

# Playing the Field: The Effect of Fertility on Women's Desire for Variety

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Previous research finds that ovulation—the time each month when women are most fertile—can shift women's mating psychology and increase their desire for new options in men. However, might ovulation also increase women's desire for new products? Four studies find that women select a greater number of unique options from consumer product sets at high fertility. This effect is especially strong for women in committed relationships. Additional findings show that the fertility shift in desire for variety in products is driven by the fertility shift in desire for new options in men activating a variety-seeking mind-set. Subsequently, loyalty to a romantic partner, whether manipulated or measured, moderated the effect of fertility on consumer variety seeking. This research contributes to the literature by revealing when, why, and how fertility influences desire for variety in consumer choice and highlights the mating motives that underlie this effect.

Consider two friends deciding on a restaurant for dinner. One suggests a renowned steakhouse chain with a stable, single-course menu. The other suggests a local fusion restaurant with an eclectic and ever-changing tasting menu. These two options can be construed as representing a desire for something familiar versus a desire for something new. While many factors likely contribute to such individual differences in preference, is it possible that biology might play a role? Could women's preference for more or less variety in consumer choice be influenced by the hormones that regulate women's fertility?

Previous research suggests that ovulation—the time each month when women are most fertile—increases women's openness to novelty and variety in men (e.g., Durante and Li 2009; Faraji-Rad, Moeini-Jazani, and Warlop 2013; Gangestad and Thornhill 2008; Larson et al. 2013). Openness

to variety at high fertility likely enhanced women's reproductive success by leading women to consider a wider pool of mating options, including the consideration of men other than a current partner. We propose that the fertility-regulated desire for new options in men is carried over to a desire for greater variety in consumer choice at high fertility. We test this idea in a series of studies, including an examination of the process by which fertility increases desire for variety in products. We also theoretically derive and identify important boundary conditions for this effect. Overall, this research contributes to the consumer behavior literature by revealing how, why, and when mating goals associated with increased fertility influence women's desire for variety.

## THE OVULATORY CYCLE

Each month women experience a biological ovulatory cycle that regulates fertility. The ovulatory cycle spans approximately 28 days, during which a woman can only become pregnant on about seven of these days that surround ovulation. Ovulation occurs on day 14 of a 28-day cycle and is accompanied by an increase in the ovarian hormone estrogen (Lipson and Ellison 1996). Levels of estrogen peak in the ovulatory (or follicular) phase just before ovulation (day 13 of a 28-day cycle; Jones 1997; Roney and Simmons 2013) and drop back to baseline a few days after ovulation (Venners et al. 2006). Because ovulation is the only time women's sexual behavior can result in pregnancy, the rise in estrogen near ovulation has been found to influence women's attitudes, preferences, and behaviors in specific

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ways (Roney and Simmons 2013; Thornhill and Gangestad 2008; Venners et al. 2006).

### The Ovulatory Shift Hypothesis

After noting that female nonhuman mammals experience a shift in mate preferences at high fertility (e.g., Knott et al. 2010; Pieta 2008; Stumpf and Boesch 2005), researchers reasoned that the same shift should be seen in humans and proposed the “ovulatory shift hypothesis” (Gangestad and Thornhill 1998). The ovulatory shift hypothesis posits that women should experience increased sexual attraction to men possessing purported markers of genetic fitness when fertile in their cycles (Thornhill and Gangestad 2008). Research inspired by this hypothesis has found that ovulating women have increased sexual desire for men who display facial symmetry and attractiveness (Gangestad and Thornhill 1998; Gangestad, Thornhill, and Garver-Apgar 2005; Pillsworth and Haselton 2006), masculinity (Penton-Voak and Perrett 2000; Puts 2005, 2006), and social dominance (Cantu et al. 2014; Durante et al. 2012; Gangestad et al. 2007). Each of these traits is purported to be a reliable cue to genes that were beneficial in ancestral environments. An ovulatory increase in women’s sexual attraction to men who possess these markers is thought to have evolved because it served to garner indirect genetic benefits for offspring. That is, ancestral women who became more sexually receptive to men high in genetic fitness near ovulation would subsequently produce offspring who were also relatively high in genetic quality (see Gildersleeve, Haselton, and Fales [2014] for a meta-analysis).

