

# Don't Surprise Me: How Social Relationships Shape Consumers' Attitudes toward Probabilistic Selling

LINYING (SOPHIE) FAN AND YUWEI JIANG

**ABSTRACT** Although probabilistic selling has been widely used as a tool for retailing and sales promotion, when and how it should be used has seldom been investigated. Contributing to our knowledge on this important topic, the current research examines how and why consumers' social relationships influence their attitudes toward probabilistic selling. Four experiments reveal that socially excluded consumers exhibit less favorable attitudes toward probabilistic selling than do their peers who do not feel excluded. This effect is mediated by a thwarted sense of personal control following social exclusion, and the effect diminishes when vivid information about the probabilistic offer is provided. This research offers rich practical implications for retailers in terms of how to strengthen experiential shopping and improve results in consumption activities through probabilistic selling.

Probabilistic selling refers to the marketing practice in which a seller offers buyers a purchase choice involving a probability of obtaining a subset of the whole set of distinct products or services offered by a company (Fay and Xie 2008, 2010). As a new retailing strategy, probabilistic selling makes shopping more experiential among consumers, and an increasing number of companies have started to use this innovative retailing strategy in their business practices (Fay and Xie 2010). For instance, on the first day of 2016, more than 900 customers waited outside the Apple Store in Ginza, Tokyo, before it opened to purchase the Apple *fukubukuro* (i.e., grab bags), which contained a handful of randomly selected Apple products worth JPY35,000 (roughly USD300). In the tourism industry, companies have started offering probabilistic bookings (e.g., secret flights on KAYAK and mystery hotels and blind vacation bookings on Mysterybreaks). According to TravelClick (2012), more than 6% of the hotel rooms booked online in 2012 were booked through probabilistic-selling websites. Recently the Dutch tour operator Srprs.me became popular for its "surprise trips." On its website, travelers pick the topic of their journey (e.g., adventure, solo, city tripping, etc.) before booking, but they can only find out what exactly their destination is once they arrive at the airport on their departure date.

Social-networking websites have become the most commonly used distribution and promotion channels for probabilistic selling (Ang 2017; Klompsma 2017). For example, within 2 years, Srprs.me has served more than 30,000 travelers and accumulated 131,911 "likes" and more than 4,000 "People Talk about This" stories on Facebook. As another example, GearBest.com launched the lucky bag sale storm and got 535 shares within 3 days on Facebook. There are also many emerging communities on social-networking sites that allow consumers to discuss and share tips on how to get better deals from the probabilistic-selling vendors (e.g., "Bidding-ForTravel" and "BidonTravel" on Facebook).

Despite the increasing prevalence of probabilistic selling in retailing, research related to this topic is surprisingly sparse, and it has mostly taken an economic perspective that focuses on the effects of probabilistic selling on suppliers (e.g., Fay and Xie 2008, 2010, 2015). How consumers react to this innovative retailing strategy, however, has seldom been investigated in the marketing literature (for an exception, see Huang and Yu 2014). To address this gap, in the current research we look at how consumers' social relationships influence their attitudes toward probabilistic selling.

Consumers are not totally isolated from one another, and the social milieu they live in has a significant effect on their consumption (Dahl 2013). Using advanced technolo-

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Linying (Sophie) Fan (linying.fan@connect.polyu.hk) is a PhD student in marketing, and Yuwei Jiang (yuwei.jiang@polyu.edu.hk) is an associate professor of marketing, both at the Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong. This research was supported by research grants from Hong Kong Research Grants Council (PolyU 155046/17B and PolyU G-UAD5) and the Asian Centre for Branding and Marketing (ACBM) to the second author. Correspondence can be sent to Yuwei Jiang.

gies, the ever-increasing social networks provide new ways for individuals to communicate with each other. However, these advanced technologies also increase the chances of being ignored or rejected by others. Research reveals that being online actually harms relationships and makes people feel more isolated (e.g., Twenge, Catanese, and Baumeister 2002). Given the pervasive influence of social relationships in social media, and the role of social media in transmitting information about probabilistic marketing offers, we investigate the impact of consumers' social relationships on attitudes toward probabilistic selling.

Specifically, we look at the effect of social exclusion. One important consequence of social exclusion is that it deprives people of their sense of personal control; hence, excluded individuals usually exhibit high vigilance and reactance to additional threats to their sense of control (Su et al. 2017). Probabilistic selling is likely to be considered a threat to one's sense of personal control because in such a context consumers cannot observe directly how the final outcome of their purchasing behavior (i.e., the product or service) is determined by their input. (That's why probabilistic selling is also called *opaque selling*; Nagpal et al. 2011; Huang and Yu 2014; Patrick, Atefi, and Hagtvedt 2016.) This difficulty of establishing behavior–outcome contingency in probabilistic selling tends to contribute to a sense of lack of personal control (Alloy, Clements, and Koenig 1993). Taking this information together, we hypothesize that social exclusion decreases consumers' favorableness toward probabilistic selling, driven by the defensive system they use to guard against further loss of personal control (e.g., Kay et al. 2008; Chen, Lee, and Yap 2017). Consistent with this proposed underlying mechanism, we further predict that the effect of social exclusion on consumers' attitudes toward probabilistic selling is weakened when vivid information about the probabilistic offer is provided.

