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Crush on You: Romantic Crushes Increase Consumers' Preferences for Strong Sensory Stimuli

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What influences consumers' preferences for strong versus weak sensory stimuli? In this article, we find converging evidence that when the experience of a romantic crush is salient, consumers have an enhanced preference for options that elicit strong sensory stimulation (e.g., loud music, strongly flavored food). We demonstrate this effect across seven studies using a broad array of products and services as stimuli. We further show that these consumers have a heightened motivation to achieve greater sensations from the desired person, but cannot act in a way that directly satisfies this motivation, leading them to be more likely to turn to products and services for the desired sensations. Moreover, we find that the effect is specific to the experience of a romantic crush and cannot be generalized to other interpersonal experiences (e.g., passionate love, stable romantic relationship, unmet sexual desire).

Keywords: romantic crush, sensations, sensory intensity, interpersonal relationship

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Managing consumers' consumption experiences is an important concern of both researchers and practitioners. To provide consumers with the best experience possible, products and services offer different levels of sensory stimulation. For example, Buffalo Wild Wings can be ordered at different levels of spiciness, hotel customers can reserve both scented and unscented rooms, and shopping environments either play soft music in-store or, in some cases (e.g., Abercrombie & Fitch), use loud and upbeat music to make their customers happy. Moviegoers can now choose between 2D, 3D, and even 4D versions of the same movie, depending on the level of sensory stimulation they prefer.

What determines a consumer's preference for different levels of sensory stimulation? The answer to this question is unclear. The need for stimulation can exhibit chronic individual differences (Sales 1971; Terasaki and Imada 1988). Cultural differences also exist; people in different cultures (e.g., South Asians) may prefer more strongly flavored food (e.g., spicy taste) than others. However, with few exceptions (Batra and Ghoshal 2017), the situational factors that affect people's desire for sensory stimulation

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have not been explored. We report that a particular novel factor—the salient experience of a romantic crush—can enhance consumers' preferences for products and services that elicit strong sensations.

Consumers' romantic relationships with their partners are a primary part of their lives and are known to influence their preferences and choices (Cavanaugh 2014; Etkin 2016; Griskevicius et al. 2007; Huang, Dong, and Wyer 2017; Wang and Griskevicius 2014; for a review, see Cavanaugh 2016). People who experience a romantic crush are romantically attracted to a specific person who is unaware of the crush. It is a common romantic experience depicted in novels, movies, songs, and ads. In a recent example, Jollibee, a fast food giant in the Philippines, put out a viral ad entitled "Crush" that described the story of a young man who left Jollibee burgers as anonymous gifts for his crush. Facebook has a popular app called "Crush Notifier" that allows users to send anonymous notification emails to a person on whom they have a crush.

Does having a crush influence consumer decisions? If so, why? The answers to these questions are also unclear. We propose that people who have romantic crushes on others may exhibit an enhanced preference for products and services that elicit an intense sensation (e.g., loud in-store music, strongly flavored food). These products and services can be unrelated to romance. We further show that such an effect is unique to the experience of a romantic crush, and is less likely to occur in other relationship-based experiences (e.g., a stable romantic relationship, a mutual passionate love, sexual desire).

In the next section, we develop a theoretical rationale for our prediction. We then report on seven studies that provide consistent evidence for our prediction.

THEORETICAL BACKGROUND

Characteristics of a Romantic Crush

The concept of the crush originated in the 19th century to describe a crowded social gathering where people could meet attractive individuals. Nowadays, a crush refers to romantic feelings for someone that are not expressed (Merriam-Webster.com). During our research, we found that people generally shared a similar understanding of a romantic crush. They perceived it as a kind of romantic love not yet communicated to the desired person and primarily regarded the experience as rewarding (Oettingen and Mayer 2002). Such an understanding is consistent with prior research showing that dopamine plays an important role in reward processing and that romantic feelings are correlated with an increased dopaminergic level (Aron et al. 2005; Bartels and Zeki 2004; Schultz 2002).

In our view, a romantic crush, as a special kind of romantic love, has three defining features. The first two features are common to all kinds of romantic love, whereas

the latter is unique to the romantic crush. First, all interpersonal relationships—including relationships between colleagues and friends, as well as romantic love—involve a degree of psychological connectedness between self and other. This connectedness is based on shared traits, beliefs, social memberships, common values, likes, and dislikes (Aron et al. 1991; Cialdini et al. 1997). When one is romantically attracted to another, however, one desires not only a greater psychological closeness with the other, but also a physical intimacy, a bodily union, or "oneness." Mature individuals in a nonromantic or nonsexual relationship are expected to maintain a certain degree of bodily distance between self and other (Hall 1963). However, people in romantic love are licensed to enjoy strong physical sensations—induced by bodily intimacy—from their partner, such as seeing, hearing, smelling, kissing, and touching their partner (Hall 1963). That is, when one is physically close to one's partner, one's visual, auditory, haptic, taste, or smell stimulations are stronger than when the partner is distant.

Second, although sex and romance generally co-occur in real-life relationships, a key factor that distinguishes romantic love from mere sexual desire is the exclusivity of the desired target. The sex drive is thought to have evolved to promote the initiation of sexual intercourse with any appropriate partner (Eastwick 2009; Ma and Gal 2016). That is, when sexual desire is salient, if a desired partner is not available, people can accept another as an alternative to satisfy the desire (Aral 2006; Johnson et al. 1994). Romantic love, however, is thought to have evolved to promote the preference for a particular individual. If the deemed partner is not available, this desired person is unlikely to be readily replaced by another.

Third, a romantic crush, by definition, occurs when people have a romantic attraction to a specific person to whom they have not yet expressed their feelings. It implies that people on the one hand have a heightened motivation for achieving the desired sensory contact, but on the other hand are unable to get it directly from the crush target at this stage. A salient motivation with no readily available means, as we argue later, is the central reason for the predicted effect.

These three features are important to understanding the experience of the romantic crush. We predict that when this experience is salient, although it may be short-lived or never acted upon, can have important influences on consumers' preferences in a broad array of domains.

Direct and Indirect Means of Fulfilling a Motivation

When a salient discrepancy exists between what people desire and have, a goal may be activated to reduce the discrepancy (Carver and Scheier 1990; Higgins 1987; Kim and Gal 2014; Lee and Shrum 2013; Lisjak et al. 2015;

Mandel et al., 2017; Rucker and Galinsky 2013; Sela and Shiv 2009). Once a goal is activated, people search for goal-consistent means to satisfy it. For example, when wanting to gain scientific knowledge, one may purchase science books. When motivated to lose weight, one may purchase low-fat food or sign up for a weight-loss program. When a goal of social connection is salient, consumers may try to affiliate with desired others by conforming to their decisions (Mead et al. 2011). In these cases, people's consumption decisions can be viewed as means that help to fulfill their goals directly.

But what if the means that are directly consistent with the motivation are lacking? Research has shown that under such circumstances, people may turn to products and services that are associated with a goal in a more general or indirect way. These products and services may not help the individual attain the goal to the same extent as direct means. For example, MBA students who desire success may demonstrate a stronger preference for products that are associated with success only symbolically, such as luxury watches and briefcases (Wicklund and Gollwitzer 1981). When consumers are motivated to recover from an embarrassing situation, they may choose products that can help them "save face" in a more indirect way (e.g., facial cream; Dong, Huang, and Wyer 2013).

Of particular relevance to the current research is the finding that when the motivation for social connection is salient but achieving an affiliation with others is not immediately possible, people may seek to satisfy their desired connection by connecting with nonhuman objects, such as nature (Poon et al. 2015) or brands (Chen, Wan, and Levy 2017; Jahn, Gaus, and Kiessling 2012; Pieters 2013).