Some research has found the ovulatory shift in sexual attraction to men who possess markers of genetic fitness to be stronger for partnered women, with the sexual preference often directed toward men *other than* a woman’s primary partner (Havelicek, Roberts, and Flegr 2005; Little et al. 2002; Pillsworth and Haselton 2006). Consistent with this, women also report greater interest in other men and increased probability that they will date and have a brief affair with a man other than their current partner when fertile (Durante and Li 2009; Gangestad, Thornhill, and Garver-Apgar 2010). And one study found the frequency of sex with a man other than a primary partner to be higher near ovulation (Bellis and Baker 1990).

In addition, women in relationships experience a decrease in satisfaction with their current partner near ovulation (Durante and Li 2009; Jones et al. 2005; Larson et al. 2013). Specifically, near ovulation women feel less satisfied with their current partner and are more critical of their partner’s faults. However, there are important boundary conditions to this effect. Ovulation enhances intimacy and desire for one’s current partner only for those women who are strongly bonded to their current partner (Eastwick and Finkel 2012; Sheldon 2007; Sheldon et al. 2006) or whose partner is high in physical attractiveness and thus is someone who displays markers of genetic fitness (Larson et al. 2012, 2013). A decrease in relationship satisfaction near ovulation can enhance a woman’s ability to secure the best available mate

by freeing her from emotional ties that could circumvent her ability to consider other, more optimal options in men (Kenrick et al. 2010).

To enhance the likelihood of finding a more optimal option, women may seek to expand the pool of mates they have to choose from. This would be akin to a fisherman casting a wider fishing net because doing so increases the likelihood of catching that lucrative big fish. In much the same way, women should seek to cast a wider net into the mating pool at ovulation. Importantly, we are not suggesting that women become sexually receptive to multiple men near ovulation. In fact, women become much more discriminating when it comes to choice of a sexual partner when fertile (Thornhill and Gangestad 2008). They should, however, desire more mating options to compare, contrast, and evaluate (or “sample” in the form of a date or conversation) in order to enhance the probability of finding the best sexual partner available (i.e., a final choice of only one—most optimal—sex partner). One way for ovulating women to expand their mating pool and increase their options is to be open to variety.

### FERTILITY, VARIETY SEEKING, AND CARRY-OVER EFFECTS

Variety seeking is often defined as openness to exploring alternative options, to switch away from a previous choice, and hedge against the possibility of not finding the best option available (Farquhar and Rao 1976; Kahn, Kalwani, and Morrison 1986; Pessemier 1978). If women seek to optimize mate choice near ovulation via a desire for alternative options in men, it is therefore possible that the shift in desire for new options in men at high fertility activates a variety-seeking mind-set that can influence choice behavior in other domains. Previous research has found that goal-directed behavior in one situation can often be carried over into other, unrelated situations (e.g., Dhar, Huber, and Kahn 2007; Gollwitzer, Heckhausen, and Steller 1990; Wyer and Xu 2010; Xu, Shen, and Wyer 2012; Xu and Wyer 2008). For example, one study found that asking people to generate a variety of responses to questions about animals led them to choose a greater variety of consumer products (Shen and Wyer 2010). It is reasoned that these effects occur because the activation of a specific behavioral mind-set (or specific mode of processing) relevant to one situation can subsequently affect decisions in other situations (Wyer and Xu 2010). In the same vein, variety seeking in mate choice at high fertility may lead women to also seek variety in other choice categories, including consumer products.