These hypotheses are supported by the four experiments reported in this article. The findings provide useful insights into how and why consumers' social relationships influence their attitudes toward probabilistic retail offerings. The current research contributes to the probabilistic-selling literature by demonstrating a psychological mechanism underlying consumer reactions to probabilistic selling. In addition to revealing a novel and important sociopsychological factor driving consumers' attitudes toward probabilistic selling, we extend the marketing literature related to social influence and personal control by providing fresh empirical evidence that both consumers' social relationships and feelings of personal control influence their reaction to retailing and

sales promotion strategies. Furthermore, this research also extends our understanding of control compensation by demonstrating a novel effect that vivid information about a target can enhance consumers' sense of control over it. Finally, from a managerial perspective, this study enriches understanding of probabilistic-retailing strategies and suggests potential tactics that companies can use to increase acceptance and effectiveness of such offers.

## PROBABILISTIC SELLING

Probabilistic (or opaque) selling has become increasingly prevalent and even entrenched in numerous industries, including tourism, transportation, and online retailing (Fay and Xie 2008, 2010, 2015). These innovative retailing strategies, which make shopping more experiential, have also attracted the interest of marketing researchers. The research related to probabilistic selling has mostly focused on its effects on the suppliers' side. Considered to be an effective revenue management tool (Jerath, Netessine, and Veeraraghavan 2010), probabilistic selling is profitable and benefits the seller by homogenizing and separating heterogeneous consumers (Fay and Xie 2008), softening price competition (Fay 2008; Huang and Yu 2014), relieving mismatches between consumer demand and capacity (Fay and Xie 2008), causing closer quality levels in the product line (Zhang, Joseph, and Subramaniam 2015), depriving consumers of a choice to buy the preferred type of product during the sales season (Ren and Huang 2017), and improving inventory efficiency (Fay and Xie 2015).

Only recently have researchers begun to look at consumers' reactions to probabilistic retail offerings. For example, Chen and Yuan (2014) found that low-price, value-added deals and the enjoyment gained from playing with the system were the main benefits that consumers received through purchasing probabilistic products or services. Researchers also suggested that anecdotal reasoning (i.e., consumers make judgments based on observed anecdotes or examples) might be why consumers are attracted to probabilistic selling (Huang and Yu 2014). On the other hand, it has been shown that a considerable portion of consumers react negatively to probabilistic product or service offerings due to the perceived price discrimination and lower trustworthiness (Darke and Chung 2005; Benedicktus et al. 2010; Lee 2015; Cai, Bagchi, and Gauri 2016). The current research contributes to our understanding of this increasingly widespread retailing strategy by investigating how consumers' social relationships influence their attitudes toward probabilistic selling.

## SOCIAL RELATIONSHIPS AND THE NEED FOR PERSONAL CONTROL

Establishing and maintaining stable social relationships is essential for human survival (Baumeister and Leary 1995), yet social exclusion continues to be a characteristic of human society. Social exclusion refers to the situation in which an individual is ignored, rejected, or isolated (e.g., Baumeister et al. 2005). In the consumption domain, excluded consumers have demonstrated a heightened instrumentality of money (Duclos, Wan, and Jiang 2013), greater preference for distinctive or minority-endorsed products (Wang, Zhu, and Shiv 2012), higher likelihood to switch products or brands (Su et al. 2017), and more strategic spending and consumption in the service of affiliation (Mead et al. 2011) compared to consumers with more social connections.

Summarizing the consequences of social exclusion, Williams and colleagues suggested that it threatens four fundamental human needs: belonging, control, self-esteem, and meaningful existence (e.g., Zadro, Williams, and Richardson 2004; Williams 2007). Of these four needs, the one essential to the current research is the need for personal control. Social exclusion thwarts individuals' sense of personal control because the act of social rejection is imposed on the target (e.g., Zadro et al. 2004; Williams 2007). Social exclusion is unilateral and unaffected by people's responses; thus, it deprives them of the sense of control that they think they have in social interactions (van Beest and Williams 2006).

The perception of personal control is important because it buffers individuals against the threats of randomness and chaos in the social world (Kay et al. 2008). The pursuit and maintenance of personal control are considered fundamental human needs, and its lack inevitably causes negative psychological and physical consequences. The feeling of a lack of personal control is threatening and aversive (Heckhausen and Schulz 1995), and it activates a defensive mechanism in which people actively strive to preserve the sense of order and nonrandomness through various coping strategies, such as bolstering personal agency, affiliating themselves with an external control system, affirming action-outcome contingencies, or affirming nonspecific structures (e.g., Landau, Kay, and Whitson 2015).