Although in these aforementioned studies consumers were not asked to choose between direct and indirect means simultaneously, implicit in the motivation literature is the assumption that motivation-driven preference may have a hierarchy, with means that can directly satisfy the motivation being more primary than those only indirectly related to the goal. To this extent, when a goal can be satisfied directly, it may have a less pronounced influence on strategies that seem to be secondary to the goal attainment. Some recent findings have also provided evidence for this assumption (Huang, Huang, and Wyer 2018). These findings show that although consumers may tend to attach to a nonsocial target (e.g., brands) in order to satisfy their motivation to socially distance themselves from a crowd of strangers (as in an aversive crowding environment), when they have a chance to become more attached to a friend (a strategy adopted to directly satisfy this motivation), their enhanced attachment to general objects goes away.

Such a hierarchy can also be explained by goal system theory (Kruglanski et al. 2002). According to this theory, people strive to choose the best available means for attaining a salient goal. In other words, when direct means are immediately available, people are less likely to turn to

indirect means. Only when more direct means are deemed to be less probable can motivation have a strong influence on indirect strategies.

The Current Research: Romantic Crushes Increase Preferences for Strong Sensory Stimuli

As argued previously, when the experience of a romantic crush is salient, people have a heightened motivation to have more sensations, induced by their desired person (seeing, hearing, smelling, tasting, and touching this person more). However, they are unable to act in a way that allows them to directly achieve the goal. Consequently, they may be more likely to show a preference for products and services that elicit strong sensory stimulations (e.g., loud music, strongly flavored food).

From the outset, we clarify the relationship between the intensity of sensory stimuli and arousal. Arousal is a state ranging from a continuum of drowsiness to being extremely alert/energized/awake (Mehrabian and Russell 1974). It can be caused by different factors, such as the physiological and visceral properties of the individual (e.g., sexual desire, fear, physical exercise), the sensory stimulation of the stimuli, or other properties of the stimuli (e.g., novelty; Batra and Ghoshal 2017). To this extent, a strong sensory product is also a highly arousing one.

An Alternative: Intensity Transfer

One may wonder if the predicted effect is due to an intensity transfer; that is, a romantic crush is an intense experience that may lead to a preference for high-intensity sensory options (due to similarity or fluency). We test this alternative in our article. Consider two other intense experiences: mutual, passionate love and unmet sexual desire. Both relate to the same heightened motivation to achieve greater sensations from the desired person. However, in these two experiences, the motivation may be satisfied more directly. Specifically, people in a mutual, passionate love relationship may gain more intimacy from their relationship partners, and people with an unmet sexual desire may find another to satisfy their motivation due to the low exclusivity of their sexual targets (Aral 2006; Johnson et al. 1994). If our theory is correct, then the predicted preference for high-intensity sensory products and services should be more likely to occur only when the experience of the romantic crush is salient, but less so when the other two experiences are salient.

When the Sensory Effect Is Not Observed

Our argument builds on the assumption that (1) people who have a romantic crush have an unsatisfied motivation for greater sensory stimulations from the desired person, but (2) they cannot satisfy this goal from the desired person or from social others. A couple of additional considerations

then arise in evaluating the generalizability of our prediction. First, when this heightened motivation is fulfilled, the enhanced sensory preference for general products and services may not be observed. For example, in a stable and long-term romantic love relationship, the discrepancy between the levels of sensations people desire and have already received may be minimized, making the predicted effect less likely to emerge.

Second, even when a romantic crush experience is salient, if people hold the view that direct means are readily available, the predicted effect may also be weakened. For example, when a desired relationship is perceived as being highly attainable, or when people are led to believe that they can have the same romantic feelings for multiple individuals, the predicted effect may be attenuated. To some extent, a highly attainable crush is similar to a mutual romantic love in which people can gain sensory stimulations from the desired person; a nonexclusive desired target may resemble the experience of sexual desire in which the desired person can be readily replaced by another.

Third, whether the effect is due to the fact that people who have a romantic crush have not yet revealed the feelings to the desired target per se is unclear. What if people who have a romantic crush on a specific person *have* revealed their feelings? If being secretive is the key, then the predicted effect should disappear. However, if, as we predict, the effect is due to a salient motivation, but with no direct means, then the predicted effect may go away only when people have revealed their feelings and have received definite responses from the desired target. Specifically, if the desired target provides a positive answer, then a mutual love is initiated, in which people may fulfill their desire with the partner (Adams-Price and Greene 1990; Furman and Collins 2009; Hurlock and Klein 1934; Oettingen and Mayer 2002). If the desired target provides a negative answer, however, the desired end state itself may dissipate, making the motivation less likely to be active. If no definite answers are received, the predicted effect may still hold. We tested these possibilities empirically.

STUDY 1

In study 1, we compared participants' preferences for products and services between two groups: those who had romantic crushes and those who did not. To control for the potential impact of the participants' relationship status on their willingness to admit they had romantic crushes, only single participants were recruited.

Method

Participants and Design. Ninety undergraduate students who self-reported as being single (53 males; $M_{\text{age}} = 20.12$ years, $SD = 1.60$) were recruited from a large North

American university to participate in this study for course credit.

Procedure. Upon arrival at the lab, the participants were seated in individual cubicles, each equipped with dividers and a computer. They were asked to complete an online survey. We first measured the participants' current relationship status ("Do you have a crush on somebody right now?" 1 = "yes," 2 = "no"). To reduce attention to this measure and the possibility of any self-generated demand effects, we presented this item as one of several demographic measures. Forty-one of the participants reported having a romantic crush, and 49 reported not having a romantic crush.

All of the participants were then asked to perform a task related to "product preference." They were told the researchers were collecting information about consumers' preferences for a variety of products and services. The participants were presented with eight pairs of product options and asked to indicate which option in each pair they would prefer if they had to make a choice now. In each pair, one option had a stronger sensory stimulation, whereas the other option had a weaker sensory stimulation (e.g., strongly flavored vs. light coffee). The order of presentation was counterbalanced. We tested all of the dependent measures used in this article to ensure that the options would indeed reflect a stronger versus weaker sensory stimulation (see the [web appendix](#) for details).

Results and Discussion

Gender and Age Effects. In all seven studies, we measured the participants' genders and ages. Across all of the studies, gender showed no significant influence on our predicted effects. Thus, we pooled the data from both genders for our analyses. We provide a note in the [web appendix](#) on the main effects of gender on some of our measures.

No age effects were found in the studies, except for studies 3 and 5. We therefore present the effects of age in these two studies in the [web appendix](#).

Product Choice. We coded the participants' choices, giving the options offering stronger sensory stimulation a value of 1 and the options offering weaker sensory stimulation a value of 0. As we observed similar patterns of results across the eight different categories (see [table 1](#) for item-specific results), we summed up the participants' choices to form an index of preferences for choices eliciting stronger sensory stimulation (with a range of 0–8). Consistent with our prediction, the participants who reported a romantic crush were more likely to choose the options eliciting stronger sensory stimulation ($M = 3.93$, $SD = 1.63$) than those who did not report a crush ($M = 3.16$, $SD = 1.56$; $F(1, 88) = 5.13$, $p < .05$).

Discussion. The results of study 1 provide initial evidence for our predicted effect by comparing the preferences of participants who had romantic crushes with those

TABLE 1

PERCENTAGE CHOOSING THE STRONGER (VS. WEAKER)
SENSORY OPTION (STUDY 1)

	Crush (<i>N</i> = 41)	No crush (<i>N</i> = 49)
1. Tea	56.1%	44.9%
2. Music CD	46.3%	40.8%
3. Hotel room	65.9%	55.1%
4. Restaurant	80.5%	79.6%
5. Coffee	51.2%	34.7%
6. Painting	46.3%	20.4%
7. Hand wash	24.4%	22.4%
8. iPad cover	22.0%	18.4%
Average	49.1%	39.5%

NOTE.—A binary logistic regression yielded the same conclusion. Participants who reported a romantic crush chose significantly more options eliciting stronger sensory stimulation (49.1%) than those who did not report a crush (39.5%; $\chi^2 = 6.61$, $p < .05$).

who did not. One potential limitation of this study is that we measured participants' actual crush status before the product choice task, and this measurement might have primed the romantic crush concept to some extent and caused the effect. We thus conducted a conceptual replication study (reported in the [web appendix](#)) in which we measured participants' actual crush status in the end. The same results held.