Consistent with this idea, preference for more options and greater variety in products has been found to be influenced by our interpersonal relationships, whereby decreased commitment to a social relationship can increase preference for variety in consumer choice. For example, individuals who feel independent of other people prefer more choice (Iyengar and Lepper 1999; Kim and Drolet 2003; Markus and Kitayama 1991; Ybarra, Lee, and Gonzalez 2012). Specifically,

people who feel like their relationships are less secure and supportive desire flexibility when making decisions and subsequently prefer more choice and variety (Ybarra et al. 2012). In contrast, individuals in supportive, committed relationships experience increased feelings of security and loyalty, which reduces their desire for choice and variety. It is possible that less loyalty and security in one's relationship leads to desire for variety because it enables people to consider alternative options when the current relationship is not fulfilling. Thus, the effect of fertility on women's desire to seek variety in mate choice may activate a generalized variety-seeking mind-set that is subsequently carried over to choice behavior in other domains (see fig. 1 for a depiction of our conceptual model).

## OVERVIEW OF CENTRAL PREDICTIONS

Building on the finding that decreased loyalty and felt security in social relationships leads to an increased desire for variety in consumer choice (Ybarra et al. 2012), and on previous research that suggests that fertility decreases women's relationship satisfaction and increases their desire for new options in men (Durante et al. 2012; Gildersleeve et al. 2014; Larson et al. 2012, 2013), we propose that the hormones that regulate fertility should lead women to desire variety in consumer products.

**H1A:** Women will seek more variety in consumer choice at high fertility compared to low fertility.

Although both single and partnered women can benefit from considering a wider set of mating options near ovulation, the desire for variety at ovulation should be stronger for women in relationships. Women in relationships have the most to gain from a fertility-regulated increase in desire for variety because this desire can enhance motivation to consider options other than a current partner. This would be especially important when one's current relationship is not fulfilling. Given that relationship indicators appear to play an important role in consumer variety seeking, we predicted that the fertility shift in desire for variety in products should be stronger for women in relationships. Formally:

**H1B:** The effect of fertility on variety seeking should be stronger for women in relationships compared to single women.

Finally, we propose that the effect of fertility on women's desire for new options in men activates a variety-seeking mind-set. Thus, we predict that the psychological process underlying women's desire for variety in products near ovulation is a generalized variety-seeking mind-set.

**H2:** A variety-seeking mind-set should mediate the effect of fertility on consumer variety seeking, whereby ovulating women should seek greater variety in product choice via a fertility-induced variety-seeking mind-set.

## STUDY 1: FERTILITY, VARIETY SEEKING, AND THE ROLE OF MIND-SET

The first study sought to test hypothesis 1, examining whether women seek more variety in consumer choice sets at high fertility and whether this effect is stronger for women in relationships. We examined women's choices across the cycle in four different product categories: lipstick, high heels, yogurt, and candy bars. Further, study 1 sought to test whether fertility leads women to seek variety via a variety-seeking mind-set (hypothesis 2).

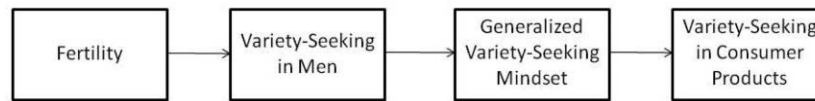
### Method

**Participants.** Three hundred US women 18–40 years of age were originally recruited from Amazon Mechanical Turk (MTurk). Women were paid \$0.75 for their participation. Following recommendations from previous menstrual cycle research (e.g., Durante, Li, and Haselton 2008; Gangestad, Thornhill, and Garver 2002; Pillsworth and Haselton 2006; see Gildersleeve et al. 2014), we excluded women if they did not meet the established criteria that enables estimation of fertility status. We excluded women if they did not complete the menstrual cycle questions on the survey or were not certain of the start date of their last menstrual period, and thus fertility status could not be estimated. We excluded women with an average menstrual cycle length shorter than 25 days or longer than 35 days. These women are at an increased likelihood of experiencing anovulatory cycles (i.e., cycles in which they do not ovulate and are thus not fertile; Harlow 2000). We excluded women who reported currently taking hormonal contraception or having used hormonal contraception within the last three months (e.g., the pill, hormonal IUD, vaginal ring) or who reported being pregnant. Pregnant women and women on hormonal contraception do not ovulate because contraception and pregnancy disrupts the normal fluctuation of hormones across the menstrual cycle and eliminates ovulation (Fleischman, Navarette, and Fessler 2010; Nassaralla et al. 2011). Of the women originally recruited, 156 women were excluded from the data set because they met one or more of the above criteria. See Durante et al. (2014) for further details on the MTurk recruiting process.