## THE CURRENT RESEARCH

In addition to the aforementioned active coping strategies, another function of this control-defense mechanism is to monitor the current level and avoid further loss of personal control (e.g., Chen et al. 2017; Su et al. 2017). A major di-

mension contributing to one's sense of control is *personal mastery*, that is, a feeling in which people perceive themselves as having the ability to influence or control their environment (Lachman and Weaver 1998). In this research, we argue that probabilistic selling threatens people's feeling of control through thwarting personal mastery. By definition, the business operation behind probabilistic selling is opaque and ambiguous to consumers, and consumers have no capacity to influence the final outcome of their purchasing behavior. This difficulty in establishing behavior-outcome contingency in the probabilistic-selling context is likely to decrease one's personal mastery and feeling of control (Alloy et al. 1993).

Given that social exclusion activates a control-defense mechanism, and probabilistic selling thwarts people's feelings of control, in the current research we hypothesize that socially excluded consumers have more negative attitudes toward probabilistic selling than their included peers. We further predict that this effect is likely to be driven by consumers' sense of personal control. We state these hypotheses formally as follows:

**H1:** Compared with consumers who are socially included, socially excluded consumers exhibit less favorable attitudes toward probabilistic selling.

**H2:** The effect of social exclusion on consumers' attitudes toward probabilistic selling is mediated by the consumers' sense of personal control.

If the effect of social exclusion on consumers' attitudes toward probabilistic selling is indeed driven by a thwarted sense of personal control, restoring control within the consumption context should weaken this effect. The vividness of the product/service information provided by the probabilistic seller, for example, could potentially restore individual feelings of control. Vivid information is retrieved from memory faster than information that is not presented in a vivid format (e.g., McGill and Anand 1989). Consequently, past research has found that vividly presented targets were perceived as more proximate, more feasible, and more attainable than their nonvivid counterparts due to the lay belief that distant objects are more difficult to process than close ones (e.g., Alter and Balcetis 2011; Labrecque, Patrick, and Milne 2013; Darke et al. 2016). Given these streams of literature, it seems reasonable to predict that vivid information about a target can enhance consumers' sense of control over it by decreasing their belief about obstacles or factors that will

interfere with attaining the desirable outcomes (Alter and Balcetis 2011).

Taken together, we predict that providing vivid product/service information could increase the feeling of personal control within a probabilistic-selling context, which in turn results in a weakened effect of social exclusion on consumers' attitudes toward probabilistic selling. We state this hypothesis formally as follows:

**H3:** The effect of social exclusion on consumers' attitudes toward probabilistic selling is attenuated when vivid information about the product or service is provided.

We conducted four experiments to test the effects of social relationships on consumers' attitudes toward probabilistic selling. Experiments 1 and 2 examined whether feeling socially excluded (vs. socially included) made consumers exhibit more aversive attitudes toward probabilistic product offerings, compared with fixed offerings. Experiments 3 and 4 confirmed the proposed underlying control-defense mechanism, in addition to the moderating role of information vividness. Taken together, the findings from these experiments provide corroborative evidence that social relationships shape consumers' reactions to probabilistic selling.

## EXPERIMENT 1

Experiment 1 tested the basic hypothesis that social relationships influence consumers' actual choice of probabilistic products. We expected that feelings of social exclusion would make people less likely to choose probabilistic products.

### Method

**Participants.** One hundred and fifty-three Hong Kong undergraduate students ( $M_{\text{age}} = 21.7$ ; 75% female) participated in this study.

**Design and Procedures.** The participants were randomly assigned to the two conditions of a one-way (social relationships: exclusion vs. inclusion) between-subjects factorial design. As a cover story for our later behavioral measure, the participants first completed a filler satisfaction survey for the campus bookstore. After the survey, the participants' feelings of social exclusion and inclusion were manipulated through an imagination task (see the appendix, available online). The participants were asked to read a story and put themselves into the role of the character, as if they were actually experiencing the situation. In the exclusion condition,

the described scenario involved a student who had been excluded by teammates during the preparation of an important project presentation. In the inclusion condition, the described scenario involved a student who had been accepted by teammates during the preparation of that presentation. After the participants finished imagining the scenario, they described their feelings and possible reactions as if they had experienced the incident described in the story. As a manipulation check, the participants indicated how excluded/belonged they felt when imagining the situation on a 9-point scale (1 = not at all, 9 = extremely).

After the social-relationship manipulation, each participant was led individually to a different room to receive the reward for participation: a local restaurant coupon. An experimenter there told the participants that because the campus bookstore sponsored this study, they could have an alternative probabilistic reward option: namely, a mystery stationery bag from the bookstore (containing various random stationery items with a total value 20% higher than the restaurant coupon). Given that real-life probabilistic selling is usually associated with discounts or benefits designed to attract consumers (e.g., Fay and Xie 2008, 2015), in this study we intentionally designed the probabilistic offer with a slightly higher economic value than the fixed offer. The participants were asked to choose between these two reward options and received their chosen reward.