Study 2 then manipulated the salience of a romantic crush by asking participants to vividly recall a past romantic crush experience of their own and reported their choices of a real product.

STUDY 2

Method

Participants and Design. One hundred seventy-two undergraduate students (63 males; $M_{\text{age}} = 21.53$ years, $SD = 1.89$) from a large Asian university participated in the study for payment (approximately US\$3). They were randomly assigned to conditions of a one-factor, two-level (experience: romantic crush vs. control) between-subjects design.

Procedure. Participants were instructed that the researchers were interested in collecting information about people's life experiences. Under this guise, the participants in the romantic crush condition were asked to recall a past experience in which they experienced a romantic crush on another person. Those in the control condition were asked to describe their typical day (see the [web appendix](#)).

Afterward, the participants were told that as a token of appreciation we would randomly select four participants who would each receive a Godiva chocolate bar as an additional prize. They were asked to indicate their choice between two options if they won. One chocolate bar had a stronger sensory stimulation (an extra dark chocolate bar

with 85% cocoa), whereas the other chocolate bar had a weaker sensory stimulation (a dark chocolate bar with 50% cocoa). The two options had the same value (approximately US\$11). The product choice served as the dependent variable.

After the choice task, the participants answered a short questionnaire on their perceptions of the options. They were asked to rate the levels of sensation associated with each option on three items (1 = "not at all," 9 = "very much"; "To what extent do you think the 50% Cacao Dark Chocolate Bar [the 85% Cacao Extra Dark Chocolate Bar] is stimulating?"; "To what extent do you think the 50% Cacao Dark Chocolate Bar [the 85% Cacao Extra Dark Chocolate Bar] is exciting?"; and "To what extent do you think the 50% Cacao Dark Chocolate Bar [the 85% Cacao Extra Dark Chocolate Bar] can elicit strong sensory stimulation?"). The scores were averaged to create indices of sensory stimulation ($\alpha_{50\%} = .94$; $\alpha_{85\%} = .95$). As manipulated, the participants perceived the 85% Cacao Extra Dark Chocolate Bar as eliciting a greater sensory stimulation than the 50% Cacao Dark Chocolate Bar ($M_{50\%} = 5.24$, $SD = 1.84$ vs. $M_{85\%} = 5.74$, $SD = 2.40$, $F(1, 171) = 4.64$, $p < .05$).

Lastly, the participants reported their demographic details and were funnel-debriefed. None of the participants correctly guessed the purpose of this study. Two participants reported that they never had a crush experience, and thus their responses were excluded from further analysis (final $N = 170$), although including them did not affect the conclusion of the results. In the end, we conducted the draw and the winners were awarded their chosen chocolate bar.

Results and Discussion

Chocolate Bar Choice. As predicted, a binary logistic regression conducted with the product choice (1 = 85% Cacao Extra Dark Chocolate Bar and 0 = 50% Cacao Dark Chocolate Bar) as the dependent variable and experience (1 = romantic crush; 0 = control) as the independent variable showed that the participants who recalled and thus reexperienced their crush experiences ($M = 54.8\%$) were more likely to choose the more stimulating chocolate bar than those who described their typical day ($M = 38.4\%$; $b = .67$, $SE = .31$, $Wald = 4.55$, $p < .05$).

Discussion. Study 2 provided additional evidence for our prediction. When participants' own experiences of a romantic crush were salient, these experiences exerted a measurable effect on their real product choices.

STUDY 3

In the following studies, we manipulated the experience of a romantic crush by asking participants to vividly

imagine themselves in such experiences, and compared its effect with that of other noncrush experiences. In study 3, we compared the effect of a crush with that of a stable romantic relationship, and examined the mediating role of the salient motivation. In addition, we used the 4D movie as the focal product and measured each participant's level of desired sensory stimulation from this product as the dependent variable.

Method

Participants and Design. One hundred seventy participants (69 males; $M_{\text{age}} = 38.02$ years, $SD = 12.22$) from the Amazon Mechanical Turk (MTurk) online panel participated for payment of US\$50. The participants were randomly assigned to one of two between-subject conditions (romantic crush vs. stable romantic relationship). They were told that the survey related to various aspects of life experience and consumption preferences, and that we had combined several unrelated surveys by different researchers for the sake of saving time.

Procedure. The participants first completed a survey entitled "Writing Workshop." They were asked to write a story as vividly as possible, so that people who read the stories would feel what the writers were experiencing. Specifically, the participants in the romantic crush condition were asked to write a story entitled "I Am Having a Crush on Somebody," whereas those in the stable romantic relationship condition wrote a story entitled "I Am in a Stable Relationship with Somebody," in which they had been in a romantic relationship with their partner for more than 10 years. To facilitate the story writing, the participants in each condition were provided with several beginning sentences (see the [web appendix](#)). This kind of story writing is an established method in activating subjective experiences (West, Huber, and Min 2004). One participant did not follow the instruction and wrote "N/A" in the story writing box. This participant was therefore eliminated from further analysis, leaving us with 169 data points. (Including the response of this participant did not change the pattern of the results.)

After writing their stories, the participants were presented with a second and ostensibly unrelated survey entitled "Movie Survey." The participants were told that the researcher was currently collaborating with a new 4D movie theater that would soon be opening in town. The theater managers wished to gain a better understanding of local customers' preferences. The participants were given the following explanation:

4D movies can give the audience a variety of theater effects. According to Wikipedia's description of 4D film, the effects simulated in a 4D film may include rain, wind, strobe lights, and vibration. Seats in 4D seat venues may vibrate or move a few inches during PowerPoint presentations. Other

common chair effects include air jets, water sprays, and leg and back ticklers. Hall effects may include smoke, rain, lightning, air bubbles, and special smells (e.g., firework smells at the London Eye's Experience, and gassy smells when a stinkbug sprays in It's Tough to Be a Bug).

Based on this description of 4D movies, the participants were asked to indicate the extent of sensory stimulation (produced by the various theater effects) they preferred to receive in this 4D movie theater, on a scale from 1 ("I prefer very mild sensory stimulation") to 9 ("I prefer very strong sensory stimulation").

The participants then proceeded to the third task, entitled "About Yourself." In this task, they were asked the following questions: (1) "Are you satisfied with your current level of physical closeness with the person you described in the writing task?"; (2) "To what extent would you want to be touched more by this person?"; (3) "To what extent would you love to touch this person more?"; (4) "To what extent would you love to hear this person's voice more?"; (5) "To what extent would you love to experience the smell of this person more often?"; (6) "To what extent would you like to see this person more?"; (7) "To what extent would you like to kiss this person more?"; and (8) "In general, to what extent would you desire greater intimacy with this person?"

Question 1 was answered on a scale from 1 = "I am unsatisfied and would desire more intimacy with this person" to 9 = "I am satisfied with the current intimacy with this person" (reverse-coded). Questions 2–8 were answered on a scale from 1 = "not at all" to 9 = "very much." The eight questions were highly correlated, and their answers were averaged to form a composite score of "desiring more sensory contact with the person" ($\alpha = .90$). Lastly, the participants reported their levels of engagement in the writing task (with answers ranging from 1 = "not at all" to 9 = "very involved/interested/engaged"; $\alpha = .92$).

