Felt obligation → Payment (B = .18, SE = .11, 95% CI: [.02, .45]).
The conditional direct effect and all indirect effects at low product value are not significant at the 95% significance level.

Figure 3B. Process Analysis for Study 4: Estimated Serial Mediation Path Effects for the Low-Value Product Conditions



Note. The numbers next to the effect paths refer to the estimated effects for the serial mediation model applied to the low-value product conditions only. * p <.05, ** p <.01. Analysis of the full moderated mediation model (see Figure 3A) shows that the conditional direct effect and all indirect effects at low product value are non-significant at the 95% significance level.

Before or After? The Effects of Payment Decision Timing in Pay-What-You-Want Contexts

Web Appendices

WEB APPENDIX A

A SAMPLE OF PAY-WHAT-YOU-WANT PRACTICES

Seller	**Location**	**Product**	**Payment timing: before or after?**	**Reference (all URLs accessed on October 30, 2022)**
A Place at the Table	Raleigh, NC, US	All menu items	Before	https://tableraleigh.org/
Burger King	Various locations, US	Whopper burgers	Before	Salaky (2020)
Credo Coffee Orlando	Orlando, FL, US	All made-to-order coffee products	Before	https://www.orlandosentinel.com/business/os-xpm-2012-03-12-os-cfb-cover-credo-coffee-0312-20120311-story.html
Galvin at Windows	London, UK	All menu items	After	https://www.standard.co.uk/go/london/the-london-restaurants-that-are-letting-you-pay-what-you-want-a2324096.html
Humble Bundle	Internet	Video games	Before	https://www.humblebundle.com/
Ibis Singapore	Singapore	Hotel rooms	Before	https://sgpropertywatch.blogspot.com/2009/02/new-hotel-lets-you-dictate-room-rates.html
Lentil As Anything	Melbourne, Australia	All menu items	After	https://www.lentilasanything.com/
Little Bay Restaurant	London, UK	All menu items except drinks	After	https://www.reuters.com/article/us-britain-restaurant/pay-what-you-want-uk-restaurant-tells-diners-idUSTRE5124N120090203
One world Everyone eats	Various locations, US	Varies	Varies	https://www.oneworldeverybodyeats.org/find-a-cafe
Panera	Various locations, US	All menu items	Before	Eckhardt and Dobscha (2019)
Public	Various locations, US	Brokerage service	Before	https://help.public.com/en/articles/4847508-how-does-tipping-work
Radiohead	Internet	*In Rainbows* (album)	Before	Elberse and Bergsman (2008a, 2008b)
Table Grace Cafe	Omaha, NE, US	All menu items	Before	https://www.tablegracecafe.com/

Seller	Location	Product	Payment timing: before or after?	Reference (all URLs accessed on October 30, 2022)
The British Museum	London, UK	General admission to permanent exhibits	Before (+ donation boxes at various onsite locations)	https://www.britishmuseum.org/
The Guardian	Internet	Online news articles	After	https://www.theguardian.com/uk and https://support.theguardian.com/us/contribute
The Metropolitan Museum of Art	New York, NY, US	Admission for NY state residents and NY/NJ/CT students	Before	https://engage.metmuseum.org/admissions/*tickets*
Wikipedia (fundraising campaigns)	Internet	Wikipedia entries	Before (top of webpage)	https://www.ibtimes.co.uk/wikipedia-fundraising-drive-should-you-donate-money-wikipedia-foundation-1531912

WEB APPENDIX B

A SAMPLE OF RESEARCH ON PAY-WHAT-YOU-WANT, WITH SUMMARIES OF FINDINGS

A. Studies in which payment decision timing is a research focus (replicating Table 1 in the main text)

Authors	Study type	Pay-what-you-want product	Main findings	Additional remarks
Egbert, Greiff and Xhangolli (2015)	Conceptual paper	Experience good	Payment decision post-consumption can be beneficial to businesses, due to lack of information asymmetry at the time of payment.	In both conditions, payment decision was made after product delivery.
Christopher and Machado (2019) Study 2	Lab study	A snack	Marginal increase in pay-what-you-want payment after (versus before) product consumption.	
Viglia et al. (2019) Study 1	Field study at a conventional and a fast-food restaurant	A meal (excluding beverages)	Pay-what-you-want payment at a conventional restaurant was significantly higher after (versus before) consumption. No significant differences across conditions at the fast-food restaurant. Interaction between payment timing and uncertainty only for the conventional restaurant.	
Viglia et al. (2019) Study 3	Field study featuring a cruise company	A photo of passengers going on board a cruise	Highest pay-what-you-want payment in the after condition with lower uncertainty, followed by the after condition with higher uncertainty. Lowest pay-what-you-want payment in the before condition.	Three pay-what-you-want conditions at different levels of consumer uncertainty resolution.
The present research Study 1	Lab study	Amazon voucher	Pay-what-you-want payment higher after (versus before) product delivery.	All studies look at payment decision timing before versus after product delivery with minimal change in consumer uncertainty.
The present research Study 2	Field study at a restaurant	Familiar non-alcoholic beverages	Pay-what-you-want payment higher after (versus before) product delivery for high product value; evidence of reversal of effect for low product value.	
The present research Study 3	Online study	Raffle ticket with Amazon voucher as raffle prize		

The present research Study 4	Online study	Raffle ticket with bonus payment as raffle prize	Pay-what-you-want payment higher after (versus before) product delivery at high product value; mitigation of effect at low product value.	In Study 4, payment goes to a charity (contribute-what-you-want).

