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The power of close relationships and audiences: Interpersonal closeness and payment observability as determinants of voluntary payments

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Abstract

Individual decision-making in Pay-What-You-Want settings is prone to social influence. Especially payment observability and the social relationship with other buyers during the payment decision are two important components of social influence. In practical applications of Pay-What-You-Want both phenomena often occur together while not being investigated yet for more than two types of social relationships. Thus, it is not clear how the presence of various types of social relationships influence voluntary payments and how they relate to payment observability. This study examines both drivers of social influence and investigates how payment observability (audience effect) and different types of social relationships (closeness effect) affect voluntary payments at the American Museum of Natural History. 1034 subjects participated in the study. I find that both, payment observability and interpersonal closeness, significantly increase payments. Voluntary payments are significantly higher if observed by other buyers and if visitors are surrounded by interpersonally close others. A high level of consistency between beliefs and behavior with increasing interpersonal closeness is discussed as potential explanation of the closeness effect. The study results are robustly confirmed in a replication study with 995 subjects.

JEL classifications: C90; D01; D91; L11

Keywords: social influence; interpersonal closeness; social image concerns; experiments; Pay-What-You-Want

1   Introduction

People behave prosocially in many ways: they donate, they help others, and they pay positive amounts in voluntary payment settings. Pay-What-You-Want (PWYW) for instance is such a voluntary payment setting which has emerged recently (see, for recent reviews, Gerpott 2017; Greiff and Egbert 2018). It represents one practical application of prosocial behavior because the whole price determination power is delegated to the buyer (Kim et al. 2009). As the price setting decision is made by the buyer it thus can be assumed that higher payments reflect increased prosocial behavior of the buyer towards the seller.

In many practical applications of PWYW the buyer is not alone but surrounded by other buyers during the payment decision. The chosen price of the buyer thus is prone to social influence processes. Two conceptually different but important phenomena of social influence in PWYW contexts are observability of behavior and the social relationship between the buyers during the payment decision. In PWYW contexts both variables often occur together and accordingly the individual decision making can be influenced by both components separately or in combination. As an example, imagine a situation in which visitors of a museum stand in a queue to pay voluntarily at the ticket counter. They either stand close to each other such that the other visitors can observe the payment decision or the other visitors stand far away from each other and accordingly are not able to observe the payment. In addition, the other visitors in the queue might vary in their type of social relationship towards the buyer. In some situations, interpersonally close other visitors – such as friends or family members – might stand in the queue while in other situations the visitors in the queue might be strangers. Both characteristics of this payment setting – observability of behavior and the social relationship between the buyers – might influence the payment decision of a buyer. It could be the case that the presence of close others already increases prosocial behavior without being observed. Furthermore it could be that being observed increases prosocial behavior irrespective of who is observing the own behavior. Finally, it might be the case that the closeness towards the other buyers only matters if the own payments are observed.

Until now it is an open empirical question how payments are affected by varying types of social relationships, including close others, and how the interpersonal closeness between the buyers relate to the aspect of payment observability. And further: Does increasing interpersonal closeness amplify the effects driven by observability or is the effect additive in total? The aim of this paper is to close this research gap and to explore both components of social influence, payment observability and different types of social relationships, as well as their relationship to each other in a Pay-What-You-Want setting with high external validity. The two components – payment observability and interpersonal closeness – are two phenomena which can be investigated in a controlled experimental design very well. Together, important behavioral insights for the impact of both determinants on voluntary payments are addressed, so far lacking in the scientific literature.

This paper builds on the broad literature on observability and prosocial behavior as one channel of social influence. Recent research proposes that being observed by others might change behavior. This will be referred to as *audience effect* in this paper. While psychological research focuses on changes in performance due to observation (Wolf et al. 2015; Zajonc 1965), research in economics focuses on the impact of observability on prosocial behavior. One potential explanation for this effect are social image concerns. Social image concerns assume that people derive a positive social image from signaling generous behavior to others (Andreoni and Bernheim 2009; Bénabou and Tirole 2006; Ellingsen and Johannesson 2008). Individuals can use their behavior as a mechanism to maintain such a positive social image, for instance with high payments in a voluntary payment setting.

This paper further builds upon the literature on social relationships – and more specifically, on interpersonal closeness – and prosocial behavior as another channel of social influence. Traditionally, it has been assumed that an individual's behavior is shaped especially by the relationship to interpersonally close others (Cooley 1909; Forgas and Williams 2001; Gächter et al. 2017; Mashek and Aron 2004). This will be referred to as *closeness effect* in this paper. It recently has been proposed that being together with interpersonally close others can result in entering a prosocial mindset which in turn might increase prosocial behavior (see, e.g., Brewer and Kramer 1986; Kramer and Brewer 1984; Reddish et al. 2013; Rennung and Göritz 2016; Stel et al. 2008; Valdesolo and DeSteno 2011; van Baaren et al. 2004; Vicaria and Dickens 2016). Furthermore, several studies exist showing that altruism and helping behavior are raised with increasing closeness (Andersson et al. 2020; Bell et al. 1995; Cialdini et al. 1997; Korchmaros and Kenny 2001; Maner et al. 2002; Neuberg et al. 1997). Adapted to PWYW this effect proposes that buyers might enter a prosocial mindset if they are together with close others in the payment setting, and thus pay more in a PWYW scheme. One potential explanation of such a closeness effect is the desire of an individual to behave similar to the expected behavior of others. Those expectations of others are also called normative beliefs (Ajzen and Fishbein 1970; Ajzen 1991; Fishbein and Ajzen 1975). As an individual aims to maintain a close social relationship with another person, this view suggests that the own behavior is more aligned with the observed or expected behavior of close others as compared to not close others (Etcheverry and Agnew 2016). Following this line of research it thus can be proposed that interpersonal closeness and beliefs play an important role in individual decision making, also in PWYW contexts.

Connecting both concepts of observability and interpersonal closeness, one might expect that the composition of the audience might influence the strength of the audience effect. This explanation in turn suggests that not only the observability of behavior matters but the social context in which a decision is taking place, as well. Recent literature in economics acknowledges the relevance of social relationships for decision making if behavior is observed (Andreoni and Bernheim 2009; Ellingsen and Johannesson 2008; Regner and Riener 2017). However, empirical studies testing these assumptions are still lacking.

The literature on payment observability, social relationships, and their interplay in the field of PWYW is inconclusive. While Gneezy et al. (2010) as well as Regner and Riener (2017) have shown that observation by the seller does not significantly increase payments, Dorn and Suessmair (2016), Dorn and Suessmair (2017), Hilbert and Suessmair (2015), and Schlüter and Vollan (2015) report increased payments if the payment is observed by other buyers. However, these studies intertwine the concepts of observability and interpersonal closeness and are thus not able to disentangle whether increased payments are driven by the payment observability or the presence of close others. In a laboratory experiment, Hofmann et al. (2018) have shown that both effects are at play separately. Payment observability and the presence of close others increase payments separately while their combined effect is additive in total. It yet remains unclear whether this result holds true for a larger range of interpersonal closeness levels and in a scenario with higher external validity.

The novelty of this paper is to manipulate interpersonal closeness on four different levels, to investigate the interplay between such a broader range of closeness and payment observability, and to explore their impact on voluntary payment behavior in a real practical application of PWYW. It thus contributes to the literature on PWYW by detecting whether higher payments are due to varying levels of interpersonal closeness between the buyers or due to payment observability. Forgas and Williams (2001) emphasize that social influence research should take "real social settings" (p. 6) into account in order to understand how such processes affect behavior and thoughts. Hence, the hypothetical purchase of an entrance ticket at the American Museum of Natural History (AMNH) in New York is used as a setting with high external validity in this paper. The AMNH was the tenth most visited museum worldwide in 2018 (Themed Entertainment Association 2018) and it uses Pay-What-You-Want at the admission desk in the museum as pricing mechanism. I employed the typical payment situation in museums for the manipulation of payment observability and interpersonal closeness between buyers in this experiment, namely standing in a queue with other visitors around during the payment situation.

In a 4 x 2 between-subjects design I vary interpersonal closeness on four levels (very low interpersonal closeness *IOS1*, low interpersonal closeness *IOS2*, high interpersonal closeness *IOS3*, and very high interpersonal closeness *IOS4*), while payment observability is varied on two levels (*No Audience* and *Audience*). 1034 subjects participated in the online experiment. I find an average main effect of payment observability on voluntary payments: Payments are significantly higher if observed by other visitors. Furthermore, I find an average main effect of interpersonal closeness on voluntary payments: Increased interpersonal closeness significantly increases payments. That is, the presence of close others increases voluntary payments regardless of payment observability. The relationship between payment observability and interpersonal closeness is additive in total: Voluntary payments are highest if the buyers are observed by very close others during the payment decision. However, I do not find a significant inter-

action effect. Thus, the observation by very close others does not pronounce the effect of observability more strongly than by not close others. These results are robustly confirmed in a replication study with 995 participants. The data analysis further supports the importance of beliefs as one potential driver of the strong closeness effect. The results of this paper may help to shape a successful design of PWYW mechanisms, taking the additive effect of interpersonal closeness and payment observability into account.

The remaining part of the paper proceeds as follows: Section 2 sets out the theoretical framework of this paper, while Section 3 describes the experimental design and procedures. In Section 4, the behavioral predictions are introduced. Section 5 describes the participants and Section 6 presents the main results. The study results are discussed in Section 7, while Section 8 concludes.

2   Literature review

This paper contributes to two streams of literature: Social influence and Pay-What-You-Want (PWYW). I firstly review the existing literature on observability of behavior (audience effect) and secondly the literature on varying types of social relationships (closeness effect) as two phenomena of social influence. Furthermore, these concepts are combined with social image concerns and normative beliefs as potential explanations for the two behavioral effects. Finally, I review recent findings of payment observability and social relationships in the field of PWYW.

Walker (2015) defines social influence as "change in an individual's thoughts, feelings, attitudes, or behavior that result from interaction with another individual or a group" (p. 1). Kelman (1958) proposes observability and social relationships as two important aspects of social influence. He assumes that being observed activates social influence driven by the goal to gain reward from a relevant other for a specific behavior ('compliance'). This influence requires to make the individual decision publicly known to a relevant other. On the contrary, the process of 'identification' does not necessarily requires public behavior. Kelman (1958) uses the term 'identification' for a process in which an individual behaves similar to the expectations of relevant others in order to maintain the existing social relationship.