Results and Discussion

Preference for Stronger Sensory Stimulation in 4D Movies. As expected, the participants who wrote a vivid story about romantic crushes expressed a greater preference for stronger sensory stimulation in 4D movies ($M = 6.13$, $SD = 1.75$) than the participants who wrote about long-term relationships ($M = 5.35$, $SD = 2.33$, $F(1, 167) = 5.88$, $p < .05$). No differences were found in the level of engagement in the writing task ($M_{\text{crush}} = 7.29$, $SD = 1.73$; $M_{\text{stable-relationship}} = 7.25$, $SD = 1.75$, $F < 1$).

Desire for Sensory Stimulation from the Desired Person. Participants in the romantic crush condition had a greater desire for sensory contact with the imagined target ($M = 7.60$, $SD = 1.57$) than those in the long-term relationship condition ($M = 6.38$, $SD = 1.31$, $F(1, 167) = 30.25$, $p < .001$).

Mediation Analysis. We coded the romantic crush condition as 1 and the stable relationship condition as 0. Regression analyses revealed that the romantic crush condition was positively associated with a desire for sensory contact ($b = 1.22$, $SE = .22$, $t(167) = 5.50$, $p < .001$) and a preference for greater theater effects ($b = .78$, $SE = .32$, $t(167) = 2.43$, $p < .05$). Moreover, the desire for sensory contact was positively associated with a preference for greater sensory effects in 4D movies ($b = .29$, $SE = .10$, $t(167) = 2.76$, $p < .01$). When both the romantic crush and level of desire were used to predict movie preference, the significance of the effect of the romantic crush decreased ($b = .51$, $SE = .35$, $t(166) = 1.48$, $p = .14$), but that of the effect of desire did not ($b = .22$, $SE = .11$, $t(166) = 1.97$, $p = .05$). The indirect effect of the romantic crush condition was further supported by the bootstrapping method (Hayes 2013) based on 5,000 samples. The 95% confidence interval ranged between .0035 and .6869, excluding 0.

Discussion. Study 3 compared the effect of a romantic crush with that of a long-term romantic relationship. The results are consistent with our conceptualization: when the motivation to obtain more sensations from desired partners was lacking, such as those in stable romantic relationships, an enhanced sensory preference was less likely to be observed. In addition, the mediation test provided some evidence that the observed effect was driven by the salient motivation.

STUDY 4

In study 4, we examined whether the predicted effect would be more likely to occur during the experience of a romantic crush than during the other two experiences (i.e., passionate love, unmet sexual desire). This study also aimed to rule out an alternative explanation based on intensity transfer: an intense experience such as a romantic crush may lead to a preference for intense sensations due to similarity or processing fluency. These two other experiences were also intense experiences by definition. However, as per our theory, the predicted effects on products and services may be less likely to occur in these two experiences, as people may achieve the motivation via more direct means. Specifically, people in a mutual, passionate romantic love relationship may obtain the desired sensations from their partners, decreasing their likelihood of seeking more sensations from unrelated objects. Similarly, people with an unmet sexual desire may satisfy that desire from social others, as the sexual targets are replaceable. This again decreases their likelihood of turning to unrelated products and services for sensation satisfaction. We tested these possibilities.

Before presenting the main study, we first reported two separate tests. The first was a pretest to examine the similarities and differences between these three experiences

(see details in the following section). The second was a post-test (reported in the [web appendix](#)) to provide triangulated evidence of the effectiveness of using this scenario-based method to induce different experiences. The results of this post-test show that our manipulations of these three experiences also led to significant differences in other variables, as predicted by prior relationship studies (i.e., the Satisfaction with Sacrifice Scale, [Stanley and Markman 1992](#); and attitudes toward one's partner measured on the Love Scale, [Rubin 1970](#)).

Pretest: Method

One hundred twenty-one participants (63 males; $M_{\text{age}} = 37.77$ years, $SD = 10.87$) were recruited from MTurk, the same subject pool used in the main study. The participants were randomly assigned to one of three conditions (romantic crush vs. passionate love vs. unmet sexual desire). The participants were told that the researchers were interested in collecting information about people's thoughts on their daily life experiences. They were instructed to imagine a scenario as vividly as they could, as if they were experiencing it themselves, and to answer a few questions. In the romantic crush condition, the participants were asked to imagine that they currently had a crush on somebody they found very attractive, but had not revealed their feelings to that person. In the passionate love condition, the participants were asked to imagine that they were currently in passionate love with their relationship partners. In the sexual desire condition, the participants were asked to imagine that they currently had sexual desire for somebody they found very attractive, but not in the sense of romantic love.

After vividly imagining the scenarios, all of the participants answered a set of questions. These questions related to (a) their desire to achieve greater sensations from the target ("To what extent do you desire more sensory contact with this person?" 1 = "not at all," 9 = "very much so"), (b) the perceived reciprocity of their feelings ("To what extent do you think your feelings for this person are reciprocated?" 1 = "not at all," 9 = "very much so"), and (c) the exclusivity of the desired target ("To what extent do you feel you could easily find another person to replace this person?" 1 = "not at all," 9 = "very much so"; we reverse-coded this item so that higher scores indicated higher exclusivity).

Pretest: Results and Discussion

Desired Sensory Stimulation. As expected, participants in all three conditions had a desire to achieve more sensations from the target, indicating a similar strength of motivation across all three conditions ($F(2, 118) = 1.10$, $p = .34$; see [table 2](#)).

Reciprocity. Participants in the passionate love condition reported that their feelings for the desired target were

TABLE 2
RESULTS OF THE PRETEST FOR STUDY 4

	Romantic crush	Passionate love	Unmet sexual desire	F-statistics and p-value
(1) Motivation for more sensory stimulations	7.46(1.79) ^a	7.90(1.41) ^a	7.45(1.40) ^a	$F(2, 118) = 1.10, p = .34$
(2) Reciprocity	4.22(1.94) ^a	6.67(1.89) ^b	4.98(2.27) ^a	$F(2, 118) = 15.35, p < .001$
(3) Exclusivity	5.95(1.91) ^a	6.78(1.69) ^a	3.93(2.20) ^b	$F(2, 118) = 22.80, p < .001$

NOTE.—Cells with different superscripts in each row differ at $p < .05$.

more likely to be reciprocated than did those in the other two conditions (romantic crush vs. passionate love: 4.22 vs. 6.67, $F(1, 118) = 29.35, p < .001$; sexual desire vs. passionate love: 4.98 vs. 6.67, $F(1, 118) = 13.90, p < .001$). These findings are consistent with our argument that people who feel a passionate love are more likely than those who feel a romantic crush to achieve reciprocity.

Exclusivity. As predicted, relative to those experiencing sexual desire, it was more difficult for those experiencing crushes and love to find another to replace the desired target (romantic crush vs. sexual desire: 5.95 vs. 3.93, $F(1, 118) = 22.01, p < .001$; passionate love vs. sexual desire: 6.78 vs. 3.93, $F(1, 118) = 43.01, p < .001$). These findings are more consistent with our argument that for those with a sexual desire, another individual may readily replace the target if the desired intimacy from the target cannot be obtained.

In summary, the results from this pretest provided support for our conceptualization of the romantic crush. Next, we examined whether the predicted effect would be more likely to occur during the experience of a romantic crush than during the other two experiences.

Main Study: Method

Participants and Design. One hundred seventy-two participants (90 males; $M_{\text{age}} = 39.20$ years, $SD = 12.21$) from MTurk took part in the study for payment of US\$50. To provide a more conservative test, in the passionate love condition, we manipulated the initial stage of their love. We recruited participants who self-reported as being either in a relationship (56 out of 172) or married (116 out of 172). They were randomly assigned to one of the three between-subject conditions (romantic crush vs. passionate love vs. unmet sexual desire).

Procedure. The participants first completed a survey entitled “Writing Workshop,” which followed a procedure similar to that used in study 3. The participants in the romantic crush condition were asked to write a story entitled “I Have a Crush on Somebody.” The participants in the passionate love condition wrote a story entitled “I Just Fell in Love with Somebody,” whereas those in the unmet sexual desire condition wrote a story entitled “I Have Unmet Sexual Desire.” As in our previous studies, to facilitate the

story writing, the participants in each condition were provided with several beginning sentences (see the [web appendix](#)).