B. Studies in which payment decision timing is always before delivery

Authors	Study type	Pay-what-you-want product	Main findings	Additional remarks
Kim, Natter and Spann (2009) Study 2	Field study at a multiplex cinema	A cinema ticket	PWYW payment was significantly below regular price.	
Regner and Barria (2009)	Case study	Music downloads or CDs	PWYW payment were significantly higher than the minimum payment of $5 and even higher than the recommended reference price of $8. Authors argue that the underlying motives for PWYW payment are reciprocity, warm glow and guilt aversion.	
Gneezy et al. (2010)	Field study at an amusement park	A printed photo of attendees during a roller coaster-like ride	PWYW (as opposed to fixed price) substantially increased purchase rate. In the PWYW treatment, presence of charitable component substantially increased payment.	
Jang and Chu (2012) Study 5	Field study at a market stall in a large park	A canned coffee drink	Participants paid more in the PWYW control condition (no social norms) and in the treatment condition where social norms encouraged PWYW payment compared to treatment condition where social norms discouraged payment.	
Gneezy et al. (2012) Study 2	Field study at a sightseeing boat tour	A printed photo of the passengers during embarkation	PWYW payments were below the regular fixed price and the rate of purchase was lower.	
Johnson and Cui (2013) Studies 1 through 4	Lab study	A concert ticket (hypothetical)	The use of reference prices may not be an effective PWYW strategy for firms. The authors further suggest that reference price performs better than using minimum or maximum prices.	

Kim, Natter and Spann (2014b) Study 1	Field study in two superstores	A men's razor	Used as a promotional tool, PWYW pricing received higher repeat purchases compared to providing razors as free samples.	
Schons et al. (2014)	Field study at an outdoor coffee bar over 8 weeks	An iced coffee beverage	PWYW payment and internal reference prices steadily declined over repeated purchases of the beverage.	
Kunter (2015) Study 5	Field study at a zoo	An entrance ticket	The textual cues showcase a weak effect on PWYW payments. Between treatment comparison suggests that pro-social cues perform better than economic cues.	
Mak et al. (2015) Study 1	Lab study	A song (hypothetical)	PWYW payment was highest in treatment condition where chat function was available followed by when experimenter suggestions were available.	
Mak et al. (2015) Study 2	Lab study	An unnamed incentive compatible product	Social contract among participants enabled by the chat function increases PWYW payment and PWYW mechanism sustainability. Holds even in absence of full information and feedback for participants.	
Schmidt, Spann and Zeithammer (2015)	Lab study	An unnamed incentive compatible product	A large fraction of buyers make substantial voluntary payments sufficient for sellers to cover costs and generate positive profits, if sellers invest in product quality. This result holds even if sellers' "entry" and investment decisions are exogenous. When given an option between posted price and PWYW, many buy at posted price.	Significant amount of product information (including marginal cost) was available to the participant prior to purchase.
Jung et al. (2017) Study 2	Field study at a donut shop	A glazed doughnut	Customers had a higher PWYW payment when a portion of their payment was allocated to charity. Although customers pay more when a portion of their payment was allocated to charity, customers are insensitive to the portion size.	Payment decision timing unspecified in the text. Procedure description suggests it to likely be before delivery.
KC, Kunter and Mak (2018)	Field study at a zoo	An entrance ticket	Awareness of competition among participants increases PWYW payment compared to	

			control condition where participants are unaware of competition.	
Viglia et al. (2019) Study 2	Lab study	A meal (hypothetical)	Hypothetical PWYW payment increased with service outcome certainty.	
Christopher and Machado (2019) Study 3	Lab study	A wine bottle	Presence of price recommendation and payment visibility (public payment as opposed to private payments) has a positive effect on PWYW payments.	
Lee, Baumgartner and Pieters (2021) Study 1C	Lab study	$5 gift certificate	When other consumer (confederate) sends a specific cue mitigating the social image signaling through higher payment, PWYW payment decreases significantly.	
Santana and Morwitz (2021) Study 1	Case study	Online retailer promotional campaign for expensive consumer electronics product	Men paid significantly less on average than women.	Payment decision timing unspecified in the text. Procedure description suggests it to likely be before delivery.
Santana and Morwitz (2021) Study 2	Online experiment on MTurk	2 cookies at a bakery (hypothetical)	Men paid significantly less on average than women. Differences in agentic-communal orientation make economic payment motives more salient for men leading to lower payment.	Payment decision timing unspecified in the text. Procedure description suggests it to likely be before delivery.
Santana and Morwitz (2021) Study 3	Online experiment on Prolific	A large pizza (hypothetical)	Difference in PWYW payment between men and women was marginal in the control condition. This difference was attenuated in the treatment condition where both men and women were primed towards a communal orientation.	Payment decision timing unspecified in the text. Procedure description suggests it to likely be before delivery.
Santana and Morwitz (2021) Study 4	Lab study	2 cookies from a pop-up bakery	Men paid less than women when communications did not make social payment motives salient. When social payment motives were made salient, the difference in payment was attenuated.	Payment decision timing unspecified in the text. Procedure description suggests it to likely be before delivery.
Wang, Beck and Yuan (2021)	Field study at a bakery	A freshly baked cookie	When compared to a conventional fixed price, PWYW has a negative effect on purchase	Payment decision timing unspecified in the text.