In this paper, *audience effect* is defined as a change in behavior due to observability by others. A large number of studies in psychology has shown that observation affects performance (see, e.g., Triplett 1898; Wolf et al. 2015; Zajonc 1965). Similarly, research in economics provides empirical evidence that observing the payments (via reducing anonymity) increases prosocial behavior in the form of contributions in dictator games (see, e.g., Engel 2011; Hoffman et al. 1996), in donations (see, e.g., Alpízar et al. 2008; Alpízar and Martinsson 2013; Lacetera and Macis 2010; List et al. 2004; Martin and Randal 2008; Soetevent 2005), and in public goods games (see, e.g., Andreoni and Petrie 2004; Christens et al.

2019; Rege and Telle 2004). As one possible underlying psychological mechanism social image concerns have been introduced in the literature (Andreoni and Bernheim 2009; Ariely et al. 2009; Ellingsen and Johannesson 2008). If behavior is observed it can be assumed that social image concerns are activated. An audience thus can be operationalized via introducing observability of behavior. The concept of social image concerns implicitly assumes that people strive to appear in a favorable way towards themselves and others. Thus, cooperation and prosocial behavior might increase due to their goal of being perceived as generous. The social image model of Ellingsen and Johannesson (2008) also takes into account that the expectations of the audience matter. The model predicts that the behavior of the individual depends on the values of the audience. Social reward from being observed can be expected only if the behavior of the individual is congruent with the expectations of the audience. In line with this idea of social reward is the idea of Kelman (1958) that an individual's behavior is driven by the goal to gain positive reward from relevant others if the behavior is publicly observed. In the same vein, the expectation of being evaluated by others is proposed as underlying mechanism of the audience effect by psychologists (Cottrell 1968; Guerin and Innes 1982). Similarly, it has been shown that even minimal social cues like stylized faces or watching eyes can activate reputation concerns (Bateson et al. 2006; Ekström 2012; Fehr and Schneider 2010; Haley and Fessler 2005; Krupka and Croson 2016; Rigdon et al. 2009). Together, this literature outlines observability of behavior as important aspect of social influence in individual decision making, possibly being driven by social image concerns and resulting in increased prosocial behavior.

As human beings do not live in social vacuums, but in social relationships, it is a well established view that the behavior of an individual is shaped especially by the social relationship to interpersonally close others (Cooley 1909; Forgas and Williams 2001; Gächter et al. 2017; Mashek and Aron 2004). In line with this literature *closeness effect* in this paper is defined as a change in behavior due to the presence of interpersonally close others. The concept of interpersonal closeness was first conceptualized as such in social psychology. Interpersonal closeness can be defined as a parameter to distinguish between social relationship categories (Aron et al. 1992; Berscheid et al. 1989a). It thus is assumed that social relationships differ regarding their level of interpersonal closeness between the respective individuals, including categories such as strangers, acquaintances, friends, very close friends, partners or family members. As noted by Agnew et al. (1998), Berscheid et al. (1989a), Gaines (2016), and Kelley and Thibaut (1978), close relationships rely on an interdependence between two or more people and can emerge via repeated interactions resulting in increasing amounts of seeing each other, knowing each other, and sharing information about each other. As assumed by Arriaga et al. (2004), close relationships are further characterized by continuation in a long-term future.

Established methods to induce interpersonal closeness in mainly laboratory experimental settings are sharing information with each other (Aron et al. 1997; Sedikides et al. 1999), having eye-contact (Cui et

al. 2019; Zhou et al. 2018), or acting in synchrony (Paladino et al. 2010; Rabinowitch and Knafo-Noam 2015; Tunçgenç and Cohen 2016). Furthermore, natural social relationships can be used, such as inviting friends into the laboratory, conducting experiments in the field or borrowing identities from real social relationships (Aron et al. 1997; Berscheid et al. 1989b; Cialdini et al. 1997; Gächter et al. 2015). Less explored is whether such methods can be successfully applied in an online experimental environment. This paper closes this research gap by using borrowed identities from real social relationships as method to induce varying degrees of interpersonal closeness in an online experiment.

The view that interpersonal closeness can be conceptualized as cognitive overlap between the self and the other has been introduced by Aron et al. (1991, 1992, 1997). This is, the closer a social relationship is, the more do the boundaries between the self and the other blur away. This results in the merging of the self and the other. In this line of thought, the authors proposed to elicit the strength of interpersonal closeness with the 'Inclusion of Other in the Self' (IOS) Scale (Aron et al. 1992). The IOS Scale measures the perceived 'interconnectedness of self and other' (Aron et al. 1992, 1997), using a pictorial scale of increasingly overlapping circles: The more the circles overlap, the higher the perceived interpersonal closeness. Accordingly it is assumed that the cognitive overlap is able to differentiate among varying degrees of interpersonal closeness in social relationships (Aron and Fraley 1999). As compared to the 'Relationship Closeness Inventory' (Berscheid et al. 1989b), the IOS Scale is a more flexible measure of interpersonal closeness that is simple and fast to use at the same time. As shown by Gächter et al. (2017), the IOS Scale is a reliable measure of interpersonal closeness. It is not only used in psychology but also gained attention in economics recently (see, e.g., Gächter et al. 2015). The IOS Scale thus is used in this study as it can be seen as a valid instrument to measure interpersonal closeness.

Psychological research indicates that higher levels of interpersonal closeness put people into a prosocial mindset and thus might potentially increase prosocial behavior (Brewer and Kramer 1986; Kramer and Brewer 1984; Reddish et al. 2013, 2016; Rennung and Göritz 2016; Stel et al. 2008; Valdesolo and DeSteno 2011; van Baaren et al. 2004; Vicaria and Dickens 2016; Wiltermuth and Heath 2009). In this vein, it can be proposed that people enter a prosocial mindset if being together with close others. Also, Cialdini et al. (1997), Maner et al. (2002), and Neuberg et al. (1997) propose interpersonal closeness as driver of increased prosocial behavior. Furthermore, Korchmaros and Kenny (2001) have shown that emotional closeness and helping behavior correlate positively with each other. Findings from neuropsychology underline the closeness effect even in the absence of observability (van Hoorn et al. 2016). In addition, processes that involve thinking about oneself and others are activated especially when being familar with others (Jung et al. 2018). Following this line of research, the degree of social relationship seems to be a relevant aspect of social influence processes, potentially driving increased prosocial behavior.

The literature offers beliefs and the adaptation of individuals to these beliefs as one possible explanation for the phenomenon of the closeness effect. The idea that individual behavior is influenced

by beliefs entered the economic literature with the advent of the psychological game theory (see, e.g., Battigalli and Dufwenberg 2007; Geanakoplos et al. 1989). Geanakoplos et al. (1989) introduced the terms 'first order beliefs' and 'second order beliefs'. While first order beliefs describe an individual's beliefs about what another individual will do, second order beliefs refer to the beliefs of an individual about the beliefs and expectations of another individual. Thus, the behavior of others serves as either informational source to arrive at a decision or as normative guidance of what kind of behavior is expected to be the right thing to do. These concepts are similar to 'informative' and 'normative' influence within the franework of conformity (Cialdini et al. 1990; Deutsch and Gerard 1955). That an individual compares itself with similar and relevant others in order to arrive at a decision is also proposed in the 'Social Comparison Theory' by Festinger (1954). Some authors have further suggested that normative beliefs might influence individual decision making. Ajzen and Fishbein (1970) define normative beliefs as "what [an individual] is expected to do in that situation" (p. 467). They refer to the expectations of relevant others and are proposed as important determinant of individual decision making. The idea of normative beliefs has been put forward in the 'Theory of Reasoned Action' by Fishbein and Ajzen (1975) and the 'Theory of Planned Bevahior' by Ajzen (1991). Accordingly, Ajzen (1991) argues that individuals aim to fulfill the expectations (normative beliefs) of relevant others. Similarly, Etcheverry and Agnew (2016) emphasize the relevance of close relationships in adapting to normative beliefs. They proposed a positive relationship between interpersonal closeness and adaption to normative beliefs such that the expectations of close others are fulfilled more often than those of not close others. Also, Walker (2015) puts forward the idea that social influence processes occur especially between individuals who are perceived as similar or relevant.

Social cohesion might be one underlying motive for the aim to fulfill the normative beliefs of close others. Social cohesion captures the desire to be included in a social relationship with one or more others and to maintain this relationship (Carless and De Paola 2000). Connecting social cohesion and interpersonal closeness it can be assumed that the desire to maintain a social relationship with a person increases, the closer the social relationship is with this other person. Mapping this onto PWYW settings it thus can be expected that the closer an individual feels to another buyer the more does the desire to behave similar in order to maintain the social relationship increases. Accordingly, it can be assumed that with higher levels of interpersonal closeness people adjust their own behavior more towards the behavior and expectations of others as the maintenance of these relationships is increasingly important to an individual. More specifically, this implies for PWYW settings that payments may increase up to the amount individuals expect others to pay.

Overall, the presented literature provides important insights on the role of beliefs in individual decision making. In view of what has been mentioned so far one may suppose that the closeness effect is driven by the aim to be consistent with first order and normative beliefs of interpersonally close others.

In the field of PWYW, audience and closeness effects by themselves and in combination are under-investigated. Although payment observability and the presence of close others are already quite well investigated in public goods games or charitable giving settings, only a limited number of studies in the field of PWYW exist focusing on these topics. Furthermore, existing studies reveal mixed evidence of audience and closeness effects on voluntary payments. Payment observability towards the seller does not significantly affect payments in an online music store (Regner and Riener 2017) and a restaurant setting (Gneezy et al. 2012).

If payments are observed by other buyers they increase in general (Dorn and Suessmair 2016, 2017; Hilbert and Suessmair 2015; Schlüter and Vollan 2015). Hilbert and Suessmair (2015) find higher payments if buyers are observed by another subject in a laboratory experiment. Further, Dorn and Suessmair (2016, 2017) find that payments increased, when participants were observed by friends. A field experiment of Schlüter and Vollan (2015) explored payment observability by close others in a field experiment. They found that payments were higher if buyers were together with known others. Summarizing, these four studies have shown that, on average, voluntary payments were higher in settings where buyers were observed by other buyers compared to settings where buyers could pay anonymously. This was found to hold true for different products, namely the hypothetical purchase of a Big Mac (Dorn and Suessmair 2016, 2017), for the purchase of flowers via an honour box (Schlüter and Vollan 2015) and for the purchase of mugs in a laboratory experiment (Hilbert and Suessmair 2015). However, these studies can not disentangle the effect of payment observability and the effect of being together with close others. The interpretation of the results thus is limited as the studies were not able to detect whether higher payments arose due to payment observability or due to the presence of close others in the payment situation. Increased payments might either have been driven by the observability of payments or by the presence of close other buyers during the payment decision.