Although we advertised the study on MTurk as a study for women aged 18–40, some women over the age of 40 did complete the survey. Two women over the age of 40 reported regular menstrual cycles, and we were able to estimate their fertility status so we retained them in the final data set. The final sample included 144 female participants ( $M_{\text{age}} = 29.69$ ,  $SD = 6.24$ , ranging 18–47 years).

**Assessing Fertility.** Because we collected data from women across the entire cycle, we used the established reverse cycle day (RCD) method to predict day of ovulation for each participant (see Durante et al. 2014; Haselton and Gangestad 2006; Miller et al. 2007). Specifically, we obtained from participants (1) the start date of their last menstrual period and previous menstrual period, (2) the expected

FIGURE 1  
CONCEPTUAL MODEL



start date of their next menstrual period, and (3) the typical length of their menstrual cycle. On the basis of the RCD method, women were divided into a *high fertility* group and a *low fertility* group.

The chance of becoming pregnant from one act of sexual intercourse increases substantially during the ovulatory phase of the cycle (Wilcox et al. 2001). Thus, following established measures of conception probability (Wilcox et al. 2001), the high fertility group consisted of women who had a conception probability above 5% (cycle days 9–17,  $n = 51$ ). The low fertility group consisted of women who had a lower conception probability within the cycle (cycle days 1–8 and 18–28;  $n = 93$ ).

*Design and Procedure.* Participants were told that the study involved making various product choices. To assess variety seeking, participants were asked to select 15 options for an upcoming 15 days from four consumer product categories: lipstick, high heels, yogurt, and candy bars. For example, participants were presented with 20 lip colors and asked to select a color for each day of an (imagined) upcoming vacation (days 1–15; see the appendix). Participants were informed they could select as many or as few lip colors as they preferred. The number of unique options chosen from each category represented a measure of variety seeking (Kahn and Isen 1993; Roehm and Roehm 2005).

To measure variety-seeking mind-set, we used items adapted from previous research on variety and sensation seeking (Arnett 1994; Zuckerman 1971). Women reported their agreement with the following eight items (7-point scale: 1 – definitely disagree; 7 – definitely agree): (1) “I like a movie where there are a lot of explosions and car chases”; (2) “When the water is very cold, I prefer not to swim even if it is a hot day”; (3) “It would be exciting to try some of the new hallucinogenic drugs”; (4) “I like to mix it up and try new foods”; (5) “I think it’s fun and exciting to perform or speak before a group”; (6) “In general, I work better when I am under pressure”; (7) “When taking a trip, I think it is best to make as few plans as possible and just take it as it comes”; and (8) “If it were possible to visit another planet or the moon for free, I would be among the first in line to sign up.” The items were coded such that high numbers reflected greater sensation seeking and collapsed to form a composite measure ( $\alpha = .53$ ). Participants also indicated whether they were (1) single or dating more than one person ( $n = 26$ ) or (2) in a committed relationship with one partner ( $n = 118$ ).