Study 1			intention whereas Pick Your Price (PYP) has a positive effect.	Procedure description suggests it to likely be before delivery.
Wang, Beck and Yuan (2021) Study 2	Online experiment on MTurk	Genetic testing service (hypothetical)	Compared to a conventional fixed price, PWYW has a negative effect on purchase intention whereas Pick Your Price (PYP) has a positive effect. Perception of pricing control mediates purchase intent for PYP whereas both perceptions of pricing control and effort in pricing mediates purchase intent for PWYW.	
Wang, Beck and Yuan (2021) Study 3	Online experiment on MTurk	Renters' Insurance (hypothetical)	When customers are primed to save money, the purchase intention is highest with PWYW mechanism. When customers are primed to save time, the purchase intention is highest with the Pick Your Price (PYP) mechanism	

C. Studies in which payment decision timing is always after delivery and before consumption

Authors	Study type	Pay-what-you-want product	Main findings	Additional remarks
Jung et al. (2017) Study 1	Field study at a supermarket	A reusable grocery bag	Customers had a lower purchase likelihood but paid a higher PWYW amount when a portion of their payment was allocated to charity versus when no portion was allocated to charity.	Payment decision timing unspecified in the text. Procedure description suggests it to likely be after delivery but prior to consumption.

D. Studies in which payment decision timing is always after delivery and during/after consumption

Authors	Study type	Pay-what-you-want product	Main findings	Additional remarks
Cui and Wiggins (2017) Study 2	Field study at a jazz performance venue	Entrance to a jazz performance	'Pay What You Think It Is Worth' frame had the highest payment followed by 'Pay What You Can'. 'Pay What You Want' frame had lowest payment.	Voluntary payments were sought during the intermission.
Kim, Natter and Spann (2009) Study 1	Field study at a Persian restaurant	A lunch buffet meal (excluding drinks)	PWYW payment was significantly below regular price.	
Kim, Natter and Spann (2009) Study 3	Field study at a delicatessen	A hot beverage (e.g., coffee, tea)	PWYW payment were on average 10.62% higher than the regular price.	
Gneezy et al. (2012) Study 3	Field study at a restaurant	A lunch buffet meal (excluding drinks)	When reference point from other customers' payment is not available, anonymity for the paying customer increased payment.	
Gautier and van der Klaauw (2012)	Field study as part of a promotional hotel campaign	One night stay with breakfast	Involuntary participants paying twice as much as the voluntary participants in the promotional campaign.	
Riener and Traxler (2012)	2 years of empirical data from a restaurant	A lunch buffet meal (excluding drinks)	Over the two years, average PWYW payment declined. However, the number of customers increased steadily providing increasing revenue for the restaurant.	
Kim, Natter and Spann (2014b) Study 2	Field study in six comparable photo studios	A portrait photo print	PWYW incentive performed better than price discounts in attracting more buyers and obtaining higher revenues. When compared to free samples, PWYW incentive received fewer repeat purchases.	
Kim, Kaufmann and Stegemann (2014a) Study 2	Field study at a restaurant	A meal (excluding beverages)	PWYW prices decrease in proportion to the product value as the product value increases. Presence of external reference prices impacts PWYW payment.	
Kim, Kaufmann and Stegemann (2014a) Study 3	Field study at a cafeteria	A sandwich	PWYW prices decrease in proportion to the product value as the product value rises.	

			Presence of external reference prices impacts PWYW payment.	
Lu et al. (2021)	Field study on a Chinese live-streaming platform	Video content	PWYW payment (tip) has a mostly positive relationship with audience size.	
Ma, Wang and Liu (2022)	Case study on a Chinese live-streaming platform	Video content	PWYW payment (tip) decreases as a viewer's tenure increases because the viewer believes they have already paid a significant amount of tips.	
Roy and Das (2022) Studies 1 and 1a	Field study at a food outlet	A chocolate cake	Low arousal music facilitates higher PWYW payment in the presence of a salesperson; mediation by internal reference price.	Payment decision timing unspecified in the text. Procedure description suggests it to likely be after delivery but prior to consumption.
Roy and Das (2022) Study 2	Field study at a food outlet	A sandwich	High arousal music facilitates higher PWYW payment when consumer carries a high amount of loose change.	Payment decision timing unspecified in the text. Procedure description suggests it to likely be after delivery but prior to consumption.
Roy and Das (2022) Study 3	Field study at a stationery shop	A pen	High arousal music facilitates higher PWYW payment when consumer carries a high amount of loose change; mediation by internal reference price.	Payment decision timing unspecified in the text. Procedure description suggests it to likely be after delivery but prior to consumption.
Tena-Sanchez, Leon-Medina, and Noguera (2020)	Field study at a theatre	Entrance to the theatre/show	PWYW scheme significantly increased payments and attendance.	

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WEB APPENDIX C

STUDY 2 (RESTAURANT FIELD EXPERIMENT): INSTRUCTIONS TEXT

The instructions text here is presented in their English version. A Nepali translation (produced with back-translation checks) was provided to participants in the actual study.

1. Order sheet in the "Before" conditions

Respected Customers,

We have recently started a "Pay As You Wish" program for our drinks (excluding alcoholic beverages). You can order any of these drinks from the menu. For each of the drinks, you can choose the amount you wish to pay. You have to state, in the box below, the amounts you wish to pay for the drinks you order. The stated amounts will then be added to your bill.