A recent study by Hofmann et al. (2018) provides for the first time empirical evidence from a laboratory experiment that both, audience and closeness effects, are at play separately. The results indicate an additive effect of payment observability and interpersonal closeness. In a laboratory experiment the authors varied payment observability on two levels (No Audience vs. Audience) and interpersonal closeness on two levels (Strangers vs. Acquaintances). The results showed that payments significantly increased if subjects were observed or if participants were together with close others but that the two effects did not interact significantly. Thus, an interactive relationship, assuming that the signaling of the payment in an observed setting is affected by the interpersonal closeness between an individual and the audience, can not be supported by empirical data. As a consequence, it is more plausible to assume an additive relationship between observability and interpersonal closeness.

A limitation of the study by Hofmann et al. (2018) is that it manipulated interpersonal closeness on two levels only whereas in reality there is a broad range of varying intensities in social relationships. The

study of Hofmann et al. (2018) might not have found a significant interation effect due to the reason that only two levels of interpersonal closeness were investigated which were strong enough to result in a separate closeness effect but not in an interaction effect between observability and closeness. Possibly, sufficiently high levels of interpersonal closeness might amplify the audience effect more strongly. In addition, a non-linear effect might explain why Hofmann et al. (2018) did not find an interaction between payment observability and interpersonal closeness. Thus it still remains an open question how more than two levels of interpersonal closeness towards other buyers (strangers vs. different kinds of close others) influence voluntary payments. Accordingly, there is still uncertainty on how audience effects and varying levels of interpersonal closeness relate to each other. Further, the generalizability of the results is limited as the study was conducted as laboratory experiment. Although internal validity can be assumed to be high, external validity might be an issue.

The contribution of this paper to the literature is threefold. It firstly aims to investigate how payment observability and varying intensities of interpersonal closeness as two components of social influence affect voluntary payments. It further tests how varying levels of interpersonal closeness relate to payment observability: either additively or interactively. In this context it aims to explore the relevance of beliefs as possible underlying mechanism for the closeness effect. Secondly, it contributes methodologically to the operationalization of interpersonal closeness by using borrowed identities of real social relationships. It thus transfers this complex phenomenon into a controlled online experimental setting to gain insights for understanding the processes at play. Finally, it adds external validity to previous experiments as the experimental setting is embedded in a real-world application of PWYW, namely the American Museum of Natural History (AMNH) in New York.

3   Experimental design and procedures

This experiment applies a 4 x 2 between-subjects design, resulting in eight treatments. The hypothetical purchase of a ticket for the American Museum of Natural History (AMNH) in New York is used as the product. I vary the degree of interpersonal closeness between the buyers on four levels (*IOS1, IOS2, IOS3* and *IOS4*) and payment observability on two levels (*No Audience* and *Audience*). The interpersonal closeness condition *IOS1* serves as baseline condition as here a stranger is described as the other visitor being present during the purchase of the ticket. The three interpersonal closeness conditions *IOS2*, *IOS3*, and *IOS4* represent peer conditions and use borrowed identities from real social relationships of the participants. A low interpersonal closeness is manipulated in the *IOS2* condition, while a high interpersonal closeness is manipulated in the *IOS3* condition. Finally, in the *IOS4* condition, a very high interpersonal closeness is manipulated. The payment observability condition *No Audience* (NA)

represents a scenario in which payments are not observed by a specific other visitor (standing far away from the participant in the queue), whereas in the *Audience* (A) condition own payments are observed by a specific other visitor (standing in the queue direcly behind the participant). Table 1 summarizes the number of participants, almost equally distributed among the eight treatments.

Interpersonal Closeness	No Audience (NA)	Audience (A)	Total
Very low interpersonal closeness (IOS1)	129	131	260
Low interpersonal closeness (IOS2)	130	130	260
High interpersonal closeness (IOS3)	126	123	249
Very high interpersonal closeness (IOS4)	135	130	265
Total	520	514	1034

Table 1: Treatments and observations

The experiment consisted of six steps which are described hereinafter. The timeline of the experiment is shown in Table 2.

Step 1 • Specifying IOS2 - IOS4 persons
Step 2 • One interpersonal closeness level randomly chosen: Strengthen relation-
ship
Step 3 • AMNH scenario description; Treatment manipulation
Step 4 • Decision: Willingness to pay
Step 5 • Manipulation check
Step 6 • Measure of controls, beliefs, preference for fixed price vs. Pay-What-
You-Want, and demographics

Table 2: Timeline of the experiment

In **Step 1**, three real social relationships were elicited to be used in the further procedure of the experiment. The participants were shown the picture of a four-level-adapted version of the original seven-level IOS Scale (Aron et al. 1992), familiarizing them with the concept of interpersonal closeness (see Figure 1).
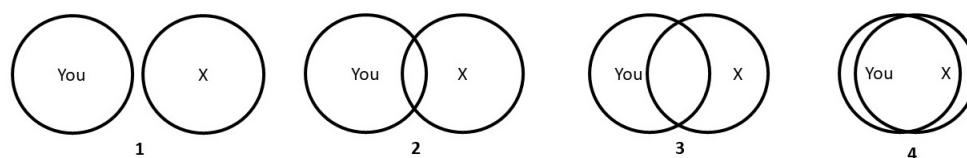

Figure 1: Adapted IOS Scale with four levels

The subjects were asked to think about three same sex people representing different levels of perceived interpersonal closeness to them, namely picture 2, picture 3, and picture 4 of Figure 1. Subjects provided the first name, age, time since they had known the person for, and type of relationship for each of the three persons. As an example, participants were told that a social relationship towards a stranger, about whom they do not know anything, would represent picture 1 of Figure 1. Participants were asked to name same

sex persons and not to name persons that they share a common income for livelihood with. The same sex criteria has been checked before participants were able to continue with the experiment. This method to induce various degrees of closeness relying on the subject's assessment captures possible interindividual variance regarding the meaning of closeness while at the same time structuring the assessment by means of the IOS Scale. It thus allows the subjects to define for themselves how to classify their social relationships regarding different degrees of closeness. This approach represents an advantage compared to external classifications by the experimenter to define what manifests a close relationship (Berscheid et al. 1989a).

In **Step 2**, the level of interpersonal closeness was manipulated. One out of the four levels of interpersonal closeness was randomly chosen and each subject was assigned to one interpersonal closeness condition (*IOS1, IOS2, IOS3*, or *IOS4*) only. Subjects were asked to write a short text about their daily routine on a weekday (baseline condition *IOS1*) or to write a short text about their relationship with the assigned person (conditions *IOS2, IOS3*, and *IOS4*) as for instance how they met each other and which kind of activities they usually do together. The aim of this procedure was to strengthen the randomly assigned level of interpersonal closeness.

In **Step 3**, subjects read the scenario description. Participants were asked to imagine visiting the American Museum of Natural History (AMNH) in New York and standing in the queue at the ticket counter. A picture of the AMNH and information about the museum were provided to activate possible knowledge about the museum and to make the scenario more salient. The subjects were told that the AMNH allowed visitors to pay what they want for the entrance ticket. They further read that they could expect the visit to fulfill their expectations to keep expected satisfaction homogeneous in all treatments. In the scenario description, the manipulation of the audience has been embedded. Subjects were told that they recognized the randomly assigned person from Step 2 also standing in the queue. In the *No Audience* condition they read that the person was standing *far away behind* them with other stranger visitors standing between them. Thus, while paying at the ticket counter, this person would still be far away behind them and could not observe how much they paid for their visit. In the *Audience* condition they read that the person was standing *right behind* them. Thus, while paying at the ticket counter, this person was still right behind them and could observe how much they paid for their visit. It was kept constant across treatments that the staff person at the ticket counter would learn about the price the subjects were willing to pay. Additionally, the subjects were given the information that the museum suggests a price of $23 for a visit, thus providing an external reference price.

Step 4 contained the measure of willingness to pay, operationalized as the price the subjects would be willing to pay in $ for a ticket to visit the AMNH.

In **Step 5**, a manipulation check was conducted in which participants were asked to rate their perceived level of closeness towards the person randomly chosen in Step 2 on the same adapted IOS Scale from one to four (Figure 1).

In **Step 6**, a couple of control variables were measured. First order beliefs and normative beliefs of the participants were measured as well as their general interest in and usage of various cultural activities. Additionally, their affiliation to the AMNH in general was collected. Further, subjects were asked to indicate their preferences for a fixed price or a Pay-What-You-Want pricing mechanism. At the very end of the experiment, demographics were measured.

4   Behavioral predictions

This paper aims to investigate audience effects and closeness effects on voluntary payments for two levels of payment observability and four levels of interpersonal closeness. The behavioral predictions are derived in accordance with the related literature outlined earlier.

If behavior is observed, social image concerns are activated. In the *Audience* condition, these social image concerns are activated via payment observability. Related literature on payment observability showed increased contributions if payments were observed. Accordingly, I expect that, on average, payments are higher if observed by other buyers. I thus predict an average audience effect:

Hypothesis 1 *Payments are, on average, higher in the* Audience *condition than in the* No Audience *condition.*

Recent literature suggests that being together with interpersonally close others might lead to entering a prosocial mindset which in turn results in increased prosocial behavior. As in this study four levels of interpersonal closeness are induced, I expect that, on average, payments increase with increasing levels of interpersonal closeness. Ceteris paribus, I predict an average closeness effect:

Hypothesis 2 *Payments increase with increasing levels of interpersonal closeness.*

Regarding the relationship between an audience and interpersonal closeness, two competing hypotheses are tested. Based on recent empirical findings, I firstly test the prediction that the effects of an audience and interpersonal closeness are additive. Both constructs may increase payments separately, without amplifying each other. This would not lead to a significant interaction effect but nevertheless to highest payments in the treatment in which the behavior is observed by a very close other. Consistently with the more plausible additive relationship, I predict:

Hypothesis 3 *The relationship between observability and interpersonal closeness is additive in total. Hence, payments are highest when observed by a very close other visitor.*

Secondly, taking into account that the relevance of the audience matters regarding social image concerns, it can alternatively be assumed that the motivation to maintain a positive social image increases with increasing levels of interpersonal closeness if behavior is observed. Thus, it might be expected that

interpersonal closeness amplifies differences in the audience effect regarding payment. Close others might induce a stronger activation of social image concerns because close others might be more important than less close others. Currently, this assumption is theoretically possible in economic models of social image concerns but not yet supported by empirical analysis in PWYW settings. Accordingly, I predict the following interactive relationship as alternative to the – more plausible – additive relationship:

Hypothesis 4 *Audience effects are more pronounced if interpersonal closeness is very high.*

5 Participants and manipulation check

The subjects were recruited via Amazon Mechanical Turk (MTurk) and the experiment was programmed with Qualtrics. 1034 subjects participated in the exeriment, randomly assigned to one of the eight treatments. Data collection took place in December 2018. Participants took on average 11.6 minutes ($SD = 7.12$) to complete the survey and they earned \$1.20 for their participation. The participants were on average 38.4 ($SD = 11.87$) years old. 55.1% of the subjects were female. On average, subjects had 0.84 children ($SD = 1.14$). The sample is balanced between liberals and conservatives ($M = 3.53$, $SD = 1.82$, 7-point Likert scale ranging from "Strongly liberal" (1) to "Strongly conservative" (7)).