## Results and Discussion

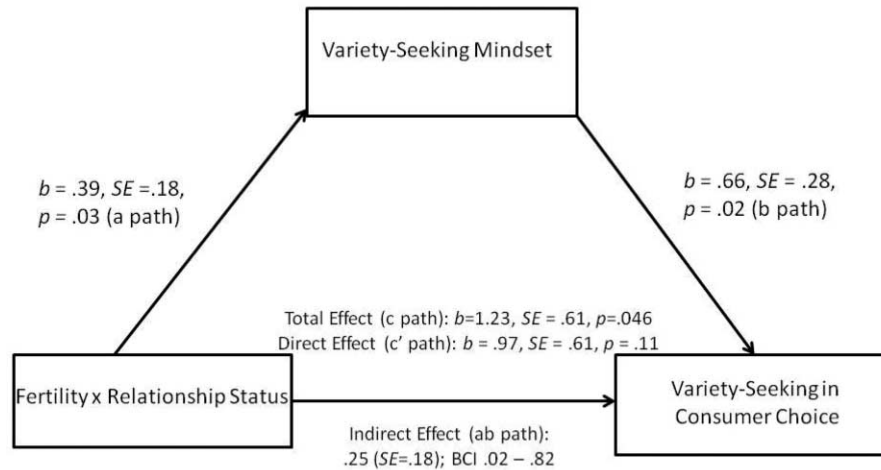
Because previous research has shown that women seek to enhance their attractiveness at high fertility (Durante et al. 2008, 2011), and because two of our consumer products can be construed as enhancing attractiveness (i.e., lipstick and high heels), we first ran a repeated measures ANOVA with product type (attractiveness enhancing [lipstick, heels] vs. not [yogurt, candy bars]) as a within-subjects factor and fertility (high vs. low) and relationship status (single vs. in a relationship) as between-subjects factors to confirm that there was no effect of product type on variety seeking, nor an interaction with fertility. There was no three-way interaction between fertility, relationship status, and product type ( $p = .48$ ), nor were there any second-order interactions between fertility and product type ( $p = .55$ ) or relationship status and product type ( $p = .96$ ). Thus, the four product categories were converted into a variety-seeking composite ( $\alpha = .74$ ) for final analysis.

*Variety Seeking in Consumer Choice.* An ANOVA revealed a trend toward increased variety seeking at high fertility ( $M_{\text{high fertility}} = 8.22$ ,  $SD = 3.69$  vs.  $M_{\text{low fertility}} = 7.48$ ,  $SD = 2.97$ ;  $F(1, 142) = 1.69$ ,  $p = .19$ ,  $d = .22$ ). However, when the relationship status variable (single vs. in a relationship) was added to the model, there emerged a significant fertility by relationship status interaction,  $F(1, 140) = 4.31$ ,  $p = .04$ . Consistent with hypothesis 1B, simple effects tests showed a main effect of fertility on variety seeking for women in relationships,  $F(1, 140) = 4.46$ ,  $p = .037$ ,  $d = .40$ . Partnered women sought more variety at high compared to low fertility ( $M_{\text{high fertility}} = 8.64$ ,  $SD = 3.78$  vs.  $M_{\text{low fertility}} = 7.31$ ,  $SD = 2.90$ ). In contrast, there was no effect of fertility on variety seeking for single women ( $M_{\text{high fertility}} = 6.96$ ,  $SD = 3.22$  vs.  $M_{\text{low fertility}} = 8.56$ ,  $SD = 3.28$ ;  $p = .21$ ).

*Variety-Seeking Mind-Set.* An ANOVA revealed a significant effect of fertility on variety-seeking mind-set,  $F(1, 142) = 4.87$ ,  $p = .029$ ,  $d = .38$ . Women reported increased variety-seeking motivation at high compared to low fertility ( $M_{\text{high fertility}} = 3.93$ ,  $SD = 1.04$  vs.  $M_{\text{low fertility}} = 3.57$ ,  $SD = .87$ ). When relationship status was added to the model, the fertility by relationship status interaction approached significance,  $F(1, 140) = 1.92$ ,  $p = .16$ . Simple effects tests again showed a main effect of fertility on variety-seeking mind-set for women in relationships,  $F(1, 140) = 6.29$ ,  $p$

FIGURE 2

MEDIATED MODERATION MODEL FOR THE EFFECT OF FERTILITY BY RELATIONSHIP STATUS ON WOMEN'S VARIETY SEEKING VIA A FERTILITY SHIFT IN VARIETY SEEKING (STUDY 1)



NOTE.—Path coefficients represent unstandardized regression weights.