Pay as you wish!

Please list the drinks you would like to order:

Drink	Amount you wish to pay

Thank you!

For Restaurant Use Only Code: B41

Bill Number: Date: Time:
Table Number: Note:
Total number of customers: Number of children:
RA: TA:

2. Order sheet in the "After" conditions

Respected Customers,

We have recently started a "Pay As You Wish" program for our drinks (excluding alcoholic beverages). You can order any of these drinks from the menu. For each of the drinks, you can choose the amount you wish to pay. After you finish your food (before you receive the bill for the food), you will have to state the amounts you wish to pay for the drinks you have ordered. The stated amounts will then be added to your bill.

Pay as you wish!

Please list the drinks you would like to order:

Drink	

Thank you!

For Restaurant Use Only Code: AF1

Bill Number: Date: Time:
Table Number: Note:
Total number of customers: Number of children:
RA: TA:

3. Order sheet with payment column in the "After" conditions (in implementation a carbon copy of the previous order sheet but with the payment column added; provided directly to participants after consumption)

Respected Customers,

Please state, in the box below, the amounts you wish to pay for the drinks you have ordered. The stated amounts will then be added to your bill.

Pay as you wish!

Drink	Amount you wish to pay

Thank you!

For Restaurant Use Only Code: AF2

Bill Number: Date: Time:
Table Number: Note:
Total number of customers: Number of children:
RA: TA:

WEB APPENDIX D

STUDY 2 (RESTAURANT FIELD EXPERIMENT):

ADDITIONAL ANALYSIS AND DISCUSSION

Analysis of Selection Issues

The percentage of tables in the final dataset – relative to the initial 306-tables dataset – ranged consistently between 50% and 55% across the four experimental conditions, suggesting that there were no significant selection issues in the data screening process. In the final dataset of 161 tables, the overall mean actual value (proxied by the menu prices) of the familiar non-alcoholic beverages ordered per table was 151.21 Rupees (SD = 111.06 Rupees). A 2 (payment decision timing: "Before" vs. "After") × 2 (reference prices: presented vs. withheld) between-subjects ANOVA of the final dataset for the actual value of this variable (see also Table 2 in the main text) does not present any significant effects across experimental conditions ($p > 0.4$ for all effects). In addition, as can be seen in the bottom rows of Table 2 in the main text, the proportion of data (in terms of number of tables) collected on weekdays versus weekends is similar across conditions; chi-squared tests of these proportions yield non-significant differences at the 95% significance level in all meaningful contrasts in the 2 × 2 design. These results provide further evidence that our data screening approach has not introduced significant selection issues.

Regression Analysis for All the Non-Alcoholic Beverages

In addition to the regression analysis reported in the main text, we perform a follow-up analysis including all the non-alcoholic beverages, i.e., the familiar as well as less familiar beverages that were house-prepared. As can be seen in Table W1 at the end of this Web Appendix, our analysis reveals a significant interaction effect between payment decision timing and product value in

models that include that interaction term (Models 1-3 in the table). In the model without the interaction term (Model 4 in the table), the analysis reveals a significant payment decision timing main effect. These effects are all consistent with our theoretical development and the key findings from the main analysis. In particular, the additional findings provide evidence on the robustness of the payment decision timing effect. Our analysis also reveals a significant main effect of presence/absence of reference prices only in the full model with the interaction effect between payment decision timing and reference price; this main effect becomes non-significant in regression models that include only the main effects. Thus, it seems that, when all the non-alcoholic beverages are included, reference price effect could have been partially impactful in some conditions.

Could Payment Norms be a Confounding Factor in Study 2?

Since Study 2 was a field experiment, its context involved established norms of payment that could be confounding factors. Here the norm would be to pay the bill *after* the meal. It might be conjectured that this norm biased payments in the experiment towards higher levels in the "After" conditions. However, note that, in conventional posted-price transactions at restaurants, customers actually decide on/agree to their payment – with reference to the menu price – when placing their order of food and beverages. Hence it can also be argued that the "Before" conditions in our experiment mirrored the norm more than the "After" conditions. To conclude, while norms could be a confounding factor in Study 2, the direction of their impact is ambiguous to hypothesize.

Table W1. Study 2 (Restaurant Field Experiment): Results of Regression Analysis on Pay-What-You-Want Payment (in Nepalese Rupees) For All Non-Alcoholic Beverages

	Model 1	Model 2	Model 3
Payment decision timing (0 = Before, 1 = After)		28.99** (10.15)	11.74 (19.36)
Actual value in Rupees according to menu prices		.53** (0.04)	.47** (0.04)
Reference price (0 = Withheld, 1 = Presented)		14.78 (10.32)	41.71** (15.16)
Payment decision timing × Actual value in Rupees according to menu prices			.15** (0.05)
Payment decision timing × Reference price			-45.33* (20.22)
Number of items of non-alcoholic beverages ordered	45.94** (6.16)	-1.77 (5.72)	-1.75 (5.60)
Number of customers	13.67 (8.37)	-.48 (6.36)	-2.38 (6.24)
Weekend indicator (1 = Saturday-Sunday, 0 = Monday-Friday)	15.69 (15.67)	8.45 (11.84)	6.26 (11.64)
Intercept	41.91* (16.66)	20.94 (14.59)	30.17[a] (16.42)
R^2	.38	.66	.67
Adjusted R^2	.37	.65	.66
No. of observations (tables)	264	264	264

Note. The data in this analysis include 655 customers at 264 tables who ordered non-alcoholic beverages, comprising 121 tables in the "Before" conditions (of which 70 were presented with reference prices) and 143 tables in the "After" conditions (of which 80 were presented with reference prices). The beverages included the bottled and pre-packaged branded beverages described under Table 1 in the main text, plus varieties of house-brewed coffee, house-brewed green tea, hot chocolate, hot lemon with honey, lemon ice tea, lemonade, and milkshakes. Standard errors in parentheses. Where the estimate is significantly different from zero, the entry is marked by one or more asterisks (* $p < .05$, ** $p < .01$). [a] $p = .067$.