To ensure that the manipulation of interpersonal closeness was successful, I ran a manipulation check. Using a four-level IOS Scale at the end of the experiment, subjects were asked which of the four presented IOS pictures best described their relationship to the person mentioned in the experimental Steps 2, 3, and 4. The mean IOS score in condition *IOS1* is $M = 1.30$ while it is $M = 2.10$ in condition *IOS2*. In condition *IOS3*, the mean IOS score is $M = 2.92$ and in condition *IOS4* it is $M = 3.85$. The results indicate significant differences: The higher the interpersonal closeness level of the condition, the closer the subjects felt to the named person. A nonparametric comparison of the four conditions (Kruskal-Wallis test, $H(3) = 815.52$, $p < .001$) and a one-way analysis of variance ($F(3, 1030) = 1296$, $p < .001$) support this result. Also, post hoc tests indicate that the manipulation of interpersonal closeness was successful between all four levels on the 0.1% significance level. Thus, I conclude that the manipulation of interpersonal closeness via borrowed identities from real-world social relationships succesfully induced different levels of interpersonal closeness.

6 Results

On average, participants were willing to pay \$19.66 ($SD = 6.90$) for a ticket at the AMNH. The average price paid is significantly different from zero (one-sample *t*-test against zero, $p < .001$). The amount participants were willing to pay varied in a broad range between \$0 and \$50.

Table 3 provides summary statistics of the willingness to pay for all eight treatments and means averaged across the conditions. The results show that payments are higher in the *Audience* (A) treatments than in the *No Audience* (NA) treatments. Further, the results suggest increasing payments with increasing levels of interpersonal closeness.

Interpersonal Closeness	No Audience (NA)	Audience (A)	*Average*
Very low interpersonal closeness (IOS1)	17.74 (7.18)	18.48 (8.04)	18.12 (7.62)
Low interpersonal closeness (IOS2)	19.47 (6.79)	20.23 (6.24)	19.85 (6.52)
High interpersonal closeness (IOS3)	20.12 (6.24)	20.33 (7.02)	20.22 (6.62)
Very high interpersonal closeness (IOS4)	19.39 (7.08)	21.55 (5.77)	20.45 (6.55)
Average	19.18 (6.88)	20.14 (6.89)	19.66 (6.90)

Note: Standard deviations are provided in parentheses.

Table 3: Mean payments in $ for all eight treatments and averaged across conditions

In the *Audience* condition ($M = \$20.14$, $SD = 6.89$), the willingness to pay is significantly higher than in the *No Audience* condition ($M = \$19.18$, $SD = 6.88$, one-sided two-sample t-test, $t(1032) = -2.24$, $p = .013$)). Observed participants thus tended to pay on average 5 % more than subjects in the not observed condition. This result is further confirmed by a one-way analysis of variance, exploring the effect of payment observability on payments. Subjects pay significantly more if payments are observed ($F(1, 1032) = 5.03$, $p = .025$).

Result 1 *Payments are, on average, significantly higher in the* Audience *condition than in the* No Audience *condition.*

The higher the level of interpersonal closeness, the more do subjects tend to pay. On average, subjects paid $18.12 ($SD = 7.62$) in closeness condition *IOS1*, $19.85 ($SD = 6.52$) in closeness condition *IOS2*, $20.22 ($SD = 6.62$) in closeness condition *IOS3*, and $20.45 ($SD = 6.55$) in closeness condition *IOS4*. A Kruskal-Wallis test indicates that the differences between the four interpersonal closeness conditions is statistically significant on the 0.1% level ($H(3) = 17.46$, $p < .001$).

Result 2 *Payments increase significantly with increasing levels of interpersonal closeness.*

This result is also supported by a one-way analysis of variance, examining the effect of interpersonal closeness (factor variable with four levels) on payments. Subjects pay significantly more if interpersonal closeness increases ($F(3, 1030) = 6.21$, $p < .001$). Comparing the four levels of interpersonal closeness via post hoc tests, I find that only the stranger condition (*IOS1*) is significantly different from each of the three peer conditions (*IOS1-IOS2*: $p = .020$; *IOS1-IOS3*: $p = .003$; *IOS1-IOS4*: $p < .001$) but that the three peer conditions do not differ significantly from each other. Thus, payments seem to only marginally differ between the peer conditions *IOS2, IOS3*, and *IOS4*.

Results 1 and 2 are further supported by a linear regression (Table 4). In each of the four specifications, willingness to pay is the dependent variable. I included an audience dummy (Audience = 1, zero otherwise) in Model 1 as explanatory variable. In Model 2, I entered interpersonal closeness as independent variable (continuous variable). In Model 3, I added both, audience and interpersonal closeness, into the regression model. Finally, in Model 4 I added an interaction term between audience and closeness. In all four Models, I included various control variables in the regressions, such as first order and normative beliefs, preference for fixed price, sociodemographic variables, control variables regarding the American Museum of Natural History as well as control variables for rated importance of cultural activities in general and frequency of visits of cultural activities.

	(1)	(2)	(3)	(4)
Audience	0.85* (0.34)		0.86* (0.34)	0.38 (0.83)
Closeness		0.64*** (0.15)	0.64*** (0.15)	0.54* (0.21)
Audience x Closeness				0.19 (0.30)
First Order Beliefs	0.31*** (0.03)	0.29*** (0.03)	0.29*** (0.03)	0.29*** (0.03)
Normative Beliefs	0.34*** (0.04)	0.35*** (0.04)	0.35*** (0.04)	0.35*** (0.04)
Preference for Fixed Price	2.16*** (0.35)	2.14*** (0.35)	2.12*** (0.35)	2.12*** (0.35)
Age	0.04* (0.02)	0.04* (0.02)	0.04* (0.02)	0.04* (0.02)
Gender	0.33 (0.36)	0.16 (0.36)	0.21 (0.36)	0.21 (0.36)
Political Orientation	0.19† (0.10)	0.14 (0.10)	0.15 (0.10)	0.15 (0.10)
Children	−0.03 (0.16)	−0.03 (0.16)	−0.01 (0.16)	−0.01 (0.16)
Degree	−0.31* (0.13)	−0.35** (0.13)	−0.34** (0.13)	−0.34** (0.13)
Marital Status	0.03 (0.21)	0.07 (0.21)	0.06 (0.21)	0.06 (0.21)
Religion	−0.01 (0.05)	−0.02 (0.05)	−0.02 (0.05)	−0.02 (0.05)
AMNH Known	−0.19 (0.30)	−0.22 (0.30)	−0.23 (0.30)	−0.22 (0.30)
AMNH Already Visited	0.53 (0.43)	0.53 (0.43)	0.47 (0.43)	0.47 (0.43)
AMNH Intention to Visit	0.30 (0.37)	0.33 (0.37)	0.35 (0.37)	0.35 (0.37)
Importance: Cultural Activities	0.26† (0.15)	0.25† (0.14)	0.25† (0.14)	0.25† (0.14)
Visits: Cultural Activities	0.76* (0.31)	0.66* (0.31)	0.68* (0.30)	0.69* (0.30)
Constant	0.15 (1.79)	−0.24 (1.79)	−0.78 (1.79)	−0.56 (1.83)
Observations	1020	1020	1020	1020
R^2	0.38	0.39	0.39	0.39
Adjusted R^2	0.37	0.38	0.38	0.38

Notes: Results from linear regressions. Price paid is the dependent variable in all four Models. Standard errors are provided in parentheses. $^\dagger p < .1$; $^* p < .05$; $^{**} p < .01$; $^{***} p < .001$

Table 4: Determinants of the paid price

I find a significant main effect of an audience on voluntary payments across interpersonal closeness conditions (Model 1, coefficient = 0.85, $p = .02$). Payments significantly increase if observed by others. The regression results (Model 2) further show a significant main effect of interpersonal closeness on the paid price (coefficient = 0.64, $p < .001$). The main effects of audience and interpersonal closeness remain to a similar extent if added simultaneously in the regression (Model 3). Summarized, these results lend support for Hypothesis 1 and Hypothesis 2.

I further do not find a significant interaction effect between audience and interpersonal closeness (Model 4, coefficient = 0.19, $p = .524$). Although the payments are highest when very close people

observe the payment, the audience effect does not seem to be more pronounced if the audience consists of very close others. The data analysis thus lends support for the prediction that the audience effect is not amplified when interpersonal closeness is increasing. This finding does not support the interaction Hypothesis 4 but rather provides further empirical evidence for the additive Hypothesis 3.

Result 3 *Audience effects are not more pronounced if interpersonal closeness increases. An additive relationship between audience and interpersonal closeness can be assumed.*

To test this result on robustness, I ran an analysis of variance including an interaction between payment observability and interpersonal closeness. The result is similar to the linear regression summarized in Table 4. While the main effects of an audience ($F(1, 1026) = 5.11$, $p = .024$) and of interpersonal closeness ($F(3, 1026) = 6.30$, $p < .001$) are significant, the interaction is not significant ($F(3, 1026) = 0.97$, $p = .407$).

Looking at the influence of the control variables on the paid price, the regression results indicate a positive and significant effect of first order and normative beliefs on voluntary payments in all four Models. If visitors expect the other person to pay much for the ticket (first order beliefs), they adapt their behavior and also pay more. Similarly, if visitors expect the other person to expect higher payments from themselves (normative beliefs), they pay more. Additionally, those participants who prefer fixed prices (FP) over Pay-What-You-Want (PWYW) pay significantly more than subjects preferring PWYW over FP. This result holds true for all four Models. Regarding the sociodemographic variables, age and degree have a significant influence on price paid in all four Models. Older participants pay significantly more. Further, the higher the education of the participants, the less they pay for their ticket voluntarily. Finally, subjects who visit cultural activities such as museums of concerts more often, pay significantly higher prices. This influence is similar in all four tested regression Models.