$= .013$ ,  $d = .48$ . Partnered women reported increased variety-seeking motivation at high compared to low fertility ( $M_{\text{high fertility}} = 3.98$ ,  $SD = 1.07$  vs.  $M_{\text{low fertility}} = 3.52$ ,  $SD = .85$ ). There was no effect of fertility on variety seeking for single women ( $M_{\text{high fertility}} = 3.78$ ,  $SD = .99$  vs.  $M_{\text{low fertility}} = 3.88$ ,  $SD = .97$ ;  $p = .77$ ).

**Mediated Moderation Analysis.** To test our mediation hypothesis, we used the Preacher and Hayes (2008) bootstrapping procedure and corresponding SPSS macro to test for a significant indirect effect of fertility by relationship status on women's variety-seeking in consumer choice via a variety-seeking mind-set. One thousand bootstrap resamples were performed.

The *total* effect of fertility and relationship status on variety seeking via shifting variety-seeking motivation was statistically significant (*c* path),  $B = 1.23$  ( $SE = .61$ ),  $t(143) = 2.02$ ,  $p = .046$ . Fertility by relationship status significantly predicted variety-seeking mind-set (*a* path),  $B = .39$  ( $SE = .18$ ),  $t(143) = 2.18$ ,  $p = .03$ , whereby fertility shifted women's variety-seeking motivation as a function of relationship status. Further, as women's variety-seeking motivation shifted across fertility, women's variety-seeking behavior also shifted (*b* path),  $B = .66$  ( $SE = .28$ ),  $t(143) = 2.33$ ,  $p = .02$ . The *direct* effect of fertility by relationships status on women's variety-seeking behavior, after controlling for the mediating influence of the fertility shift in variety-seeking mind-set, was nonsignificant (*c'* path),  $B = .97$  ( $SE = .61$ ),  $t(143) = 1.60$ ,  $p = .11$ . The *indirect* effect (the mediated effect) of fertility by relationship status on variety seeking via a shift in variety-seeking mind-set was

$.25$  ( $SE = .18$ ), 95% BCI .02–.82 does not include zero. Reversing the model with the mediator as the dependent measure did not reveal evidence for mediated moderation, 95% BCI  $-.01$  to  $.22$  overlapped with zero, providing further evidence that a variety-seeking mind-set is the process that drives our predicted effect (see fig. 2).

Partial support was found for hypothesis 1A, and full support was found for hypothesis 1B. There was a main effect of fertility on variety seeking for women in relationships. However, no significant effect was found for single women. The null effect for single women should be interpreted with caution due to the small sample size ( $n = 26$ ; high fertility group,  $n = 13$ ; low fertility group,  $n = 13$ ). Nevertheless, results are consistent with previous ovulatory cycle research that finds a stronger effect of fertility on women's mating psychology for partnered women. Indeed, the purported process mechanism—variety-seeking mind-set—shifted across fertility only for women in relationships. This is in line with the hypothesis that the effect of fertility on variety-seeking functions to enable women to consider men other than a current partner.

## STUDY 2: FERTILITY, VARIETY SEEKING, AND THE MODERATING ROLE OF RELATIONSHIP SECURITY

Study 2 aimed to conceptually replicate and extend the finding of study 1 using the most stringent methodology to examine shifts in women's desire for variety across the cycle. We scheduled women to come into the lab for two

experimental sessions—once on an expected high fertility day (confirmed via hormone tests) and once on an expected low fertility day—and measured how many unique candy bars they chose. Consistent with study 1, we predicted that women would seek more variety in consumer choice at high fertility (near ovulation) compared to a low fertility point in the cycle and that this effect should be stronger for women in relationships. Additionally, because our model predicts that women's desire for variety in consumer choice is also driven by a desire for greater options in men, we tested whether a desire for alternative options in men also mediates our predicted effect.