After writing their stories, the participants were presented with a second and ostensibly unrelated survey entitled “Product Preference Survey,” in which they were asked to make a choice between (1) a heavy versus a light hand gripper (touch), (2) a light-colored versus a dark-colored postcard (visual), (3) a low-volume versus a high-volume video (auditory), (4) a lightly scented versus a strongly scented perfume (olfactory), and (5) slightly spicy versus very spicy chicken wings (gustatory).

Lastly, the participants answered a question about the intensity of their feelings (“To what extent do you feel that the story you wrote in the first task was emotionally intense?” 1 = “not at all,” 9 = “very much”).

Main Study: Results and Discussion

Product Choice. As in study 1, we coded each participant’s choice for an option that elicited relatively stronger sensory stimulation as 1 and coded choices for options that elicited relatively weaker sensory stimulation as 0. As in study 1, we observed similar patterns of manipulation across the five product categories (see [table 3](#)); therefore, we summed up the participants’ choices to create an index of preference for strong sensory sensation (with a range of 0–5). As expected, the participants who wrote about a crush experience had a greater preference for the products or services featuring strong sensory stimulation ($M = 1.92$, $SD = 1.28$) than their counterparts who wrote about their initial stage of love ($M = 1.49$, $SD = .97$; $F(1, 169) = 4.42, p < .05$) or those who wrote about unmet sexual desire ($M = 1.38$, $SD = 1.06$; $F(1, 169) = 6.46, p < .05$). No significant difference was observed in the latter two conditions ($F < 1$). The main effect of condition on the index of preference for strong sensory sensation was also significant ($F(2, 169) = 3.62, p < .05$).

Emotional Intensity. Moreover, the participants in all three conditions reported that the experience they wrote down was equally intense, showing that the observed effect could not be attributed to the intensity of experience ($M_{\text{crush}} = 6.35$, $SD = 2.18$; $M_{\text{passionate_love}} = 6.95$, $SD = 1.95$; $M_{\text{unmet_sexual_desire}} = 6.89$, $SD = 1.81$;

TABLE 3

PERCENTAGE CHOOSING THE STRONGER (VS. WEAKER)
SENSORY OPTION (STUDY 4)

	Romantic crush (<i>N</i> = 52)	Passionate love (<i>N</i> = 65)	Unmet sexual desire (<i>N</i> = 55)
1. Gripper	38.5%	32.3%	27.3%
2. Postcard	26.9%	15.4%	16.4%
3. Video	59.6%	47.7%	34.5%
4. Perfume	28.9%	24.6%	16.4%
5. Wings	38.5%	29.2%	43.6%
Average	38.5%	29.8%	27.6%

NOTE.—A binary logistic regression yielded the same conclusion. Participants who were in the romantic crush condition chose significantly more options eliciting stronger sensory stimulation (38.5%) than those in the passionate love (29.8%; $\chi^2 = 4.80$, $p < .05$) and unmet sexual desire (27.6%; $\chi^2 = 7.10$, $p < .01$) conditions. No significant difference was observed for the latter two conditions ($p = .55$).

$F(2, 169) = 1.57$, $p = .21$; all means greater than the scale midpoint: $t_s \geq 4.46$, $p_s < .001$).

Discussion. Taken together, the results of studies 3 and 4 are consistent with our conceptualization of the predicted effect. First, there had to be a salient motivation for more sensations from the desired target. When such a motivation was satisfied and thus no longer activated, like those in a long-term and stable love relationship (study 3), the predicted effect was attenuated. Second, there were no relatively more direct ways to achieve the motivation. That is, participants were less likely to obtain the desired sensations from the desired person, or to turn to another as a replacement (study 4). When such direct ways were deemed as more probable, such as those experiencing a mutual and passionate love or those feeling mere sexual desire, the predicted effect was attenuated. In addition, these three experiences in study 4 were similar in terms of emotional intensity and strength of motivation; the observed effects were thus inconsistent with the alternative explanation of intensity transfer. In the following studies, we examined the conditions that might turn off the predicted effects for people who have a romantic crush.

STUDY 5

If our argument is true, then based on the logic of moderation of process (Spencer, Zanna, and Fong 2005), when people believe their crushes are highly attainable (i.e., they are about to achieve the desired sensations from the target), they may become less likely to seek sensations from unrelated products or services. As a result, the predicted effect may be weakened. We tested this possibility in study 5.

Method

Participants and Design. One hundred forty participants (65 males; $M_{\text{age}} = 34.36$ years, $SD = 13.53$) from MTurk online panel were recruited. The participants were randomly assigned to one of three between-subject conditions (romantic crush vs. highly attainable romantic crush vs. baseline).

Procedure. Participants in the first two conditions completed two tasks, whereas those in the baseline condition performed only the second task. In the first task, entitled “Daily Life Experience,” the participants were instructed that the researchers were interested in collecting information about their daily life experiences. Under this guise, the participants in the romantic crush condition were asked to imagine, as vividly as possible, that they were experiencing a romantic crush on another person to whom they had not revealed their feelings. The participants in the highly attainable romantic crush condition were provided the same instruction as those in the romantic crush condition, except that they were also told the following: “In addition, you realize that this person is actually highly attainable. You know that this person would be very likely to initiate a romantic relationship with you, if you wanted it” (see the web appendix).

In the second task, an ostensibly unrelated survey entitled “Product Preference Survey” was conducted, in which the participants were asked to choose between (1) a small versus a big throw pillow (touch), (2) a light-colored versus a dark-colored painting (visual), (3) a low-volume versus a high-volume video (auditory), (4) a lightly scented versus a strongly scented lavender aromatherapy candle (olfactory), and (5) a weakly flavored versus a strongly flavored tea (gustatory).

Results and Discussion

Product Choice. Similar to studies 1 and 4, we coded each participant’s choice of an option that elicited relatively stronger sensory stimulation as 1 and that of an option that elicited relatively weaker sensory stimulation as 0. As we observed similar patterns of results for these products (see table 4), we summed up the participants’ choices to create an index of preference for strong sensory sensation (with a range of 0–5).

As expected, a significant main effect was observed ($F(2, 137) = 3.25$, $p < .05$). Specifically, the participants in the romantic crush condition had a greater preference for the products or services featuring strong sensory stimulation ($M = 2.71$, $SD = 1.24$) than their counterparts in the highly attainable crush condition ($M = 2.17$, $SD = 1.19$; $F(1, 137) = 5.47$, $p < .05$) and in the baseline condition ($M = 2.23$, $SD = .94$; $F(1, 137) = 4.13$, $p < .05$). No significant difference was observed in the latter two conditions ($F < 1$).

TABLE 4

PERCENTAGE CHOOSING THE STRONGER (VS. WEAKER)
SENSORY OPTION (STUDY 5)

	Romantic crush (<i>N</i> = 48)	Highly attainable romantic crush (<i>N</i> = 48)	Baseline (<i>N</i> = 44)
1. Pillow	68.8%	70.8%	79.6%
2. Painting	43.8%	16.7%	20.5%
3. Video	52.1%	41.7%	50.0%
4. Candle	31.3%	18.8%	6.82%
5. Tea	75.0%	68.8%	65.9%
Average	54.2%	43.3%	44.6%

NOTE.—A binary logistic regression yielded the same conclusion. Participants who were in the romantic crush condition chose significantly more options eliciting stronger sensory stimulation (54.2%) than did those in the highly attainable romantic crush (43.3%; $\chi^2 = 5.64$, $p < .05$) and baseline (44.6%; $\chi^2 = 4.25$, $p < .05$) conditions. No significant difference was observed for the latter two conditions ($p = .79$).