### Results

**Manipulation Checks.** The participants in the exclusion condition felt more rejected ( $M_{\text{excl}} = 7.00$ ,  $SD = 1.91$  vs.  $M_{\text{incl}} = 2.40$ ,  $SD = 1.54$ ;  $F(1, 151) = 263.69$ ,  $p < .001$ ) and less of a sense of belonging ( $M_{\text{excl}} = 3.14$ ,  $SD = 1.56$  vs.  $M_{\text{incl}} = 6.88$ ,  $SD = 1.62$ ;  $F(1, 151) = 212.12$ ,  $p < .001$ ) than did those in the inclusion condition.

**Choice.** A chi-square test revealed that social relationships had a significant effect on the participants' reward choices. The excluded participants were significantly less likely to choose the probabilistic reward (28.4%) than those in the inclusion condition were (44.4%; Wald  $\chi^2(1) = 4.27$ ,  $p = .044$ ).

### Discussion

With real behavioral data, experiment 1 provided initial evidence that social relationships influence consumers' reactions toward probabilistic selling. As we hypothesized, compared with participants in the inclusion condition, social



exclusion led to a lower likelihood of choosing the probabilistic reward over the fixed reward.

## EXPERIMENT 2

One of the questions unanswered in experiment 1 was whether the effect of social relationships on consumers' attitudes toward probabilistic selling was driven by the feeling of social exclusion or by the feeling of social acceptance. We investigate this issue in experiment 2 by adding a baseline condition to our research design.

In addition, in experiment 1 the probabilistic offer had a higher economic value than the fixed one in order to simulate real-world settings. Given the unequal economic values of the two options, one potential alternative explanation of our findings in experiment 1 could be that socially excluded people felt bad about themselves and thus did not think that they deserved the higher-value probabilistic option. To rule out this alternative, in experiment 2 we equalized the monetary values in the two types of offers.

### Method

**Participants.** One hundred and fifty-two US adults participated in this experiment on Amazon's Mechanical Turk in exchange for a small monetary incentive. Three of the participants failed to pass an attention check (Oppenheimer, Meyvis, and Davidenko 2009), and thus their data were excluded from the later data analyses. This left 149 participants in the sample ( $M_{age} = 34.2$ ; 52.3% female).

**Design and Procedures.** Participants were randomly assigned to the three conditions of a one-way (exclusion vs. inclusion vs. baseline) between-subjects factorial design. To manipulate the participants' feelings toward their social relationships, we asked them to carry out a recall task (Duclos et al. 2013). The participants in the exclusion condition were asked to recall a time when they were ignored or rejected by others and to write about the incident in as much detail as possible. The participants in the inclusion condition were asked to recall and write about an experience in which they felt socially included. Those in the baseline condition were required to recall what they usually did over a typical day in their lives. The participants then responded to the same manipulation checks as in experiment 1.

After the recall task, the participants were asked to imagine a scenario in which they had made an online purchase from a shopping website. The purchase exceeded USD 100, and thus they were eligible to receive a reward. There were two reward options available: a mystery bag

filled with random Procter & Gamble personal-care products (worth USD 10) or a USD 10 coupon for the shopping website. The participants indicated their preferences between these two reward options on an 8-point scale (1 = strongly prefer the coupon, 8 = strongly prefer the mystery bag).

### Results

**Manipulation Checks.** The social-relationship manipulation had significant effects on participants' feelings of belongingness ( $F(2, 146) = 177.29, p < .001$ ) and rejection ( $F(2, 146) = 446.47, p < .001$ ). The participants in the exclusion condition felt more rejected ( $M_{excl} = 7.85, SD = 1.33$ ) than those in the baseline ( $M_{base} = 1.57, SD = 1.28$ ;  $F(1, 146) = 679.51, p < .001$ ) and inclusion conditions ( $M_{incl} = 1.38, SD = .82$ ;  $F(1, 146) = 732.80, p < .001$ ). The latter two conditions did not differ significantly ( $F < 1, NS$ ). In addition, the participants in the exclusion condition felt less of a sense of belonging ( $M_{excl} = 1.74, SD = 1.09$ ) than those in the baseline ( $M_{base} = 6.33, SD = 2.32$ ;  $F(1, 146) = 172.03, p < .001$ ) and inclusion conditions ( $M_{incl} = 8.21, SD = 1.16$ ;  $F(1, 146) = 347.12, p < .001$ ). The participants in the inclusion condition felt more of a sense of belonging than those in the baseline condition ( $F(1, 146) = 266.93, p < .001$ ).

**Preference.** Consistent with our expectation, social relationships significantly affected the participants' reward preferences ( $F(2, 146) = 4.31, p = .015, \eta_p^2 = .056$ ). Specifically, participants in the exclusion condition reported lower preferences for the probabilistic reward option ( $M_{excl} = 2.23, SD = 2.29$ ) than their socially included counterparts ( $M_{incl} = 3.85, SD = 2.80$ ;  $F(1, 146) = 8.27, p = .004, \eta_p^2 = .088$ ) and the participants in the baseline condition ( $M_{base} = 3.46, SD = 2.89$ ;  $F(1, 146) = 4.68, p = .032, \eta_p^2 = .051$ ). The latter two conditions did not differ significantly ( $F < 1, NS$ ).