Finally, consistent with the finding that people who feel secure in their relationships prefer *less* variety (Ybarra et al. 2012) and have increased attraction to their partners at high fertility (Eastwick and Finkel 2012; Sheldon 2007), we predicted that the strength of a women's attachment bond to their partner (a reliable measure of relationship security; Bowlby 1969) should moderate the variety-seeking effect. Formally:

- H3:** Attachment bond strength should moderate the effect of fertility on consumer variety-seeking behavior, whereby the effect of fertility on desire for variety should be stronger (weaker) in women with weaker (stronger) attachment bonds to their partner.

## Method

**Participants.** Participants were 77 women at the University of Texas, San Antonio ( $n = 40$  single women;  $n = 37$  partnered women) with a mean age of 22.08 ( $SD = 4.80$ , ranging 18–42 years) who had regular monthly menstrual cycles and were not on hormonal contraception. Participants were compensated either with course credit or \$30, whichever they preferred.

**Procedure.** Women who were *not* on hormonal contraceptives (e.g., the pill, the patch, vaginal ring, hormonal IUD) were recruited to participate in the study via e-mail and campus flyers. Women were told that the study was about relationships, decision making, and health. Women who qualified for the study (i.e., reported not taking hormonal contraceptives) were sent a link to a survey that asked them to report (1) the start date of their last menstrual period, (2) the start date of their previous menstrual period, and (3) the average length of their menstrual periods. Based on the information provided in this survey, women were scheduled to come into the lab for two experimental sessions—one on an expected high-fertility day and one on an expected low-fertility day. Whether a woman completed the high-fertility or the low-fertility testing session first was determined by where she was in her menstrual cycle on the day she completed the online survey. Using this randomization method led to 46.8% of women completing high-fertility testing first and 53.2% completing low-fertility testing first. Similar to previous studies that have used this type of within-subjects

methodology (e.g., Durante et al. 2008, 2011; Gangestad et al. 2002; Pillsworth and Haselton 2006), no order effects were found.

To determine the high-fertility testing session date, women completed over-the-counter urine applicator tests (www.meditests.com) that detect the surge in luteinizing hormone (LH) that occurs just prior to ovulation. A surge in LH indicates that the ovarian hormone estrogen is at peak levels and that ovulation will occur within 24–48 hours (Lipson and Ellison 1996). The first urine test was scheduled 2 days before the expected day of ovulation. If an LH surge was not detected, women came back each day until an LH surge was detected or seven tests had been completed. Women were told that they needed to complete the urine tests in order to measure normal fluctuations in body chemistry because we were interested in how overall physiological health relates to relationships and decision making. Laboratory research assistants read and recorded the results of the LH tests. None of the participants identified the research hypotheses or determined that the urine test was being used to detect ovulation.

Low-fertility sessions were scheduled 7 days or more after the LH surge (if high-fertility testing took place first) or at least 3 days before the expected onset of their menstrual periods (if low-fertility testing took place first). All participants completed their high-fertility session on the day of their LH surge or over the two days following the LH surge. This within-subjects procedure is the most stringent assessment of the effect of fertility on behavior because LH tests are highly accurate in verifying ovulation as detected by ultrasound (e.g., 97% accurate; Guermandi et al. 2001), and each woman serves as her own control.

**Variety Seeking.** At both testing sessions, all 77 participants were presented with nine brands of mini candy bars displayed in separate bowls. The mini candy bar brands were Milky Way, Snickers, Heath, Kit Kat, York Peppermint Patty, Three Musketeers, Reese's Peanut Butter Cups, Milky Way Dark, and Twix. Participants were asked to select a total of five candy bars out of the nine options. The number of unique candy bars chosen was used as a measure of variety seeking.