Discussion. The results of moderation in this study are consistent with our proposed mechanism. When the participants in the crush experience condition believed that the desired target was highly attainable—indicating that their desired sensations were more likely to be achieved directly by this target, akin to the feeling in a mutual love relationship—the predicted effect was weakened.

One may wonder whether the highly attainable manipulation reduced the desirability of the crush and thus lowered the strength of the motivation. A post-test showed that this was unlikely. We randomly assigned fifty participants (25 males; $M_{\text{age}} = 33.78$ years, $SD = 10.75$), recruited from the same online panel as in the main study, to one of the two between-subjects conditions (romantic crush vs. highly attainable romantic crush), using the same procedure as in the main study. Participants were asked to report (a) the perceived attainability of the desired target (“To what extent do you think the person you have a crush on is attainable?” 1 = “not attainable at all,” 9 = “very attainable”), (b) the desirability of the target on three items (Q1: “To what extent do you think the person you have a crush on is attractive?”; Q2: “To what extent do you think the person you have a crush on is desirable?”; and Q3: “How excited do you feel about the person you have a crush on?” 1 = “not at all,” 9 = “very attractive/desirable/excited”; $\alpha = .89$, averaged to create an index of desirability), and (c) their involvement (“How involved/interested/engaged were you in the writing task?” 1 = “not at all,” 9 = “very much”; $\alpha = .86$, averaged to create an index of involvement). As expected, participants in the highly attainable romantic crush condition ($M = 7.52$, $SD = 2.08$) indeed perceived the target as being more attainable than did those in the romantic crush experience condition ($M = 5.40$, $SD = 2.80$; $F(1, 48) = 9.23$, $p < .01$).

However, no significant differences were found in terms of the desirability of the target ($M_{\text{crush}} = 7.75$, $SD = 1.37$; $M_{\text{highly-attainable-crush}} = 8.05$, $SD = 1.29$; $F < 1$) or their involvement ($M_{\text{crush}} = 6.93$, $SD = 2.11$; $M_{\text{highly-attainable-crush}} = 6.80$, $SD = 2.02$; $F < 1$). Study 6 then examined another moderator.

STUDY 6

If our argument is true, then based on the logic of moderation of process (Spencer et al. 2005), when people believe their desired target is not exclusive (i.e., the target may be replaced by another), they may be less likely to seek sensations indirectly from unrelated products and services. In study 6, we tested this moderator: the perceived exclusivity of the relationship partner.

Method

Participants and Design. Two hundred participants (115 males; $M_{\text{age}} = 37.26$ years, $SD = 11.01$) recruited from MTurk took part in the study for payment (US\$.50). They were randomly assigned to conditions of a 2 (experience: romantic crush vs. control) $\times$ 2 (exclusivity: yes vs. no) between-subjects design.

Procedure. Participants were informed that the study consisted of several unrelated tasks conducted by different researchers. In the first task, entitled “Daily Experience Study,” the participants in the romantic crush condition were asked to imagine, as vividly as possible, that they were experiencing a romantic crush. Those in the control condition were asked to describe their typical day (see the web appendix).

After that, the participants were asked to complete an ostensibly unrelated second task entitled “Reading Comprehension Task,” in which they were told that the researchers were interested in assessing people’s understanding of scientific materials (for a similar method, see Chiu, Hong, and Dweck 1997). Under this guise, in the exclusive condition, the article highlighted romantic experience as exclusive, such that the number of targets a person could have strong romantic feelings for was extremely limited:

Over the years, psychological research has found strong evidence that the number of targets that a person can have strong romantic feelings towards is extremely limited. *The romantic targets one may consider as true love at a particular point in time might be only one.* In his talk at the American Psychological Association’s annual convention held in Washington D.C. in August, Dr. George Medin argued that “for most of us, there is **a limit** as to how many times we can have a crush toward and fall in love with someone.” He reported numerous large longitudinal studies showing that romantic love is quite exclusive: over a

lifetime, there are only one or two romantic partners people would consider as “true love.”

In the nonexclusive condition, participants read a similar article, except it contended that a person could have strong romantic feelings for many targets, and there was no limit to how many times one could have romantic feelings for someone.

After the participants finished reading the article, they were asked to give it a title and summarize its main message in their own words. The titles people generated included “There Is Only One Love for You,” “Only One True Soul Mate,” and “True Love Is Limited” in the exclusive condition, and “Unlimited Romance,” “True Love Happens Many Times,” and “True Love Is Unlimited” in the nonexclusive condition.

In the third and ostensibly unrelated survey entitled “Product Preference Survey,” participants were asked to make a choice between (1) a light versus a heavy hand gripper (touch), (2) a light-colored versus a dark-colored postcard (visual), (3) low-volume versus high-volume store background music (auditory), (4) a lightly scented versus a strongly scented lavender aromatherapy candle (olfactory), and (5) slightly spicy versus very spicy chicken wings (gustatory).

Results and Discussion

Product Choice. As in our previous studies, we first coded and then summed up the participants’ choices of the five pairs of products to create an index of preference for strong sensory sensation (with a range of 0–5; 1 = choice that elicited a relatively stronger sensory stimulation; 0 = choice that elicited a relatively weaker sensory stimulation; see [table 5](#) for item-specific results). A 2 (crush) $\times$ 2 (exclusivity) ANOVA revealed an expected significant interaction ($F(1, 196) = 5.71, p < .05$). Replicating the findings of prior studies, of the participants who read that a romantic feeling was exclusive, those in the romantic crush condition demonstrated a greater preference for the products or services eliciting strong sensory stimulation ($M_{\text{crush}} = 1.96, SD = 1.18; M_{\text{control}} = 1.45, SD = 1.19; F(1, 196) = 4.27, p < .05$). However, this effect was mitigated among those who read that one could experience romantic feelings for different people ($M_{\text{crush}} = 1.36, SD = 1.16; M_{\text{control}} = 1.69, SD = 1.36; F(1, 196) = 1.73, p = .19$). Similarly, among participants in the romantic crush conditions, reading that a romantic feeling was exclusive (vs. not) increased their desire for the products or services eliciting strong sensory stimulation ($F(1, 196) = 5.93, p < .05$). No such effect occurred among participants in the control conditions ($F(1, 196) = 4.27, p = .34$).

As shown in [table 5](#), there seemed to be some interesting differences across the sensory domains, particularly under the nonexclusive conditions. The differences across

sensory domains are worthy of future investigation (see the General Discussion).

Discussion. The results of this study are consistent with our proposed mechanism and show another moderator. When participants involved in a crush experience believed that the target of their romantic feelings was not exclusive—implying that they could find other social targets to fulfill their desire—the predicted effect became unreliable.

STUDY 7

In study 7, we further examined our theorizing by clarifying the role of an inherent feature of romantic crushes: the admirers have not revealed their feelings yet. As per our theory, the predicted effect resulted from people with a romantic crush having a salient motivation to experience more sensory stimulations from their desired target, but being unable to fulfill it directly. Being secretive or not, *per se*, was not the key.

We included six additions in this study, including one noncrush control condition and five crush conditions: (a) people with a crush have not expressed their feelings to anyone; (b) people with a crush have revealed their feelings to and received positive responses from the desired target; (c) people with a crush have revealed their feelings to and received negative responses from the desired target; (d) people with a crush have revealed their feelings to but have not received any response from the desired target; and (e) people with a crush have revealed their feelings to a friend, but not to the desired target. If being secretive was the key, then the predicted effects should have disappeared under conditions b through e. If our theory was correct, then the predicted effects could have still held under conditions d and e, but might have been mitigated under conditions b and c. Specifically, when the desired target provided positive responses, as in b, a mutual relationship might have been initiated. When the desired target provided negative responses, as in c, the motivation might have dissipated. We tested these possibilities in study 7, using another real behavior (choice of a set of paintings) as the dependent variable.