### Discussion

Taken together, the results from experiments 1 and 2 provide convergent support for our basic hypothesis—namely, that social exclusion decreases consumers' favorable attitudes toward probabilistic offerings (hypothesis 1). This effect applies to both preferences and choices, intentions and real behavior, and across different consumption contexts and social-relationship manipulations. These findings support our prediction that social exclusion, but not social acceptance, drives the effects of social relationships on con-

sumers' attitudes toward probabilistic selling. The fact that we replicate the effect on fixed and probabilistic offers with equal monetary values also suggests that the effect was less likely to be caused by the alternative explanation that socially excluded participants feel unworthy of the better outcome.

To further probe whether the observed effect was due to feelings of social exclusion decreasing the probability of consumers favoring probabilistic offerings or increasing consumers' evaluations of the fixed-offering option, we conducted a follow-up experiment (see the appendix) in which we presented fixed and probabilistic offers to participants in a between-subjects manner. We found that the feeling of exclusion decreased consumers' evaluations of probabilistic offerings, but it did not increase consumers' evaluations of the fixed offerings.

### EXPERIMENT 3

Social exclusion has been shown to threaten four fundamental human needs: belonging, control, self-esteem, and meaningful existence (e.g., Williams 2007). In addition to the underlying control-defense mechanism we proposed, one may argue that the other needs triggered by social exclusion lead consumers to express negative attitudes toward probabilistic selling. We tested these possibilities in experiment 3 through multiple mediation analyses.

#### Method

**Participants.** One hundred and forty-six adult US consumers participated in this experiment on Amazon's Mechanical Turk in exchange for a small monetary incentive. The data from 35 participants were excluded from later analyses because they did not pass the attention check (e.g., Openheimer et al. 2009). This left us with 111 participants ( $M_{age} = 35.8$ ; 51.4% female).

**Design and Procedures.** We used a different manipulation of social relationships this time. At the beginning of the experimental session, the participants played a computerized ball-tossing game known as Cyberball (e.g., Williams, Cheung, and Choi 2000). They were randomly assigned to one of two experimental conditions (inclusion vs. exclusion) and led to believe that they were playing the Cyberball game with two other real players via the internet. They were told that they could toss the ball to any of the other players after receiving it. The participants in the social-inclusion condition received the ball one third of the time, whereas those in the social-exclusion condition received the ball substantially less often; that is, only two to three times at the beginning of the game.

Immediately after completing the game, the participants indicated how accepted/rejected they felt during the game on a 9-point scale (1 = not at all, 9 = extremely), and the percentage of throws they received, as manipulation checks (Zadro et al. 2004).

As an ostensible "personality assessment" task, the participants then completed three questions about their feelings of control (Cutright 2011;  $\alpha = .91$ ). To rule out alternative explanations, we also assessed the levels of the participants' other three needs (Zadro et al. 2004)—a sense of belonging (three items;  $\alpha = .90$ ), meaningful existence (three items;  $\alpha = .83$ ), and self-esteem (three items;  $\alpha = .83$ )—all on 9-point scales (1 = strongly disagree, 9 = strongly agree).

Each participant then imagined scheduling an individual trip to Bali, Indonesia, and tried to book the air tickets through a mystery flight company. The company allowed customers to select only their destination area, the price range, and the departure and return dates of the flights they wanted. However, all the other flight information (such as the name of the airline and detailed flight schedules) was kept secret until the customers made their payments. After imagining this scenario, the participants reported their attitudes toward this mystery flight company by indicating (1) the extent to which they liked the company, (2) the extent to which they thought the mystery flight service was good, and (3) how likely they were to book the flight through this company on a 9-point scale (1 = not at all, 9 = very much).

#### Results

**Manipulation Checks.** The excluded participants reported receiving a lower percentage of throws ( $M_{excl} = 8.2\%$ ,  $SD = 10.68\%$  vs.  $M_{incl} = 35.93\%$ ,  $SD = 9.61\%$ ;  $F(1, 109) = 204.73$ ,  $p < .001$ ) than their included counterparts. The participants in the exclusion condition also reported feeling less accepted ( $M_{excl} = 2.40$ ,  $SD = 1.51$  vs.  $M_{incl} = 7.17$ ,  $SD = 1.62$ ;  $F(1, 109) = 256.62$ ,  $p < .001$ ) and more rejected ( $M_{excl} = 7.04$ ,  $SD = 1.96$  vs.  $M_{incl} = 2.57$ ,  $SD = 1.82$ ;  $F(1, 109) = 153.79$ ,  $p < .001$ ) than the included participants.

**Attitude.** The three attitude items were averaged ( $\alpha = .97$ ). As expected, the excluded participants exhibited more negative attitudes toward the mystery flight company ( $M_{excl} = 4.05$ ,  $SD = 2.37$ ) than did those who felt socially accepted ( $M_{incl} = 4.96$ ,  $SD = 2.17$ ;  $F(1, 109) = 4.39$ ,  $p = .039$ ,  $\eta_p^2 = .039$ ).