WEB APPENDIX E1

STUDY 3 (RAFFLE TICKET ONLINE EXPERIMENT WITH PRODUCE VALUE MANIPULATION AND MEDIATION MEASURES): SAMPLE INTERFACE

Study 3 was conducted on Amazon's Mechanical Turk using the Qualtrics interface. The following sample is adapted from the interface. Text highlighted in gray appeared only in the "Before" conditions. Text highlighted in yellow appeared only in the "After" conditions. Text highlighted in blue appeared only in the high-value product conditions. Text highlighted in green appeared only in the low-value product conditions. Text in square brackets [] indicates notes on the procedure and is not part of the experimental interface. All other text is common to all conditions.

[General instructions page]

Your Earnings
Participation Payment: **$0.75**
Expense Account: **50 Tokens**

Instructions
Please read the following very carefully.

Overview
This study is being conducted by a team of researchers from leading universities. In this study, you will be given an opportunity to buy a raffle ticket, using an expense account provided to you within the study. Your purchase of the raffle ticket will aid our team's effort to raise funds for The American Red Cross. After the purchase decision, you will be provided a short questionnaire.

Fixed Participation Payment: Every participant will receive $0.75 for his/her participation. Please note that we only compensate participants who complete the study.

Expense Account: In addition to the fixed participation payment, you also have access to an expense account with 50 tokens. You can use the tokens in the expense account towards buying a raffle ticket with a chance to win a bonus payment of $50 $5. Any number of tokens you choose to pay for the ticket, from the expense account, will be converted into US Dollars (exchange rate: 1 token = 1 cent) and will be donated to The American Red Cross as part of the research team's fundraising efforts. The remaining tokens in the expense account will be converted to USD at the same rate and added to your final payment.

Raffle Ticket and Winnings: The raffle ticket gives each participant a 1 in 100 chance to win $50 $5. Each purchase by a participant will result in a unique ticket number. Once the study is complete, the winning codes will be announced in a dedicated webpage. If you win, your winnings will be added as a bonus payment on MTurk.

[Payment page]

[the page with the raffle ticket number at the end of this Web Appendix appeared at this point in the "After" conditions]

Your Earnings
Participation Payment: **$0.75**
Expense Account: **50 Tokens**

The Raffle Ticket

How much (in tokens) do you want to pay for the $50 $5 Amazon Gift Card raffle ticket?

You can pay any amount you want for the raffle ticket from the expense account using the slider below. The raffle ticket will be provided to you after you have made your decision. Any number of tokens you choose to pay will be converted into USD (exchange rate: 1 token = 1 cent) and deducted from your expense account. The remaining tokens in the expense account will be converted to USD at the same rate and added to your final payment.

You can pay any amount you want for the raffle ticket from the expense account using the slider below. The raffle ticket has been provided to you already. Any number of tokens you choose to pay will be converted into USD (exchange rate: 1 token = 1 cent) and deducted from your expense account. The remaining tokens in the expense account will be converted to USD at the same rate and added to your final payment.

0 5 10 15 20 25 30 35 40 45 50

[Raffle ticket page]

[the following page appeared at this point in the "Before" conditions;
it appeared immediately before the payment decision page in the "After" conditions]

Your Earnings
Participation Payment: **$0.75**
Expense Account: **50 Tokens**
[the amount above should be (50 – payment) Tokens in the "After" conditions]

RAFFLE TICKET

This ticket entitles the holder to one draw entry to win a ...

$50 $5 Amazon Gift Card

Please note your unique ticket number below.

FL - 7172311

[this ticket number is randomly generated by the Qualtrics interface]

This is your unique raffle ticket.
If you win the raffle, this number will be necessary to claim your prize.

When the study is complete (*estimated completion date: Mar 7, 2022*),
you can view the results on:
https://mturkresearchraffle.weebly.com/

Once you have made a note of the ticket number and the website address, please click the button below and continue.

O I have noted the ticket number and the website address.

[Attention check and previous participation check page]

This study required substantial time and effort to put together. If for whatever reason you feel that you did not respond to the questions carefully or accurately, we would greatly appreciate you informing us of this now.

Your answer will NOT affect your payment or reputation on Mechanical Turk.

Have you responded to the questions carefully and accurately?
O Yes, and my answers should be included in the analysis.
O No, and my answers should not be included in the analysis.

Have you participated in this study before?
O Yes
O No
O Not sure

WEB APPENDIX E2

STUDY 4 (RAFFLE TICKET ONLINE EXPERIMENT IN A CHARITABLE DONATION CONTEXT WITH PRODUCE VALUE MANIPULATION AND MEDIATION MEASURES): SAMPLE INTERFACE

Study 4 was conducted on Amazon's Mechanical Turk using the Qualtrics interface. The following sample is adapted from the interface. Text highlighting follows the same system as in Web Appendix E1. Also, as in Web Appendix E1, text in square brackets [] indicates notes on the procedure and is not part of the experimental interface. All other text is common to all conditions.