Method

Participants and Design. Four hundred seventy-eight participants (202 males; $M_{\text{age}} = 35.97$ years, $SD = 12.32$) recruited from MTurk participated in the study for a payment of US\$.50. They were randomly assigned to one of six between-subject conditions (experience: unexpressed romantic crush vs. romantic crush expressed to the target with positive responses received vs. romantic crush expressed to the target with negative responses received vs. romantic crush expressed to the target with no response

TABLE 5
PERCENTAGE CHOOSING THE STRONGER (VS. WEAKER) SENSORY OPTION (STUDY 6)

	Exclusive		Nonexclusive	
	Romantic crush (<i>N</i> = 57)	Control (<i>N</i> = 44)	Romantic crush (<i>N</i> = 44)	Control (<i>N</i> = 55)
1. Gripper	50.9%	43.2%	40.9%	27.3%
2. Postcard	33.3%	31.8%	25.0%	47.3%
3. Music	38.6%	20.5%	27.3%	29.1%
4. Candle	24.6%	18.2%	11.4%	30.9%
5. Wings	49.1%	31.8%	31.8%	34.6%
Average	39.3%	29.1%	27.3%	33.8%

NOTE.—A binary logistic regression with the exclusivity condition, the crush condition, and their interaction as the independent variables. Product choice as the dependent variable revealed an expected exclusivity $\times$ crush interaction effect ($b = .77$, $SE = .28$, $Wald = 7.72$, $p < .01$). Specifically, of the participants led to perceive romantic feelings as exclusive, those in the romantic crush condition chose significantly more options eliciting stronger sensory stimulation than did those in the control condition (39.3% vs. 29.1%; $\chi^2 = 5.70$, $p < .05$). No such effects were obtained for those in the nonexclusive condition (27.3% vs. 33.8%; $\chi^2 = 2.45$, $p = .12$).

received vs. romantic crush expressed to a friend vs. control. The participants were told that the experimental session consisted of two unrelated tasks conducted by different researchers.

Procedure. In the first task, entitled “Daily Experience Study,” the participants were instructed that the researchers were interested in collecting information about people’s various life experiences. Under this guise, participants in the “unexpressed romantic crush” condition were asked to imagine, as vividly as possible, that they were experiencing a romantic crush on another person and that they had not yet expressed their feelings to that person. Participants in the “romantic crush expressed to the target with positive (or negative) responses received” conditions were instructed to imagine that they had expressed their romantic crush experiences to the target, and they had received positive (or negative) responses from the target. Participants in the “romantic crush expressed to the target with no response received” condition were asked to imagine that they had expressed their romantic crush experiences to the target, but had not yet received any response from the target. Participants in the “romantic crush expressed to a friend” condition were asked to imagine that they were experiencing a romantic crush on another person and that they had expressed their feelings to a friend. Those in the control condition were asked to describe their typical day (see the [web appendix](#) for the detailed instructions).

Afterward, all of the participants proceeded to a second, ostensibly unrelated task entitled “Painting Evaluation Task” in which they were asked to view 10 paintings for future experimental use. Color has three dimensions: hue, value, and saturation (Thompson, Palacios, and Varela 1992). In prior studies, we used darkness/lightness (value) to manipulate sensory stimulation; in this study, we used brightness/dimness (saturation) to do so (Batra and Ghoshal 2017). Specifically, the participants were asked to choose to view a set of paintings from two options: one

brighter set and one dimmer set. They were presented with a sample painting from each of the two sets, and were told that the sample was representative of their corresponding set in terms of the color scheme.

A pretest was conducted with 82 participants (38 males; $M_{age} = 35.40$ years, $SD = 11.63$) from the same online panel as the main study to verify our manipulation. The participants were presented with all 20 paintings. For each painting, they reported (a) the attractiveness based on two items (“Please provide us your overall evaluation of this painting” 1 = “not attractive at all/dislike it very much,” 9 = “very attractive/like it very much”; averaged to create an index of attractiveness of each painting, $r_s \geq .79$, $p_s < .001$) and (b) the extent to which each painting was sensory stimulating (following a four-item scale adopted from Batra and Ghoshal 2017, including vibrant, bright, bold, and vivid, on a scale from 1 = “does not describe the color of the painting at all” to 9 = “describes the color of the painting perfectly”; averaged to create an index of the perceived sensory stimulation of each painting, $\alpha_s \geq .79$). The results show that, as manipulated, the 10 brighter paintings were indeed perceived as being more sensory-stimulating than the 10 dimmer paintings ($M_{bright} = 5.18$, $SD = 1.01$; $M_{dim} = 4.35$, $SD = 1.03$; $F(1, 81) = 44.73$, $p < .001$). We then selected one brighter painting and one dimmer painting as the two sample paintings used in the main study. No differences were found between the attractiveness of these two paintings ($M_{bright} = 6.40$, $SD = 1.77$; $M_{dim} = 6.40$, $SD = 1.91$; $F < 1$).

After the participants indicated their choices, they were presented with their chosen set of paintings to view. Lastly, the participants reported their demographic details and were funnel-debriefed. None of the participants correctly guessed the purpose of this study.

Results and Discussion

Painting Choice. As expected, participants in the “unexpressed romantic crush” condition (51.3%) were

more likely to choose to view and evaluate the brighter set of pictures than those in the control condition (35.2%, $\chi^2 = 4.39$, $p < .05$), those in the “romantic crush expressed to the target with positive responses received” condition (35.9%, $\chi^2 = 3.78$, $p = .05$), and those in the “romantic crush expressed to the target with negative responses received” condition (34.1%, $\chi^2 = 4.85$, $p < .05$).

No significant differences were obtained between participants in the “unexpressed romantic crush” condition (51.3%), “romantic crush expressed to a friend” condition (45.3%, $\chi^2 = .50$, $p = .48$), or “romantic crush expressed to the target with no response received” condition (50.0%, $\chi^2 = .03$, $p = .87$).

Discussion. In summary, the results of this study are consistent with our predictions. Being secretive was not the key; rather, it was important that the participants had the salient motivation but lacked a direct way to achieve it.

Under the condition where participants received a negative response from their crush, the effect was “turned off.” We interpreted this as indicating that under this condition, the desired end state might have dissipated. Without the heightened motivation, the predicted effect was less likely to occur. However, we acknowledge that being rejected by a desired partner, especially in an actual relationship breakup, could lead to depressing and painful experiences (Mearns 1991). Such situations are beyond the scope of this article.

GENERAL DISCUSSION

In this article, we ask a question of concern to researchers and practitioners alike: can the salient experience of a romantic crush—as a common subjective experience—systematically shift consumers’ general preference for strong or weak sensory stimuli? Across seven studies, we found converging evidence that when the experience of a romantic crush was salient, consumers who had that experience had an enhanced preference for products and services eliciting a strong (vs. weak) level of sensory stimulation. This effect held across a broad array of product and service categories (e.g., strongly flavored food or loud music).

In these studies, we compared the effect of a romantic crush with that of a neutral experience (studies 1 and 2), a stable, long-term romantic love relationship (study 3), a mutual, passionate love relationship (study 4), and an unmet sexual desire (study 4). We also showed that the observed effect was driven by participants’ salient motivation for achieving greater sensory stimulations from their desired partners (study 3). Finally, in studies 5–7, we provided further evidence of our conceptualization using moderations.

To increase the generalizability of the predicted effects, we used different methods to activate the romantic crush condition, with multiple products and services serving as

the dependent stimuli. We also collected data on two real behavior measures (chocolate bar choice in study 2, and choice of paintings in study 7). We also showed that our results could not be explained by alternative explanations, such as intensity transfer (study 4).

Lastly, we conducted an additional study (reported in the [web appendix](#)) to explore a boundary condition of the effect demonstrated in this research. We wondered whether a salient experience of a romantic crush would lead consumers to have an enhanced preference for all strong sensory stimuli. What if the sensory stimulations elicited by a product or a service were clearly negative? We examined the role of stimuli valence in this additional study, using another real behavior (i.e., participants’ adjustment of sound volume) as the dependent variable. The results show that the experience of a romantic crush did not necessarily lead people to prefer any stimuli that elicited strong sensory stimulations. When the sensory stimulation elicited was clearly negative (e.g., listening to unpleasant soundtracks), there were no reliable differences between participants in the romantic crush and control conditions.