**Mediation Analyses.** A series of mediation analyses was conducted. We examined whether the effect of social relationships on consumer reactions to probabilistic selling was mediated by the feeling of personal control (but not the three other needs thwarted by social exclusion). As expected, we found that social exclusion did influence all four needs: sense of control ( $\beta = -1.03, p = .002$ ), sense of belonging ( $\beta = -4.13, p < .001$ ), meaningful existence ( $\beta = -3.64, p < .001$ ), and self-esteem ( $\beta = -2.33, p < .001$ ). However, bootstrapping analyses (PROCESS model 4 with 5,000 bootstrapping samples, see Hayes 2012) confirmed that the indirect effect on consumers' attitudes was only significant for the feeling of control (95% CI: .0474 to .6823), not for belongingness (95% CI:  $-1.9393$  to .0150), meaningful existence (95% CI:  $-1.1795$  to .7933), or self-esteem (95% CI:  $-.3553$  to .7760).

### Discussion

Experiment 3 showed that the feeling of personal control underlies social relationships' effects on consumers' attitudes toward probabilistic marketing offerings. Consistent with the social-exclusion literature, we found that feelings of social exclusion threatened four fundamental human needs: belonging, control, self-esteem, and meaningful existence (e.g., Williams 2007). However, it was the need for control that drove social relationships' effects on attitudes toward probabilistic selling; moreover, none of the other three needs mediated the effects. In the next experiment, we further validate the underlying control-defense mechanism by examining the moderating role of information vividness.

### EXPERIMENT 4

Experiment 4 sought to provide further evidence that the need for personal control helps explain why social relationships influence consumers' attitudes toward probabilistic selling. If the observed effect was indeed driven by a threatened sense of control, we should be able to moderate it by experimentally restoring sense of control. We argued earlier that the vividness of the product/service information provided by the probabilistic seller could potentially restore people's feeling of control. Consumers hold the lay belief that distant objects are more difficult to process than close ones (e.g., Alter and Balciotis 2011; Darke et al. 2016). Since vivid information is retrieved from memory more rapidly than information that is not presented in a vivid format (e.g., McGill and Anand 1989), vividly presented targets were generally perceived as more proximate, more feasible,

and more attainable than their nonvivid counterparts (e.g., Alter and Balciotis 2011; Labrecque et al. 2013; Darke et al. 2016). Therefore, information vividness is likely to decrease belief about obstacles or factors that interfere with attaining outcomes, restore people's sense of personal control, and moderate the effect we found. Experiment 4 tested the moderating effect of information vividness on social relationships' effects on consumer attitudes toward probabilistic selling (hypothesis 3).

### Method

**Participants.** One hundred and five Hong Kong undergraduate students ( $M_{\text{age}} = 20.9$ ; 67% female) participated in return for a local restaurant coupon.

**Design and Procedures.** They were randomly assigned to the four conditions of a 2 (social relationships: exclusion vs. inclusion)  $\times$  2 (information vividness: high vs. low) between-subjects factorial design. To manipulate the participants' social relationships, we asked them to first complete the same imagination task used in experiment 1, and the manipulation checks. Then, in a purportedly unrelated task, the participants imagined that they were scheduling an individual trip to Amsterdam, Holland. They found a company that offers mystery hotel-booking services. Participants were allowed to decide the destination, the price range, and the check-in and check-out dates of their trip. All other information, such as hotel name, star rating, and address, was kept secret during the booking stage. Following the literature on information vividness (e.g., Lee and Qiu 2009), we manipulated the vividness of the product information by providing the participants (or not) with vibrant and concrete pictures of the outcome of the probabilistic service. The participants in the high-information-vividness condition were shown four color pictures of Amsterdam (see the appendix). No pictures were presented to the participants in the low-vividness condition. After imagining this scenario, the participants indicated their attitudes toward the mystery hotel company by answering three questions ( $\alpha = .71$ ) similar to those used in experiment 3.

**Pretest.** To validate the assumption that vividly presented targets are perceived as more attainable and consequently enhance consumers' sense of control over the targets compared to nonvividly presented targets, we conducted a pretest. One hundred and twenty-five Hong Kong undergraduate students ( $M_{\text{age}} = 21.0$ ; 70% female) read the same (high vs. low vividness) scenario of booking a mystery hotel

in Amsterdam as we manipulated in the main study. After imagining this scenario, the participants reported their perceived attainability of the trip to Amsterdam by responding to three items: (1) my Amsterdam trip will be smooth, (2) my Amsterdam trip will be effortless, and (3) my Amsterdam trip will be easy (1 = strongly disagree, 9 = strongly agree;  $\alpha = .93$ ). The participants also responded to the same three sense-of-control measures ( $\alpha = .88$ ) that were used in experiment 3.