How can it be explained that the audience effect is not more pronounced if interpersonal closeness increases but that there is rather an additive relationship between the two constructs? Figure 2 visualizes the distribution of payments for all eight treatments.
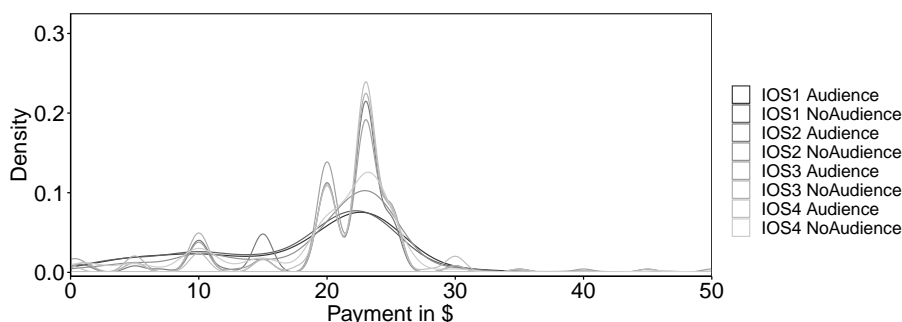

Figure 2: Kernel density functions of willingness to pay split by treatment

The graph indicates that there is sufficient variation in willingness to pay in each treatment. Thus, missing variation in payments is not an issue in finding a significant interaction effect between interpersonal closeness and payment observability.

As already shown in Table 3, in both payment observability conditions payments increase with increasing levels of interpersonal closeness. This result provides empirical evidence that the closeness effect is at work to similar degrees in the *No Audience* and the *Audience* treatments. I ran linear regressions for the *No Audience* and the *Audience* condition separately (see Table 5) to test whether the main effect of interpersonal closeness holds true for both payment observability conditions. In Model 1 and Model 2, only data from the *No Audience* condition are used, while in Model 3 and in Model 4, data from the *Audience* condition are used. In Model 1 and Model 3, interpersonal closeness is included as only predictor on prices paid, while I added various control variables in Model 2 and Model 4, respectively. The paid price is the dependent variable in all four Models.

	(1)	(2)	(3)	(4)
Interpersonal Closeness	0.55* (0.27)	0.57** (0.22)	0.93*** (0.27)	0.76*** (0.22)
First Order Beliefs		0.28*** (0.05)		0.31*** (0.04)
Normative Beliefs		0.39*** (0.06)		0.33*** (0.05)
Preference for Fixed Price		2.27*** (0.49)		2.12*** (0.50)
Age		0.07** (0.02)		0.01 (0.02)
Gender		0.01 (0.51)		0.37 (0.51)
Political Orientation		0.19 (0.15)		0.07 (0.14)
Children		0.21 (0.21)		−0.22 (0.24)
Degree		−0.39* (0.19)		−0.27 (0.18)
Marital Status		0.05 (0.30)		0.10 (0.31)
Religion		−0.07 (0.08)		0.02 (0.08)
AMNH Known		−0.52 (0.44)		−0.01 (0.42)
AMNH Already Visited		0.81 (0.60)		0.24 (0.62)
AMNH Intention to Visit		−0.01 (0.50)		0.76 (0.55)
Importance: Cultural Activities		0.17 (0.20)		0.36† (0.21)
Visits: Cultural Activities		1.08** (0.41)		0.16 (0.47)
Constant	17.80*** (0.74)	−2.01 (2.58)	17.82*** (0.73)	0.86 (2.51)
Observations	520	513	514	507
R^2	0.01	0.40	0.02	0.40
Adjusted R^2	0.01	0.38	0.02	0.38

Notes: Results from linear regressions. The paid price is the dependent variable in all four Models. Standard errors are provided in parentheses. $^{\dagger}p < .1$; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$

Table 5: Determinants of the paid price split by *No Audience* condition (Model 1 and Model 2) and *Audience* condition (Model 3 and Model 4)

The coefficients of interpersonal closeness range between 0.55 in Model 1 and 0.93 in Model 3, significantly increasing payments in all four Models. The results thus suggest that the strong closeness effect is at work irrespective of payment observability. However, the effect of interpersonal closeness is stronger in the *Audience* condition (Models 3 and 4) than in the *No Audience* condition (Models 1 and 2), indicating steeper slopes of interpersonal closeness in the *Audience* condition as compared to the

No Audience condition. Thus, the closeness effect irrespective of payment observability might explain the non significant interaction between audience and interpersonal closeness. The regression analysis in Table 4 revealed beliefs as relevant predictor of payments. It thus seems likely that individuals tend to behave similar to the expected behavior and the normative expectations of others which might lead to increased payments with increasing levels of interpersonal closeness.

6.1 Influence of beliefs

Homogeneity in beliefs and behaving consistently with these beliefs with increasing degrees of closeness are considered as potential explanations for the strong closeness effect, potentially explaing the missing interaction effect between an audience and interpersonal closeness. First order beliefs and normativebeliefs are relevant when it comes to the question whether people behave in alignment with the behavior of others and their expectations, respectively. Table 6 summarizes first order beliefs and normative beliefs for all eight treatments. Regarding first order beliefs, participants expected the other visitor to pay on average \$19.91 ($SD = 6.67$). Regarding normative beliefs, participants believed the other person expected them to pay on average \$20.34 ($SD = 6.33$). In all eight treatments, first order beliefs and normative beliefs are quite similar. Subjects believe in all eight treatments that others pay on average around \$20 and that this amount is expected by others as well.

Interpersonal Closeness	No Audience (NA)	Audience (A)	*Average*
First Order Beliefs			
Very low interpersonal closeness (IOS1)	19.58 (5.89)	19.58 (5.93)	19.58 (5.90)
Low interpersonal closeness (IOS2)	19.79 (6.43)	19.02 (7.70)	19.41 (7.09)
High interpersonal closeness (IOS3)	20.10 (6.63)	20.10 (7.67)	20.10 (7.14)
Very high interpersonal closeness (IOS4)	19.92 (6.71)	21.22 (6.14)	20.56 (6.46)
Average	19.85 (6.41)	19.98 (6.92)	19.91 (6.67)
Normative Beliefs			
Very low interpersonal closeness (IOS1)	20.88 (4.98)	20.53 (4.88)	20.71 (4.92)
Low interpersonal closeness (IOS2)	20.15 (6.07)	20.63 (7.25)	20.39 (6.68)
High interpersonal closeness (IOS3)	20.25 (6.32)	19.49 (7.42)	19.88 (6.89)
Very high interpersonal closeness (IOS4)	20.04 (5.83)	20.67 (7.41)	20.35 (6.65)
Average	20.33 (5.82)	20.34 (6.81)	20.34 (6.33)

Note: Standard deviations are provided in parentheses.

Table 6: Mean first order beliefs and normative beliefs in \$ for all eight treatments

Result 4 *First order beliefs and normative beliefs resemble to one another between the eight treatments.*

This result is supported by nonparametric Kruskal-Wallis tests. First order beliefs are not statistically significantly different between the eight treatments ($H(7) = 12.46$, $p = .086$). A similar result occurs for normative beliefs ($H(7) = 5.18$, $p = .638$). Further, first order beliefs and willingness to pay are

positively correlated (correlation coefficient $= 0.53$, Pearson's $p < .001$). Similarly, normative beliefs and willingness to pay are positively correlated (correlation coefficient $= 0.53$, Pearson's $p < .001$). These similarities between own payments, first order beliefs, and normative beliefs are illustrated in Figure 3.
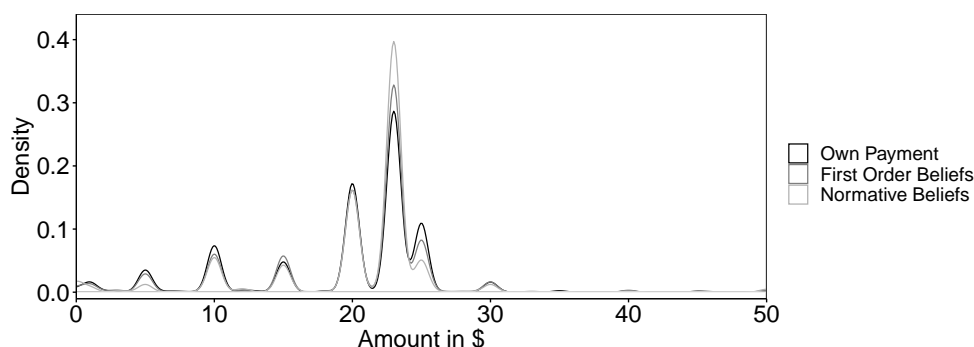

Figure 3: Kernel density functions of own payments, first order beliefs, and normative beliefs aggregated over all treatments

However, the degree of alignment between own behavior and the beliefs differs systematically between the four interpersonal closeness conditions. A high level of consistency is supposed if the difference between own payment and beliefs is small while a low level of consistency is supposed if this difference is large. To test this relationship, I calculated the difference between own payment and beliefs for each subject, measuring the degree of consistency. If the difference is zero, then subjects completely align the own behavior to the beliefs. If the difference is negative, beliefs were lower than own payments, indicating that subjects paid more than they expected the other to pay and more than the other expected them to pay. On the other hand, if the difference is positive, beliefs were higher than own payments, indicating that subjects paid less than they expected the other to pay and less than the other expected them to pay.

Figure 4 shows that the consistency with the payment of the other (first order beliefs) and the expectations of the other (normative beliefs) differs between the four interpersonal closeness conditions. Let us first look at the consistency between own payments and first order beliefs. While the mean difference between first order beliefs and own payment in condition *IOS1* is $M = \$1.43$ $(SD = 7.13)$, it is $M = \$\text{-}0.47$ $(SD = 6.71)$ in *IOS2*. In condition *IOS3*, the mean difference is $M = \$\text{-}0.15$ $(SD = 6.18)$, while it is almost zero in condition *IOS4* $(M = \$0.05, SD = 6.17)$. Thus, the highest level of consistency occurs in very close relationships. Individuals align their own behavior with the behavior of close others and thus adapt their payments. A nonparametric Kruskal-Wallis test supports the result that the degree of consistency significantly differs between the four interpersonal closeness conditions $(H(3) = 13.32, p = .004)$. The result is further supported by a one-way analysis of variance $(F(3, 1023) = 4.22, p = .006)$. Post hoc tests reveal that the degree of consistency between own payment and first order beliefs does not statistically differ between the three peer conditions (*IOS2, IOS3, and IOS4*).