Theoretical Contributions

Our article makes a couple of theoretical contributions. First, our findings contribute to the limited psychology literature on the romantic crush experience (Adams-Price and Greene 1990; Furman and Collins 2009; Hurlock and Klein 1934; Oettingen and Mayer 2002) and formally investigate the impact of this experience on consumer decision-making. According to the results of our studies, a romantic crush is a common yet unique experience; once salient, it can have a powerful influence on consumers’ preferences.

Second, this article extends the current literature on sensory marketing (Krishna and Morrin 2008; Shen, Zhang, and Krishna 2016; for a review, see Krishna and Schwarz 2014) as well as research on arousal in general (Mogilner, Kamvar, and Aaker 2011). Previous research has shown that individual factors, such as personality traits (Sales 1971) or age (Mogilner et al. 2011), might shape one’s preference for strong versus weak stimuli. To the best of our knowledge, our article is one of the first (see Batra and Ghoshal 2017 for an exception) to examine how a temporarily activated, subjective experience can shift consumers’ preferences for stronger sensory stimuli. Batra and Ghoshal (2017) show that to cope with the aversive threats, consumers prefer high-intensity sensory consumptions in the visual and auditory domains. The current study extends their work in two ways. We identify a different route and show that a rewarding state, such as having a romantic crush on a special other, can also enhance consumers’ preference for products and services that elicit strong sensory stimulations. Furthermore, we examine the effects on all five sensory domains.

Third, our study contributes to the motivation literature by providing more evidence that goal-driven preference has a hierarchy. When the direct means are readily available, a goal's influence on indirect means may become less pronounced. People experiencing a mutual, passionate love relationship, mere sexual desire, and a romantic crush may be motivated to obtain greater sensations for a desired social target. However, people involved in the former two experiences may act more directly to satisfy that motivation. As a result, they are less likely to seek sensation satisfaction from nonsocial entities such as products and services (study 4). Future research should think of creative methods to directly test this hierarchy, probably by presenting different means in the same choice context.

Managerial Implications

Our research also has important managerial implications. Many consumers currently choose to disclose their relationship status through social media, including whether they have a secret crush on someone. It would be worthwhile for marketers to customize the content of their direct marketing messages to match products with consumers' romantic states. For example, marketers should target those who currently have crushes with products involving strong stimuli (e.g., 4D movies, strongly flavored coffee). Similarly, when promoting these products and services with rich sensory elements, it may be wise for marketers to place their advertising in television programs or movies that feature romantic crush themes.

Limitations and Future Directions

In our studies, we used both recall and imagined experience to induce romantic crushes. Future studies may consider inducing romantic crushes in more natural contexts (e.g., eliciting or measuring romantic crushes at events organized by student clubs).

In our studies, we operationalized the stronger versus weaker sensory stimulations in different ways and found consistent results. For example, we used stimuli representing each of the five senses (studies 1, 4, 5, and 6) and used an overall level of sensory stimulation (study 3) as the dependent variables. However, in each sensory domain, we manipulated the high or low sensations using only a few factors. Specifically, we used visual (color: dark or light; bright or dim), auditory (sound volume: high or low), gustatory (spicier taste, richer flavors), olfactory (strong or light scent, scented or nonscented), and haptic (heavy or light, rugged or smooth, big or small) factors. To provide a more complete picture of the predicted effect, future research should examine other ways to manipulate the level of sensory stimulation. For example, in the auditory domain, a high or low tempo or different genres of music

could offer ways other than sound volume to change the level of auditory stimulations.

Moreover, our underlying mechanism involves two steps: (a) increased desire for sensory contact and (b) failure to gain the sensory contact directly from human beings. We tested the first link in study 3 and examined the second link in studies 4–7. We hope future research can develop more creative methods to capture the whole process directly within a single study context.

Another limitation is that we did not examine any relative differences in the effects of a romantic crush between different modalities. The result patterns across different modalities in our studies were generally consistent. However, we think the following speculations are worthy of future investigation.

A recent finding on sensory imagery suggests that the five sensory domains differ in terms of psychological distance (Elder et al. 2017). For example, taste and touch have a relatively closer psychological distance than the other three senses (hearing, sight, and smell). One may wonder whether the psychological distance of the senses affects the strength of the effect we documented. We explored this possibility by averaging the dependent measures based on their associated psychological distance. Specifically, we grouped the items measuring taste and touch senses together and the items measuring hearing, sight, and smelling together. In studies 1 and 6, we observed no significant interaction effect between the manipulation of a romantic crush and the psychological distance of the senses. However, the predicted effects were stronger for the distant sensory (sight, hearing, and smell) group in both study 4 (for the distant sensory group: $M_{\text{crush}} = 1.15$, $SD = .80$, $M_{\text{passionate_love}} = .88$, $SD = .70$, $M_{\text{unmet_sexual_desire}} = .67$, $SD = .72$; for the close sensory group: $M_{\text{crush}} = .77$, $SD = .67$, $M_{\text{passionate_love}} = .62$, $SD = .63$, $M_{\text{unmet_sexual_desire}} = .71$, $SD = .63$; interaction: $F(2, 169) = 3.62$, $p < .05$) and study 5 (for the distant sensory group: $M_{\text{crush}} = 1.27$, $SD = 1.03$, $M_{\text{highly_attainable_crush}} = .77$, $SD = .81$, $M_{\text{baseline}} = .77$, $SD = .80$; for the close sensory group: $M_{\text{crush}} = 1.44$, $SD = .68$, $M_{\text{highly_attainable_crush}} = 1.40$, $SD = .71$, $M_{\text{baseline}} = 1.45$, $SD = .66$; interaction: $F(2, 137) = 3.07$, $p = .05$). We speculate that there are two possible reasons for these intriguing results. First, sight and hearing are the two most frequently used and easier-to-imagine senses for people, which may strengthen the effects on these two senses. Second, the psychological distance of the focal experience in our article—that is, the romantic crush—may be more congruent with the psychological distance of sight and hearing (vs. taste, touch, and smell), perhaps because in such an experience people have not achieved the closeness they desire with the target. We hope future research can extend our work by examining the subtler differences between each sensory domain.

Finally, a potential avenue for further research is how consumers feel about the strong sensory stimulation when they actually experience the product or service. Can a romantic crush influence consumers' sensory sensitivity (Cavanaugh and Lee 2016; Hoegg and Alba 2007)? For example, these consumers may have a sharpened or numbed sensitivity and perceive the same option as stronger or weaker in actual consumption. Future investigation into the sensory sensitivity of these consumers awaits.

DATA COLLECTION INFORMATION

The second author supervised the collection of data for study 1 (March 2014) by research assistants at the University of Toronto's Rotman Behavioral Research Lab. The first author supervised the collection of data for the conceptual replication for study 1 (January 2018; reported in the [web appendix](#)) as well as study 2 (December 2017 and February 2018) by research assistants at Nanyang Technological University. The first and second author supervised the data collection for study 3 (September 2014), study 4 (pretest: March 2017; main study: November 2016; post-test: December 2017), study 5 (November and December 2016; post-test: November 2017), study 6 (May 2017), study 7 (pretest: December 2017; main study: December 2017), the additional study mentioned in the General Discussion and reported in the [web appendix](#) (December 2016), and the test of the dependent measures (December 2016; reported in the [web appendix](#)) on Amazon Mechanical Turk with the help of a research assistant. The third author supervised the data collection for the additional study reported in the [web appendix](#) (November 2016) by research assistants at the Chinese University of Hong Kong. The first and second authors jointly analyzed these data.

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