As expected, participants in the high-vididness condition reported a higher sense of control ( $M_{\text{high-vidid}} = 5.53$ ,  $SD = 1.39$ ) than those in the low-vididness condition ( $M_{\text{low-vidid}} = 4.91$ ,  $SD = 1.47$ ;  $F(1, 123) = 5.89$ ,  $p = .017$ ). We also found a significant main effect of information vividness on perceived attainability ( $M_{\text{high-vidid}} = 5.49$ ,  $SD = 1.48$  vs.  $M_{\text{low-vidid}} = 4.74$ ,  $SD = 1.34$ ;  $F(1, 123) = 8.77$ ,  $p = .004$ ). Bootstrapping procedures (5,000 samples, PROCESS model 4; see Hayes 2012) with information vividness as the independent variable, perceived attainability as the mediator, and sense of control as the dependent variable yielded a 95% confidence interval (.1200, .6960) that excluded zero, suggesting a significant mediation effect of perceived attainability on the impact of information vividness on sense of control.

### Results

**Manipulation Checks.** The participants in the exclusion condition felt more rejected ( $M_{\text{excl}} = 7.12$ ,  $SD = 1.59$  vs.  $M_{\text{incl}} = 2.13$ ,  $SD = 0.94$ ;  $F(1, 103) = 328.80$ ,  $p < .001$ ) and less of a sense of belonging ( $M_{\text{excl}} = 3.73$ ,  $SD = 1.90$  vs.  $M_{\text{incl}} = 6.72$ ,  $SD = 1.63$ ;  $F(1, 103) = 74.64$ ,  $p < .001$ ) than those in the inclusion condition.

**Attitude.** A  $2 \times 2$  ANOVA revealed only a significant social relationships  $\times$  vividness interaction ( $F(1, 101) = 5.95$ ,  $p = .016$ ,  $\eta_p^2 = .06$ ). As expected, the excluded participants in the low-information-vividness condition exhibited a more negative attitude toward the mystery hotel company ( $M_{\text{excl}} = 3.47$ ,  $SD = 1.56$ ) than did those who felt socially accepted ( $M_{\text{incl}} = 4.48$ ,  $SD = 1.81$ ;  $F(1, 101) = 5.25$ ,  $p = .024$ ,  $\eta_p^2 = .05$ ). However, when vivid product information was provided, the effect of social exclusion disappeared ( $M_{\text{excl}} = 4.64$ ,  $SD = 1.47$  vs.  $M_{\text{incl}} = 4.13$ ,  $SD = 1.47$ ;  $F(1, 101) = 1.34$ ,  $p = .251$ ).

### Discussion

Experiment 4 revealed a possible way to overcome consumers' negative attitudes toward probabilistic selling in the

face of social exclusion: that is, provide vivid product or service information. In line with hypothesis 3, the effect of social exclusion on consumers' attitude toward probabilistic selling was attenuated when the consumers were provided with vivid product information, suggesting that their feelings of control were restored through receiving this vivid information. In addition, the findings of our pretest provided further support to our theorizing that vividly presented product or service information enhances consumers' sense of control through enhancing the perceived attainability of the product or service.

### GENERAL DISCUSSION

Given its increasing prevalence and role in enhancing consumer shopping experiences, is probabilistic selling suitable in all retailing contexts? The current study speaks to this question. Across four experiments, we demonstrate that socially excluded consumers exhibit a less favorable attitude toward probabilistic selling than do their peers who do not feel excluded. The experience of social exclusion leads consumers to decrease their evaluations of mystery bags and the likelihood of selecting them as rewards (experiments 1 and 2) and to exhibit more negative attitudes toward mystery flight/hotel services (experiments 3 and 4). We also show that the feeling of personal control mediates the effect of social exclusion on consumers' attitudes toward probabilistic service offerings (experiment 3), and that this effect is diminished when feeling of control is restored by the provision of vivid product/service information (experiment 4).

The current study extends our understanding of probabilistic selling from a consumer perspective. Research related to probabilistic selling has focused mostly on its effects on suppliers, such as how it improves seller profits (e.g., Fay and Xie 2008, 2010, 2015). By showing that interpersonal relationships alter consumers' attitudes toward probabilistic retailing offers, the current research contributes to our understanding of the psychological mechanism underlying consumer reactions to probabilistic selling. Our findings suggest that probabilistic selling thwarts people's feelings of control, and that the control-defense mechanism induced by interpersonal exclusion drives consumers away from probabilistic offerings. Although we restricted the scope of the current study to social exclusion, other sociopsychological factors may lead to similar effects on consumers' attitudes toward probabilistic retailing strategies when they cast doubt on people's feelings of control. Future research is needed to



investigate other psychological factors that may affect consumers' reactions to probabilistic selling.