[General instructions page]

Your Earnings
Participation Payment: **$0.75**
Expense Account: **50 Tokens**

Instructions
Please read the following very carefully.

Overview
This study is being conducted by a team of researchers from leading universities. In this study, you will be given an opportunity to buy a raffle ticket, using an expense account provided to you within the study. Your purchase of the raffle ticket will aid our team's effort to raise funds for The American Red Cross. After the purchase decision, you will be provided a short questionnaire.

Fixed Participation Payment: Every participant will receive $0.75 for his/her participation. Please note that we only compensate participants who complete the study.

Expense Account: In addition to the fixed participation payment, you also have access to an expense account with 50 tokens. You can use the tokens in the expense account towards buying a raffle ticket with a chance to win a bonus payment of $50 $5. Any number of tokens you choose to pay for the ticket, from the expense account, will be converted into US Dollars (exchange rate: 1 token = 1 cent) and will be donated to The American Red Cross as part of the research team's fundraising efforts. The remaining tokens in the expense account will be converted to USD at the same rate and added to your final payment.

Raffle Ticket and Winnings: The raffle ticket gives each participant a 1 in 100 chance to win $50 $5. Each purchase by a participant will result in a unique ticket number. Once the study is complete, the winning codes will be announced in a dedicated webpage. If you win, your winnings will be added as a bonus payment on MTurk.

[Introduction of charitable donation context page]

Your Earnings
Participation Payment: **$0.75**
Expense Account: **50 Tokens**

Raffle to Help The American Red Cross

About The American Red Cross (adapted from its News Center):
During the coronavirus (COVID-19) pandemic, life's emergencies don't stop — and neither does the work of The American Red Cross. We are involved directly in:

1. *Supporting quarantine shelters*
2. *Distributing food*
3. *Providing health and mental health services*
4. *Providing refuge from disasters*
5. *Giving comfort and support after home fires*
6. *Connecting families*
7. *Provide 24/7 Global Support to Military Families and Veterans*
8. *Maintaining 40% of the nation's blood supply … and more*

The Raffle
To assist The American Red Cross in its valiant efforts, this research team has decided to dedicate 100% of the proceeds from the raffle ticket sales to The American Red Cross.

Today we are offering every participant a chance to win $50 $5 by purchasing a raffle ticket. You can pay any amount you want for the raffle ticket (including 0 tokens) from the expense account. The amount you choose will be transferred directly to The American Red Cross.

Each raffle ticket will showcase a unique ticket number. The ticket will be provided to you after you have decided on the amount you want to pay for it. This ticket will be provided to you next. After receiving the ticket, you will be asked to decide on the amount you want to pay for it.

Once the study is complete, the winning ticket numbers will be announced in a dedicated webpage (a link will be provided to you). If you win, your winnings will be added as a bonus payment on MTurk.

[Payment page]

[the page with the raffle ticket number at the end of this Web Appendix appeared at this point in the "After" conditions; it appeared after the mediation questions in the "Before" conditions, as in this Web Appendix]

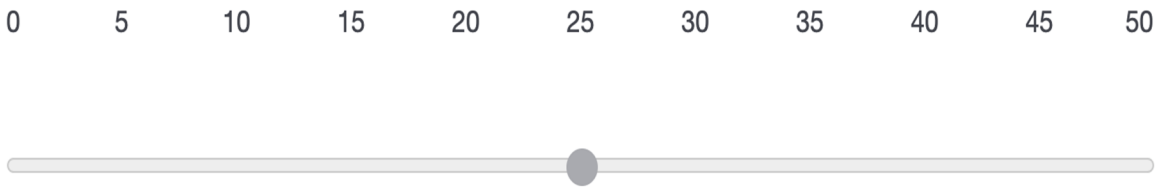
Your Earnings
Participation Payment: **$0.75**
Expense Account: **50 Tokens**

The Raffle Ticket

How much (in tokens) do you want to pay for the raffle ticket?

You can pay any amount you want for the raffle ticket from the expense account using the slider below. The raffle ticket will be provided to you after you have made your decision. Any number of tokens you choose to pay will be converted into USD (exchange rate: 1 token = 1 cent) and donated directly to The American Red Cross. The remaining tokens in the expense account will be converted to USD at the same rate and added to your final payment.

You can pay any amount you want for the raffle ticket from the expense account using the slider below. The raffle ticket has been provided to you already. Any number of tokens you choose to pay will be converted into USD (exchange rate: 1 token = 1 cent) and donated directly to The American Red Cross. The remaining tokens in the expense account will be converted to USD at the same rate and added to your final payment.



[Mediation questions pages]

You were just asked to state the amount you want to pay for the raffle ticket. While thinking about this decision, please answer how much you agree with each of the statements below:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I feel like I own the raffle ticket	O	O	O	O	O	O	O
I feel like the raffle ticket is mine	O	O	O	O	O	O	O
I feel a high degree of ownership of the raffle ticket	O	O	O	O	O	O	O

[PAGE BREAK]

You were just asked to state the amount you want to pay for the raffle ticket. While thinking about this decision, please answer the following questions:

On a scale of 1 to 9 (1 = Not at all obligated, 9 = Very obligated), how obligated did you feel towards the researchers who are fundraising for The American Red Cross while deciding on the amount to pay for the raffle ticket?