(a) Deviation between first order beliefs and own payment

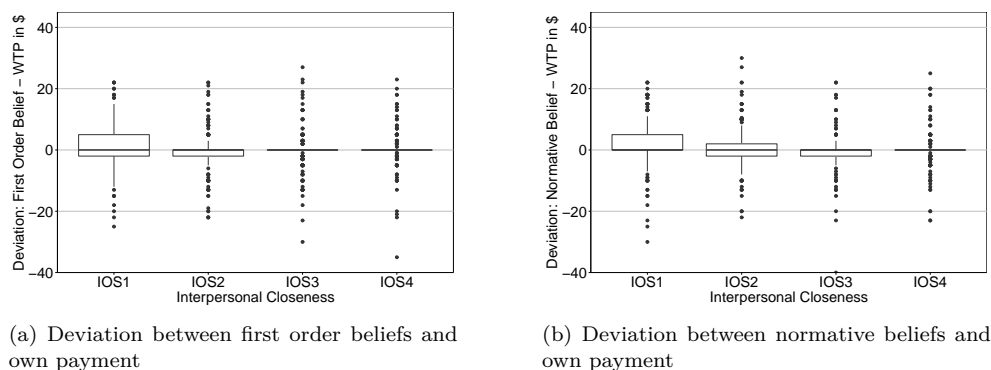(b) Deviation between normative beliefs and own payment

Figure 4: Deviations between first order beliefs, normative beliefs, and own payments split by interpersonal closeness condition

I find a similar result when looking at normative beliefs. While the mean difference between normative beliefs and own payment in condition *IOS1* is rather large with $M = \$2.60$ ($SD = 7.52$), it rapidly decreases in *IOS2* ($M = \$0.54$, $SD = 6.39$) and *IOS3* ($M = \$-0.33$, $SD = 5.89$), and reaches its respective minimum at *IOS4* ($M = \$-0.10$, $SD = 5.39$). A nonparametric Kruskal-Wallis test supports the result that consistency differs significantly between the four interpersonal closeness conditions ($H(3) = 42.68$, $p < .001$). Furthermore, this result is supported by a one-way analysis of variance ($F(3, 1027) = 11.39$, $p < .001$) and post hoc tests, revealing that the degree of consistency between own payment and normative beliefs does not statistically differ between the three peer conditions (*IOS2, IOS3, and IOS4*).

Result 5 *The degree of consistency between own behavior and beliefs differs significantly between the four levels of interpersonal closeness, potentially driving the strong closeness effect.*

The similarity in consistency in the three peer conditions might be a reason why also in the *No Audience* treatments payments in the three peer conditions (*IOS2, IOS3, IOS4*) are similar and higher than payments in the stranger condition (*IOS1*). Subjects might be driven by the aim to behave consistently with the expectations of others. This is, they want to behave similarly to their close others. Subjects seem to anticipate that social pressure to fulfill the expectations of the other buyer increases with increasing levels of closeness. As the probability to meet a close other is higher than for a stranger, subjects fulfill this pressure to behave consistently and accordingly increase their payments up to the expected level, also in the *No Audience* treatments. I thus conclude that the increasing level of consistency between own payment and beliefs with increasing levels of interpersonal closeness might drive the strong closeness effect found in this study.

6.2 Robustness of results: Replication study

In order to test the results for robustness, I ran a replication study in December 2019. I used the identical experimental design as conducted in the original study but added various control questions

after the replication measures in order to gain deeper insights into the potential underlying mechanisms influencing the willingness to pay. I further added an additional baseline treatment in which the museum visitor was alone at the ticket counter with no other visitor being present during the payment decision.

Firstly, to rule out possible confounds between the treatments due to different arousal levels, I collected data on pleasure, arousal, and dominance via the Self-Assessment Manikin (SAM) scales (Bradley and Lang 1994). I further added a manipulation check of the payment observability by the other visitor, asking "How much did you feel observed by the other visitor while making your payment decision?" (7-point Likert Scale from "Not at all" (1) to "Very much" (7)). To gain more insights into the aspect of consistency with beliefs, social cohesion with the other visitor was elicited, using adopted items from Carless and De Paola (2000) and Delfgaauw et al. (2020). Besides that, I collected data on feelings of guilt (adopted from Cohen et al. (2011)) when participants paid less than they believed the other visitor would pay, less than expected by the other visitor, and less than expected by the AMNH. I also measured the perception to feel uncomfortable when paying more than the other visitor, more than the other visitor expected the subjects to pay, and more than the AMNH expected. Finally, I elicited the participants social preferences using the six-item version of the social value orientation (SVO) slider measure (Murphy et al. 2011).

995 subjects participated in the replication experiment which took on average 16.2 minutes to be completed. Subjects earned \$1.50 as participation fee. As shown in Table 9 in the Appendix, participants in the replication study differed only regarding age from subjects in the original study. The manipulation check of the replication study reveals that participants show similar IOS scores as in the original study. Thus, the manipulation of interpersonal closeness was successful. The mean IOS score in condition *IOS1* is $M = 1.21$, while it is $M = 2.13$ in condition *IOS2*, $M = 2.99$ in condition *IOS3*, and $M = 3.94$ in condition *IOS4*. These values differ statistically significantly from each other (nonparametric Kruskal-Wallis test, $H(3) = 877.71$, $p < .001$) as it was the case in the original study. An additional manipulation check regarding payment observability shows that subjects in the *Audience* condition felt significantly more observed ($M = 4.57$, $SD = 1.89$) than participants in the *No Audience* condition ($M = 2.24$, $SD = 1.68$, one-sided two-sample t-test, $t(986) = -20.62$, $p < .001$). The similarities between the original study and the replication regarding paticipants allow for the conclusion that the two samples were not different from each other. The descriptive data analysis of the willingness to pay in the replication study confirms this assumption and reveals a successful replication of the original study results (see Table 7). None of the mean payments in the replication experiment is significantly different from the mean payments in the original study as indicated by two-sided two-sample t-tests.

Result 6 *The results of the original study (N = 1034) are robustly confirmed in a replication study (N = 995).*

Interpersonal Closeness	No Audience (NA)	Audience (A)	*Average*
Replication Study			
Very low interpersonal closeness (IOS1)	17.91 (8.03)	18.48 (6.59)	18.20 (7.32)
Low interpersonal closeness (IOS2)	19.96 (6.27)	21.28 (5.26)	20.63 (5.81)
High interpersonal closeness (IOS3)	18.90 (7.44)	19.57 (7.02)	19.25 (7.22)
Very high interpersonal closeness (IOS4)	19.83 (6.90)	20.91 (6.68)	20.37 (6.80)
Average	19.13 (7.24)	20.02 (6.53)	19.58 (6.90)
Additional Baseline (being alone)	17.64 (7.51)	-	-

Note: Standard deviations are provided in parentheses.

Table 7: Mean payments in $ for all eight treatments in the replication study as well as for the additional baseline (being alone)

The full replication is further supported by a regression analysis. I ran a linear regression with the replication data, identical to the regression run with the original study data (see Table 4). The data analysis leads to similar results as the regression with the original study data (see Table 8).

	(1)	(2)	(3)	(4)
Audience	$0.59^{\dagger}$ (0.34)		$0.60^{\dagger}$ (0.34)	-0.35 (0.83)
Closeness		0.50^{***} (0.15)	0.50^{***} (0.15)	0.31 (0.21)
Audience x Closeness				0.38 (0.30)
First Order Beliefs	0.31^{***} (0.03)	0.30^{***} (0.03)	0.30^{***} (0.03)	0.30^{***} (0.03)
Normative Beliefs	0.37^{***} (0.03)	0.37^{***} (0.03)	0.37^{***} (0.03)	0.38^{***} (0.03)
Preference for Fixed Price	2.00^{***} (0.35)	2.00^{***} (0.35)	1.98^{***} (0.35)	1.99^{***} (0.35)
Age	0.02 (0.02)	0.02 (0.02)	0.02 (0.02)	0.02 (0.02)
Gender	-0.18 (0.36)	-0.09 (0.35)	-0.11 (0.35)	-0.11 (0.35)
Political Orientation	0.15 (0.11)	0.17 (0.11)	0.17 (0.11)	0.16 (0.11)
Children	0.18 (0.16)	0.20 (0.16)	0.19 (0.16)	0.19 (0.16)
Degree	-0.37^{**} (0.13)	-0.38^{**} (0.13)	-0.38^{**} (0.13)	-0.38^{**} (0.13)
Marital Status	-0.30 (0.21)	-0.30 (0.21)	-0.29 (0.21)	-0.27 (0.21)
Religion	-0.04 (0.05)	-0.03 (0.05)	-0.03 (0.05)	-0.03 (0.05)
AMNH Known	-0.07 (0.29)	-0.01 (0.29)	-0.01 (0.29)	-0.02 (0.29)
AMNH Already Visited	0.18 (0.42)	0.08 (0.42)	0.08 (0.42)	0.05 (0.42)
AMNH Intention to Visit	-0.13 (0.36)	-0.12 (0.36)	-0.11 (0.36)	-0.08 (0.36)
Importance: Cultural Activities	0.39^{**} (0.15)	0.35^{*} (0.15)	0.35^{*} (0.15)	0.34^{*} (0.15)
Visits: Cultural Activities	0.45 (0.35)	0.54 (0.35)	0.54 (0.35)	0.55 (0.35)
Constant	$3.26^{\dagger}$ (1.74)	2.33 (1.76)	2.01 (1.77)	2.45 (1.80)
Observations	995	995	995	995
R^2	0.41	0.42	0.42	0.42
Adjusted R^2	0.40	0.41	0.41	0.41

Notes: Results from linear regressions. The paid price is the dependent variable in all four Models. Standard errors are provided in parentheses. $^{\dagger}p < .1$; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$

Table 8: Determinants of the paid price with replication data

In Model 1, audience positively and marginally significantly predicts payment behavior (coefficient = 0.59, $p = .076$). A similar result occurs in Model 3 (coefficient = 0.60, $p = .071$), when audience and interpersonal closeness were both added to the regression. Furthermore, interpersonal closeness positively

and significantly predicts payment in Model 2 (coefficient $= 0.50$, $p < .001$) and Model 3 (coefficient $= 0.50$, $p < .001$). This result is also in line with the regression analysis of the original data. Finally, also being similar to the original study, I do not find a significant interaction effect between audience and interpersonal closeness in Model 4 (coefficient $= 0.38$, $p = .228$). Regarding controls included in the regression, I find first order beliefs and normative beliefs, preference for fixed price, degree, and importance of cultural activities as significant determinants of the paid price, being in line with the regression analysis of the original study. Age is not a significant predictor anymore which might be due do the significant difference between the original and the replication data regarding age. Summarizing the results from the replication data analysis, I conclude that the effects found in the original study are robustly confirmed in a replication study.

Beyond the replication of the original study results, I retrieved additional variables in the replication to gain further insights, especially about the closeness effect. These additional variables are explored in the following. There are no significant differences between the eight treatments regarding pleasure (Kruskal-Wallis test, $H(7) = 10.04$, $p = .186$), arousal (Kruskal-Wallis test, $H(7) = 6.60$, $p = .472$) or dominance (Kruskal-Wallis test, $H(7) = 7.75$, $p = .355$). Furthermore, the eight treatments do not differ regarding SVO types (χ^2 test, $\chi^2(21, N = 995) = 19.52$, $p = .552$). Thus, neither differences in arousal levels nor differences in social preferences might explain the closeness effect.