Consumers are social animals, and how relationships among them influence marketing and consumption has received considerable attention in recent years (e.g., Mead et al. 2011; Duclos et al. 2013; Su et al. 2017). The current study enriches the repertoire of findings related to the behavioral consequences of social exclusion in the marketing context. Furthermore, it has long been established that exclusion threatens four fundamental human needs: belongingness, perceived control, self-esteem, and meaningful existence (Williams 2007). However, except for the more direct need to belong, the other three types of needs are largely ignored in the marketing literature (Su et al. 2017). The current study extends this line of research by identifying a novel effect of social exclusion on the behavior of consumers: that is, their attitudes toward probabilistic retailing strategies. We find that this effect is triggered by the need for control induced by the thwarted consumers' social relationships. We hope that this work can serve as a springboard for future research related to the distinct marketing consequences of the needs for control, self-esteem, and meaningful existence triggered by social exclusion.

The theoretical implications of our findings for the research on personal control are also worth noting. Extant literature in this area has demonstrated that consumers' deprived control can be compensated via different means, such as switching behavior (Su et al. 2017), acquisition of utilitarian products (Chen et al. 2017), or choosing high-effort product (Cutright and Samper 2014). The current research enriches the repertoire of this work by exploring a novel factor that can enhance consumers' perceived control over a target, namely, information vividness. To our knowledge, the current research is the first to demonstrate that vividly presented information about a target enhances consumers' sense of control through enhancing the perceived attainability of the target, and consequently attenuates the negative of social exclusion on consumers' attitudes toward probabilistic selling.

Recently, Su and colleagues (2017) found that socially excluded consumers exhibited a strong desire to restore their sense of control through switching of products or brands they were using. The current work adds to this stream of research by demonstrating how the experience of social exclusion could activate a different consumption strategy to cope with the deprived feeling of control: to avoid probabilistic goods or services. Different from the brand-switching strategy found in Su et al. (2017), which can be considered a pro-

active coping strategy, in the current article we found that socially excluded consumers could also try to protect their threatened personal control through a more reactive coping strategy—avoiding potential further control loss brought about by probabilistic selling. Future research is needed to differentiate various types of strategies that consumers use to cope with their feelings of threat after social exclusion.

In the current research, we restricted our focus to consumers' *ex ante* attitudes toward probability selling. However, we believe our results may not generalize to consumers' attitudes toward probability selling after they have received and discovered the goods or services purchased (i.e., their *ex post* attitudes). We speculate that the effect of social exclusion we observed would not be present in consumers' *ex post* attitude toward probabilistic selling because by the time of *ex post* judgment, consumers have already received and discovered the goods or services, and the process and outcome of the purchase are no longer opaque to them; thus probabilistic selling should not threaten consumers' sense of control in this situation. In addition, the research on probabilistic selling has expanded its scope. For instance, recent research starts to categorize probabilistic selling into horizontally versus vertically differentiated probabilistic selling strategies (e.g., Zhang et al. 2015; Ren and Huang 2017). Specifically, horizontally differentiated probabilistic selling strategy charges a single price to all different products (i.e., lucky bag filled with random products) whereas vertically differentiated probabilistic selling strategy uses dynamic pricing (i.e., the different prices of mystery hotel across two periods; Ren and Huang 2017). Although we did not differentiate these two types of probabilistic selling in the current research, future research is needed to investigate their impacts on consumers separately.

Our studies offer implementable managerial implications for marketers. Probabilistic selling is becoming increasingly prevalent in various industries due to its ability to improve profits (e.g., Fay and Xie 2008, 2010, 2015). Despite its popularity, probabilistic selling carries certain hidden risks to marketers. Our research reveals that the tactic of probabilistic selling may interact with consumers' social relationships and sense of personal control, influencing their reactions. When the feeling of control is threatened (e.g., when consumers are excluded by others), consumers exhibit a less favorable attitude toward probabilistic selling, as shown in the current research. How should marketers address this challenge? We suggest the following tactics.

First, given today's advanced techniques, companies could have more access to consumers' personal information (such

as the number of friends on their social-networking websites, their marital status, and whether they live alone) and social media data. Companies thus can take a big-data approach to identify consumers' status of social relationships and then customize appropriate (probabilistic or fixed) retailing offers to fit with the individual customer's idiosyncratic preferences. In a similar vein, it is possible that consumers may appreciate probabilistic selling strategies more once their social media posts received many likes and positive comments. By contrast, fixed selling strategies would probably be better for consumers whose social media posts were not well liked.

Second, our results suggest that consumers who perceive a lack of personal control caused by social exclusion would show less favorable attitudes toward probabilistic selling. Marketers could alter the shopping environment to boost consumers' feelings of personal control. For instance, Chae and Zhu (2014) found that environmental orderliness also increases an individual's confidence in his or her feeling of control. Thus, a spacious store design, a well-organized shop layout, and a quiet retail setting are likely to be effective ways to promote probabilistic selling.

Finally, retail offerings can be positioned strategically to address this challenge. Our research suggests that when the lack of personal control is restored through other means (such as the vivid product information in experiment 4), the negative effect of social exclusion diminishes. In addition to information vividness, utilitarian products (Chen et al. 2017) or products affiliated with high consumer effort (Cutright and Samper 2014) have been shown to compensate for one's lack of personal control. To increase consumer acceptance, companies could consider pairing their probabilistic retail strategies and offerings with vivid information or these specific types of products.

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