1	2	3	4	5	6	7	8	9
O	O	O	O	O	O	O	O	O

On a scale of 1 to 9 (1 = Not at all obligated, 9 = Very obligated), how obligated did you feel towards The American Red Cross while deciding on the amount to pay for the raffle ticket?

1	2	3	4	5	6	7	8	9
O	O	O	O	O	O	O	O	O

[PAGE BREAK]

You were just asked to state the amount you want to pay for the raffle ticket. Please take a moment to list the thoughts that came to your mind as you were making your decision.

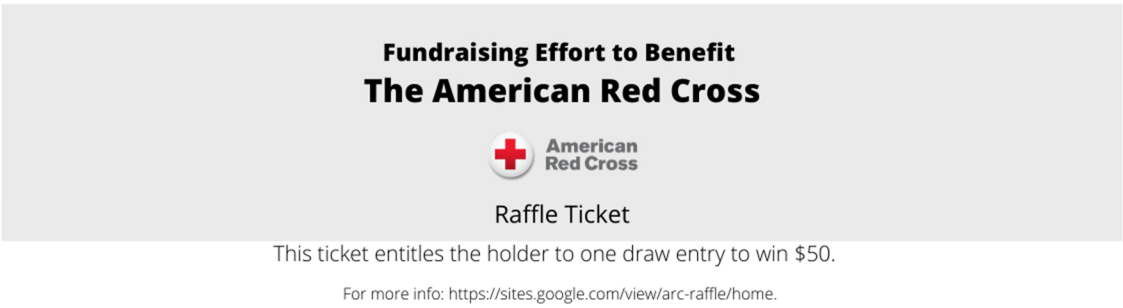
Please use the text boxes below to list your thoughts. Use the button at the bottom of the page to continue.

1	
2	
3	
4	
5	
6	
7	
8	

[Raffle ticket page]

[the following page appeared at this point in the "Before" conditions;
it appeared immediately before the payment decision page in the "After" conditions]

Your Earnings
Participation Payment: **$0.75**
Expense Account: **50 Tokens**
[the amount above should be (50 – payment) Tokens in the "After" conditions]



Please note your unique ticket number below.
Ticket Number: 68797
[this ticket number is randomly generated by the Qualtrics interface]

This is your unique raffle ticket.
Please note the raffle ticket number or take a screenshot of this page.
If you win the raffle, this number will be necessary to claim your prize.

You can view the results of the lottery on this website
when the study is complete:

https://sites.google.com/view/arc-raffle/home

Once you have made a note of the ticket number and the website address, please click the button below and continue.

O I have noted the ticket number and the website address.

WEB APPENDIX F

THOUGHT CODING PROCEDURE AND FURTHER ANALYSIS OF THE CODED THOUGHTS IN STUDY 4

In Study 4, participants were asked to "list the thoughts that came to your mind as you were making your decision" after they made their pay-what-you-want payment decision. As shown in Web Appendix E2, participants were given eight boxes to list up to eight entries. The interface program required them to fill in at least one box before they could move forward to the next page of the interface.

We employed independent coders to categorize these listed thoughts. The coders were informed about the pay-what-you-want decision and the fact that the payment would be transferred directly to The American Red Cross. They were not informed about our manipulations and predicted effects and were not given access to the experimental data apart from the thoughts. They were instructed to code each listed thought according to three categories: "Social Thoughts" (elaboration on social factors), "Economic Thoughts" (elaboration on economic factors), and "Undefined". The specific instructions (in italics) on the categorization of thoughts are as follows:

"Social Thoughts":

"All fairness-related thoughts go here as do any emotions, sentiments, and feelings shared. These could be participants' sharing of their communal motivation, grievances that explain why they are paying less, or praise or charitable thoughts that explain why they are paying more. Please note that, when participants are thinking about someone other than themselves, these should fall under social thoughts too."

"Economic Thoughts":

"*These are thoughts where participants mention the amount they want to pay, how much they stand to win, or lose. Any deliberation of probability of winning, how they'd spend the money if they win, and their opportunity cost, would go here."*

Lastly, thoughts that could not be categorized under either of the above categories were coded as "Undefined."

Each coder then counted the number of thoughts in each category for each participant. After working on their own, the coders resolved their differences through discussion to arrive at a final dataset of the coded thoughts.

Table W3 presents the means (per participant) of the number of thoughts in each category by condition. We also carry out between-subjects 2 (payment decision timing: "Before" vs. "After") × 2 (High-value product vs. Low-value product) ANOVA for several thought variables focusing on significant effects at the 95% significance level:

(a) Elaboration on social factors ("Social Thoughts" in the coding process): significant main effect in product value ($F(1,315) = 4.58$, $p = .033$) and interaction ($F(1,315) = 4.03$, $p = .046$) but no significant main effect in payment decision timing. This has also been reported in the main text.

(b) Elaboration on economic factors ("Economic Thoughts" in the coding process): significant main effect in payment decision timing ($F(1,315) = 5.52$, $p = .019$) but no significant main effect in product value nor significant interaction. This reflects the possibility the secondary effect discussed in footnote 1 in the main text: increased salience of the social exchange nature of the pay-what-you-want transaction upon delivery of the product might suppress the salience of the economic aspects of the transaction, leading to lower elaboration on economic factors.