Social cohesion values significantly differ between the four interpersonal closeness conditions (Kruskal-Wallis test, $H(3) = 636.48$, $p < .001$). The higher the interpersonal closeness, the more subjects care about their connectedness with the other visitor. This result supports the suggested proposition that with increasing interpersonal closeness individuals tend to align own behavior and expectations of others in order to maintain the social relationship. Feelings of guilt do not significantly differ between the four closeness conditions when paid less than the AMNH expected (Kruskal-Wallis test, $H(3) = 4.42$, $p = .220$) but they significantly differ when paid less than the other visitor (Kruskal-Wallis test, $H(3) = 8.49$, $p = .037$), and when paid less than the other visitor expected the subjects to pay (Kruskal-Wallis test, $H(3) = 35.02$, $p < .001$). With increasing levels of closeness feelings of guilt increased, being another indicator for the assumption that consistency with the expectations of close others plays an important role in explaining the closeness effect. This holds true not only for feelings of guilt when paid less but in a reversed relationship also for the case when subjects would pay more than the other visitor expected (Kruskal-Wallis test, $H(3) = 13.82$, $p = .003$).

I further ran an *additional baseline* treatment, in which the subjects were alone during the payment situation. 105 subjects participated in this treatment. The average payment in this *additional baseline* treatment is \$17.64 ($SD = 7.51$), being at a similar level as the average payment in the baseline treatment

of the original study, *IOS1 No Audience* ($M = 17.74$, $SD = 7.18$). The difference between the *additional baseline* and the *IOS1 No Audience* treatment in the original study is not significant (two-sample t-test, $t(232) = $ -0.11, $p = .912$). This result suggests that a payment situation, in which a stranger visitor is present, is identical to a scenario, in which a visitor is alone.

7 Discussion

How do payment observability and various levels of interpersonal closeness between buyers affect voluntary payments for a ticket at the American Museum of Natural History in New York? This paper aims to explore both aspects of social influence in a setting with high external validity. The results lend strong support to the assumption that the effects of an audience and interpersonal closeness are at work separately.

Result 1 confirms the presence of an audience effect, suggesting that payments significantly increase if observed by others. This result is in line with the literature on increased prosocial behavior due to observability (see, e.g., Alpízar et al. 2008; Andreoni and Petrie 2004; Engel 2011) and with social image concerns being acivated if behavior is observed (Andreoni and Bernheim 2009; Bénabou and Tirole 2006; Ellingsen and Johannesson 2008). It further is in line with findings from Pay-What-You-Want settings, suggesting that observation by other buyers increases payments (Dorn and Suessmair 2016, 2017; Hilbert and Suessmair 2015; Hofmann et al. 2018; Schlüter and Vollan 2015).

Result 2 further confirms the presence of a closeness effect, indicating that voluntary payments significantly increase if individuals are together with interpersonally close other buyers. Thus, the social relationship between buyers in a voluntary payment setting seems to be an important aspect in explaining the individual payment decision. The result is consistent with previous studies showing that increased interpersonal closeness leads to increased prosocial behavior (see, e.g., Cialdini et al. 1997; Korchmaros and Kenny 2001; Kramer and Brewer 1984; Maner et al. 2002; Reddish et al. 2013; Rennung and Göritz 2016; Stel et al. 2008; Valdesolo and DeSteno 2011; van Baaren et al. 2004). The result also is in line with the finding of Hofmann et al. (2018), namely that the interpersonal closeness between buyers itself affects the payment decision irrespective of payment observability. This result is interesting in particular as this study provides empirical evidence for the existence of such a strong closeness effect in voluntary payment settings for varying degrees of interpersonal closeness between buyers for the first time.

Furthermore, the data analysis reveals an additive relationship between payment observability and interpersonal closeness. Payments are highest if being observed by a very close other. However, Result 3 suggests that the effect is not interactive but rather additive in total. This paper thus adds empirical evidence to the proposition that the audience effect is not amplified when interpersonal closeness increases. The data analysis is in line with the findings of Hofmann et al. (2018), also for more than two

levels of interpersonal closeness and in a setting with high external validity. It thus does not seem to be the case that high interpersonal closeness pronounces social image concerns more when activated via observability. The results regarding audience and interpersonal closeness were robustly confirmed in a replication study with 995 subjects as indicated by Result 6. Future theories modeling the relationship between observability and interpersonal closeness might take these findings into account and emphasize more on an additive relationship instead of an interaction.

As proposed in this paper, a high level of consistency between own behavior and beliefs might drive the closeness effect which leads to a non-significant interaction effect. Increasing consistency between own behavior and expectations of others due to increasing social pressure with increasing interpersonal closeness has been explored, summarized in Result 5. The results of this study thus add the aspect of consistency of own behavior with beliefs to the theoretical literature on the influence of interpersonal closeness on prosocial behavior.

However, the data analysis also indicates that payments are lower if they are not observed which holds true for all levels of interpersonal closeness. Dreber et al. (2013) and Jung et al. (2018) outline a conflict between conformity and own economic utility maximization in not observed prosocial consumer settings as a possible explanation for this result, focusing on decision making in groups. Their results show that in not observed decisions, brain regions are activated which are related to internalized prosocial behavior (e.g. conformity due to social pressure) and that prosocial behavior is shown especially for appropriate price levels. Further, the results indicate that in observed decisions brain regions are activated which are related to strategic behavior (e.g. social image concerns). Applying this to the experiment, in unobserved settings the social pressure might be at work only up to an assessed appropriate price which is a similar concept to first order beliefs and normative beliefs. It thus might be the case that the closeness of others only facilitates higher payments up to this point, but not beyond, as no further rewards are expected from paying more than the appropriate price in unobserved settings. Thus, economic utility maximization kicks in as stronger influence beyond the expected appropriate price and becomes more relevant than social pressure. In observed settings on the contrary, social image concerns might explain why individuals pay prices beyond the appropriate price level as they expect additional social reward from this behavior.

This line of argumentation is partly supported by the data. Although expectations about an appropriate price range around $20 in all eight treatments, payments go beyond this level only in the *IOS4 Audience* treatment which represents a scenario in which the buyers are observed by a very close other visitor. Payments in the other treatments increase with increasing levels of interpersonal closeness only up to the appropriate price level of around $20 without going beyond this point. This result lends support to the assumption that amplified social image concerns are at play only for social relationships with very high interpersonal closeness. Thus, the data suggests that payments increase only beyond appropriate price levels if social pressure is high enough. Further research thus is necessary to better understand

the relationship between beliefs, fulfilling these beliefs, observability, and interpersonal closeness. As suggested by Dreber et al. (2013) it might be of interest for instance whether individuals differ regarding their "norm-compliance parameter" (p. 353), leading to hetereogeneous levels of compliance.

Further, the findings regarding beliefs and own behavior are limited by the correlational structure of the data. Thus, it is not possible to causally elicit whether the expected behavior of the other buyer influences the own payment or vice versa. Literature on the false-consensus effect (see, e.g., Ross et al. 1977) for instance raises the possibility that individuals tend to think that others behave similar to themself. This is, individuals overestimate their own behavior as being the right thing to do and accordingly as the behavior that others would show as well. Thus, the increasing level of consistency between own behavior and beliefs with increasing levels of interpersonal closeness might be due to other influences and this paper does not claim exhaustiveness in this respect. Future studies on the relation between beliefs and own willingness to pay should follow an experimental approach to better disentangle the direction of the effect. Another possible approach of future research would be to elicit beliefs in a randomized order before and after the own payment decision.

In addition, the current paper can not rule out that the relationship between interpersonal closeness, beliefs, and own behavior is not necessarily linear. The own payment behavior of an individual for instance might be positively affected if he believes that a very close other buyer would pay a high amount while it would be negatively affected if he believes that a very close other buyer would pay a very low amount. Such a possible net closeness effect of zero is suggested by Bicchieri et al. (2020) and Dimant (2019). They show that with close others being present in a decision making setting, compliance to pay less and compliance to pay more increases depending on the beliefs. It thus is relevant to explore in future studies whether low or high levels of expectations might change the amplitude of the audience and closeness effects. Summarized, a complete motivational explanation and a test for a non-linearity of the behavioral effects lie beyond the scope of this paper but remains an open task for future studies.

What are the practical implications of the results? This study provides empirical evidence that not only observability of behavior matters in a Pay-What-You-Want setting but also the buyer structure. It has been shown that both, payment observability and the presence of close others in the buying setting, are sufficient to increase payments, not necessarily a combination of both. It thus is crucial for the practical implementation of PWYW settings to take both effects into account. Making payments observable is one successful strategy to increase payments. Further, designing settings in which buyers are together with close others seems to be another successful strategy to increase payments. Accordingly, voluntary payment mechanisms might also work successfully under anonymity (e.g. online products, anonymous cashboxes) when buyers know that close others are also consuming. The results of this study provide empirical evidence towards the assumption that it might be sufficient that buyers are aware that close others are consuming the product as well.

8   Conclusion

This paper contributes to the literature by examining two important channels of social influence on buyer's willingness to pay: the effect of payment observability (audience effect) and the effect of varying degrees of interpersonal closeness (closeness effect). It explores both factors in the context of voluntary payments for a visit at the American Museum of Natural History (AMNH) in New York. In addition, it applies the method of borrowed identities of real social relationships in order to manipulate interpersonal closeness in an online experiment with a high external validity. Furthermore, it investigates the impact of interpersonal closeness on prosocial behavior for more than two levels. By means of a 4 x 2 online experiment, I explore four levels of interpersonal closeness (very low interpersonal closeness *IOS1*, low interpersonal closeness *IOS2*, high interpersonal closeness *IOS3*, and very high interpersonal closeness *IOS4*) and two levels of payment observability (*No Audience* and *Audience*). This controlled setting allows me to separately investigate the effect of payment observability (audience effect) and the effect of interpersonal closeness (closeness effect), as well as their relation to each other, on voluntary payments.

I find a significant effect of an audience on payments: If subjects are observed by other visitors, the mean payment is significantly higher than when the visitors are not observed. I further find a significant effect of interpersonal closeness on payments: If interpersonally close others are present, payments are significantly higher compared to a setting where strangers are present. The data analysis further reveals an additive relationship between payment observability and interpersonal closeness. One possible explanation for the additive relationship is the strong closeness effect driven by increasing consistency of own paymet behavior with beliefs if degrees of interpersonal closeness increase.

On the basis of the results I conclude that interpersonal closeness and observability can be seen as two separate drivers of voluntary payments. Clearly, further research will be required to validate the impact of both drivers in other domains of prosocial behavior (such as donating and helping) or other types of economic games (such as dictator games or public goods games). It further is of relevance for future research whether the results of this study hold true for different products offered under PWYW conditions and whether beliefs moderate the closeness effect on own behavior in a negative of positive direction. This information can be used to develop a better understanding of the effects that observability of behavior and the social relationships between the buyers have on individual payment decisions in PWYW settings.

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Appendix

A. Additional Material and further analyses

Variable	Mean Study	Freq. Study	Mean Replication	Freq. Replication	*p value*
Age	38.37		39.87		.006
Female		0.551		0.537	.510
Political Orientation	3.53		3.41		.135
Children	0.84		0.75		.082
Degree					.619
Less than high school graduate		0.3		0.5	
High school graduate		9.7		9.3	
Some college / associate's degree		34.6		36.1	
Bachelor's degree		39.9		36.7	
Advanced degree		15.6		17.4	
Marital Status					.562
Married / Partnership		52.1		49.0	
Widowed		1.5		1.1	
Divorced		8.4		8.7	
Separated		1.1		1.4	
Single / Never married		36.9		39.7	
Employment Status					.657
Employed		82.6		84.2	
Unemployed		17.4		15.8	
Net Income					.195
Less than $ 20.000		11.4		11.1	
$ 20.000 to $ 34.999		15.8		17.8	
$ 35.000 to $ 49.999		19.9		19.2	
$ 50.000 to $ 74.999		27.3		23.3	
$ 75.000 to $ 99.999		13.4		14.5	
Over $ 100.000		12.3		14.5	
Religion					.127
Protestant		24.4		26.3	
Catholic		21.1		18.9	
Other Christian		8.2		5.2	
Jewish		1.9		1.5	
Muslim		1.4		1.1	
Buddhist		1.6		1.6	
Hindu		0.5		0.6	
Other		3.7		5.0	
None		37.3		39.7	

Note: P values for variables age, political orientation, and children stem from two-sided two-sample t-tests and from χ^2 tests for variables gender, degree, marital status, employment status, net income, and religion.

Table 9: Characteristics of study participants and replication participants

B. Experimental instructions

Instructions

The text in curly brackets {. . .} indicates treatment differences.
The text in brackets [. . .] indicates comments of the experimenter.

Welcome Dear participant,

**thank you for participating in this survey!**
This survey investigates **decision-making**. The focus is on your personal view, therefore, there are **no right or wrong answers**! Please just answer according to your individual point of view. All the data you provide will be processed **anonymously** and will only be used for **academic research purposes**. On the following pages we will provide you with the **instructions. Please read them carefully.**

Please note that we check <u>every</u> submission for plausibility! Whenever **arbitrary** answering patterns are detected we will **not pay** you for the HIT submitted. So if you don't plan on filling in this survey sincerely - save your time.

Please solve the following equation: $98 + 2 =$

We all have **social relationships** with each other. They differ with regard to the **perceived closeness between you and other people**. Some of these relationships are more close, others are less close.

The **picture below** illustrates the **different levels of closeness between you and another person X**.
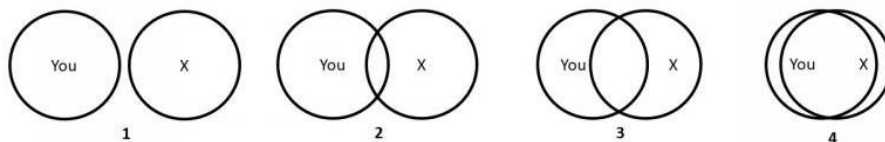
Please think about **your social relationships now** and **name relationships** with regard to the perceived closeness towards this people (see picture below).
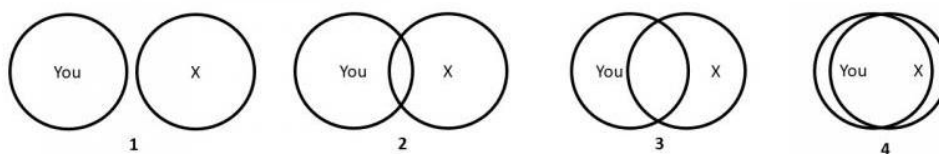
Please take into account:
Do only name people of the **same gender** as you.
Do **not name** people with whom you **share a common income for livelihood or for whom you are responsible financially (for instance children)**.

For some of you, these persons may be neighbors, personal friends or family members. For others of you, these persons might be acquaintances or colleagues. Please select these people carefully since these decisions will affect the rest of this survey.
*Example: A social relationship towards a stranger, about whom you do not know anything, would represent Picture 1.*

Which gender do you identify with?

Please provide the **first name** of the **person representing the picture below**.
Please remember: Name a person of the **same gender** as you.
Please remember: **Do not name a person with whom you share a common income for livelihood or for whom you are responsible financially (for instance children).**
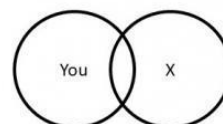
Please enter the **first name**: [IOS2 Name]

With this person in mind, please respond to the following questions.
Age of person representing the picture above:
Gender of this person (please remember: only name a person of the **same gender** as you)
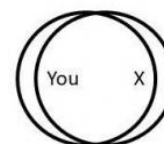**How long** have you **known** this person? Please indicate the number of years.
Which of the following best describes your relationship with this person? (Check only one)

Please provide the **first name** of the **person representing the picture below**.
Please remember: Name a person of the **same gender** as you.
Please remember: **Do not name a person with whom you share a common income for livelihood or for whom you are responsible financially (for instance children).**
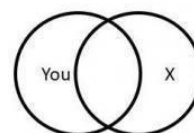
Please enter the **first name**: [IOS3 Name]

With this person in mind, please respond to the following questions.
Age of person representing the picture above:
Gender of this person
How long have you **known** this person? Please indicate the number of years.
Which of the following best describes your relationship with this person? (Check only one)

Please provide the **first name** of the **person representing the picture below.**
Please remember: Name a person of the **same gender** as you.
Please remember: **Do not name a person with whom you share a common income for livelihood or for whom you are responsible financially (for instance children).**

Please enter the **first name**: [IOS4 Name]:

With this person in mind, please respond to the following questions.

Age of person representing the picture above:
Gender of this person
How long have you **known** this person? Please indicate the number of years.
Which of the following best describes your relationship with this person? (Check only one)

{[only condition IOS1:]

Please **describe your daily routine** on a weekday in a couple of sentences, for instance what kind of activities you do.
}

{[only condition IOS2:]

Please **focus now on only one** social relationship, namely **the one you indicated as representing the picture below**.
Think about this specific person (**[IOS2 Name]**) while answering the following question.
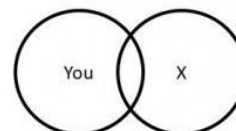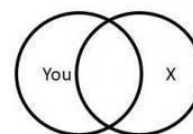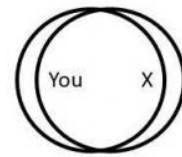
Please **describe your relationship** with **[IOS2 Name]** in a couple of sentences, for instance what kind of activities you do together, where you met the first time or which things you have in common.
}

{[only condition IOS3:]

Please **focus now on only one** social relationship, namely **the one you indicated as representing the picture below**.
Think about this specific person (**[IOS3 Name]**) while answering the following question.

Please **describe your relationship** with **[IOS3 Name]** in a couple of sentences, for instance what kind of activities you do together, where you met the first time or which things you have in common.
}

{[only condition IOS4:]

Please **focus now on only one** social relationship, namely **the one you indicated as representing the picture below**.
Think about this specific person **([IOS4 Name])** while answering the following question.

Please **describe your relationship** with **[IOS4 Name]** in a couple of sentences, for instance what kind of activities you do together, where you met the first time or which things you have in common.
}

Please put yourself into a specific situation now and answer the next question while keeping in mind the following circumstances.

Imagine you are visiting the American Museum of Natural History (AMNH) in New York, where you can **pay what you wish** for your entrance ticket. That means that the amount you pay is up to you.

American Museum of Natural History (Source: https://pixabay.com/photo-719989/)
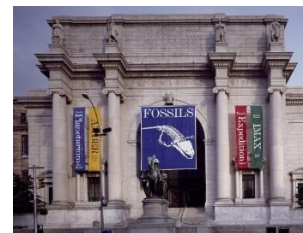
The American Museum of Natural History is one of the biggest natural history museums in the world and contains more than 30 million objects. It is not only famous for its exhibitions, but is also known from movies, as for instance the movie "Night at the Museum" has been shot in the American Museum of Natural History.

 You expect the visit to fulfill your expectations.

{[only condition Audience:]

You are **standing in the queue at the ticket counter** together with other visitors.
You **recognise {another stranger** (same gender as you) **/ IOS2 Name / IOS3 Name / IOS4 Name}** also standing in the queue, **right behind you**.

As you reach the ticket counter and **tell the staff how much to pay for your ticket, {this stranger / IOS2 Name / IOS3 Name / IOS4 Name} is still right behind you in the queue** and **observes what you choose to pay**.

That means, **you**, the **staff person at the ticket counter** and **{this other stranger / IOS2 Name / IOS3 Name / IOS4 Name} get to know how much you pay for your visit.**

Which price would you be **willing to pay for your ticket considering these given circumstances**?

You, the **staff person at the ticket counter** and **{the stranger / IOS2 Name / IOS3 Name / IOS4 Name}, standing right behind you, get to know how much you pay for your visit.**

Please remember: At the American Museum of Natural History in New York you can **pay what you wish** for your entrance ticket.

The American Museum of Natural History **suggests** to pay the following price: $23

You expect to be satisfied with your visit.
Please indicate the exact price in $:
}

{[only condition No Audience:]

You are **standing in the queue at the ticket counter** together with other visitors.
You **recognise {another stranger** (same gender as you) **/ IOS2 Name / IOS3 Name / IOS4
Name}** also standing in the queue**, far away behind you**.
As you reach the ticket counter and **tell the staff how much to pay for your ticket, {this stranger
/ IOS2 Name / IOS3 Name / IOS4 Name} is still far away behind you in the queue** and **does not
observe what you choose to pay**.

That means, **only you** and the **staff person at the ticket counter - but not {this other stranger /
IOS2 Name / IOS3 Name / IOS4 Name} - get to know how much you pay for your visit.**

Which price would you be **willing to pay for your ticket considering these given circumstances**?

You and the **staff person at the ticket counter**, but **not {the stranger / IOS2 Name / IOS3 Name
/ IOS4 Name}, standing far away behind you, get to know how much you pay for your visit.**

Please remember: At the American Museum of Natural History in New York you can **pay what
you wish** for your entrance ticket.
The American Museum of Natural History **suggests** to pay the following price: $23

You expect to be satisfied with your visit.
Please indicate the exact price in $:
}