(c) Undefined ("Undefined" in the coding process): significant main effect in payment decision timing ($F(1,315) = 7.15$, $p < .01$) but no significant main effect in product value nor significant interaction.

(d) Total number of thoughts: significant interaction ($F(1,315) = 8.46$, $p < .01$) but no significant main effects.

Table W3 indicates if there is any statistically significant (at the 95% significance level according to a pairwise contrast) simple effect within the ANOVA design for each of the above dependent variables.

As shown in Table W3, in the standard (high-value product) conditions there was statistically significant higher elaboration on social factors in the "After" (versus "Before") condition, but this is not the case among the low-value product conditions. This is consistent with the omnibus ANOVA for this variable, and, importantly, is parallel to the effects observed for the pay-what-you-want payment (Table 5 in the main text). As such, this is also consistent with our theoretical development in the main text (see, e.g., Figure 2 in the main text). Specifically, this suggests that the "After" condition was most effective in increasing thoughts about the pay-what-you-want transaction as a social exchange (see, e.g., Fiske 1992) that were distinct from objective considerations of economic values.

Meanwhile, for elaborations on economic factors as well as "Undefined" thoughts, there are main effects in payment decision timing that manifest as simple effects in payment decision timing at low product value. These observations are not consistent with those for pay-what-you-want payment and elaboration on social factors.

As discussed in the Theoretical Development section, elaboration on both economic and social factors could influence economic and social motives and pay-what-you-want payment.

However, also as explained in detail in that section, we propose that the effect on payment due to timing of payment decision before versus after product delivery, as well as the moderating effect of product value, could be mainly linked to elaboration on social factors, because of the direct relevance of this type of thoughts to the inherent social motives that drive pay-what-you-want payment. The results of our analysis of the coded thoughts in Study 4 are consistent with our theorizing.

Table W2. Study 4 (Raffle Ticket Online Experiment in a Charitable Donation Context with Product Value Manipulation and Mediation Measures):

Categories in the Thought Coding Analysis

High-level descriptor of thought category	Category label in the coding analysis	Examples
Elaboration on social factors	Social Thoughts	"to be fair" "Sincere" "The red cross could use this money wisely"
Elaboration on economic factors	Economic Thoughts	"winning raffle" "I need the money"
Undefined	Undefined	"none"

Table W3. Study 4 (Raffle Ticket Online Experiment in a Charitable Donation Context with Product Value Manipulation and Mediation Measures):

Mean Number of Thoughts by Condition and Category

	High-value product		**Low-value product**	
	"Before"	"After"	"Before"	"After"
	$N = 87$	$N = 87$	$N = 70$	$N = 75$
Elaboration on social factors	2.15* (2.27)	3.03*$^{++}$ (2.55)	2.11 (2.22)	1.95^{++} (2.24)
Elaboration on economic factors	1.15 (1.33)	1.03 (1.42)	1.47** (1.56)	.87** (1.11)
Undefined	.06 (0.28)	.38 (1.53)	.09* (0.33)	.49* (1.83)
Total	3.36** (2.04)	4.45**$^{++}$(2.39)	3.67 (2.20)	3.31^{++} (2.26)

Note: See Table W2 for descriptions of the categories. SDs in parentheses. The asterisks indicate that the difference in means of the same dependent variable between "Before" and "After" conditions under the same value manipulation is statistically significant according to between-subjects *t*-tests (* $p < .05$, ** $p < .01$). The plus signs ("$^{+}$") indicate that the difference in means of the same dependent variable by product value and controlling for payment decision timing is statistically significant according to pairwise contrasts ($^{+}$ $p < .05$, $^{++}$ $p < .01$).

WEB APPENDIX G

TEST OF REVERSE CAUSALITY IN THE MEDIATION ANALYSIS FOR STUDY 4

We observe that our mediation variables (felt ownership and felt obligation) in Study 4 were always measured after the payment decision. This is because the payment decision could be sensitive to any priming effects caused by the mediation measurements themselves. But this setup poses the question of whether the responses to the mediating variables could have been driven by the payment rather than the opposite. To examine this possibility, we use data from the standard conditions and estimate a simple mediation model using the SAS PROCESS macro (Hayes 2018, Model 4) with 10,000 bootstrapped samples. In this model, the independent variable is the payment decision timing, while the mediation variable is the payment and the dependent variable is the measure of elaboration on social factors. In other words, we estimate a reverse causality model connecting payment decision timing with our major mediation variable via the pay-what-you-want payment (see, e.g., Experiments 2A and 2B in Savary and Goldsmith 2020 for a recent example of a similar approach). We find that there is a significant direct effect (B = .75, SE = .37, 95% CI: [.02,1.48]), while the indirect effect is not significant at the 95% significance level. That is, even after controlling for the payment, decision timing still had an impact on elaboration on social factors. This provides supporting evidence that the process evidence we obtained was not the result of reverse causality.

References for Web Appendix G

Hayes, Andrew (2018), *Introduction to Mediation, Moderation, and Conditional Process Analysis*: *A Regression-Based Approach* (2nd Edition). New York, NY: The Guilford Press.

Savary, Jennifer, and Kelly Goldsmith (2020), "Unobserved Altruism: How Self-Signaling Motivations and Social Benefits Shape Willingness to Donate," *Journal of Experimental Psychology: Applied*, 26(3), 538-550.