**Relationship Measures.** The remaining items were assessed only for women in committed relationships because the appeal of alternatives and bondedness measures are relevant only for women who are in a relationship with one partner (Eastwick and Finkel 2012; Johnson and Rusbult 1989; Murray, Holmes, and Griffin 1996a, 1996b; Rusbult, Martz, and Agnew 1998; Rusbult et al. 2000; Tancredy and Fraley 2006). Although we could have opted to assess these items in single women, we would have no way of knowing the particular features of the man or the relationship they were envisioning in the hypothetical.

**Appeal of Alternatives to a Current Partner.** To measure appeal of alternatives, we used questions that are specific to the general appeal of mating options other than one's current partner (Rusbult et al. 1998). At both testing ses-

sions, participants were asked to indicate their relationship status. If a participant indicated that they were in a committed relationship (dating, engaged, living with, or married to *one partner*,  $n = 37$ ) versus single (single—not dating or single—dating a little,  $n = 40$ ), they were prompted to indicate how much they agreed with the following statements about their current romantic relationship (9-point scale; 1 = do not agree at all and 9 = agree completely): (1) “My alternatives to our relationship are close to ideal (dating another)” and (2) “My alternatives to our relationship are attractive to me (dating another).” The two items were collapsed to form a composite measure of appeal of alternatives (high fertility:  $\alpha = .85$ ; low fertility:  $\alpha = .73$ ).

**Attachment Bond Strength.** To measure attachment bond strength, participants who indicated they were in a committed relationship completed the “attachment features and functions” measure of *attachment bond strength* (Tancredy and Fraley 2006). This scale measures each of the four distinct attachment bond behaviors outlined by Bowlby (1969): proximity seeking (i.e., attempting to be near the attachment figure), separation distress (i.e., exhibiting negative affect when distant from the attachment figure), safe haven (i.e., using the attachment figure for support), and secure base (i.e., using the attachment figure for exploration). All items were recorded on 9-point scales with anchors: 1 = strongly disagree and 9 = strongly agree. Sample items from this scale include: “It is important to me to see or talk with [partner] regularly”; “When I am away from [partner], I feel down”; “[Partner] is the first person that I would turn to if I had a problem”; and “If I achieved something good, [partner] is the person that I would tell first.” This scale served as a measure of attachment bond strength at high and low fertility (high fertility:  $\alpha = .96$ ; low fertility:  $\alpha = .97$ ). There was no main effect of fertility on attachment bond strength ( $p = .14$ ) nor was one expected. Therefore, we collapsed across fertility sessions to form a composite measure of attachment bond strength for final analysis ( $\alpha = .98$ ).

## Results

**Variety Seeking.** A repeated measures ANOVA with fertility as a within-subjects factor and relationship status (single vs. in a relationship) as a between-subjects factor revealed a significant main effect of fertility on variety seeking in candy bars,  $F(1, 75) = 22.66, p < .001, \eta_p^2 = .23$ . Women chose a greater number of unique candy bars at high fertility ( $M_{\text{high fertility}} = 3.69, SD = 1.04$ ) compared to low fertility ( $M_{\text{low fertility}} = 3.09, SD = 1.11$ ). The fertility by relationship status interaction approached significance ( $p = .11$ ). However, the simple main effect of fertility was significant for both single ( $M_{\text{high fertility}} = 3.63, SD = 1.10$  vs.  $M_{\text{low fertility}} = 3.23, SD = 1.07; F(1, 75) = 5.15, p = .026, \eta_p^2 = .06$ ) and partnered women ( $M_{\text{high fertility}} = 3.76, SD = .98$  vs.  $M_{\text{low fertility}} = 2.95, SD = 1.15; F(1, 75) = 19.56, p < .001, \eta_p^2 = .21$ ). Similar to partnered women, single women chose

a greater variety of candy bars at high fertility but did so to a lesser degree.

**Appeal of Alternatives.** Because four women did not complete the appeal-of-alternatives measures, we used regression-imputation procedures to generate imputed scores for four women who had appeal-of-alternatives scores at low—but not high—fertility (see Judd and Kenny 2010). This procedure allowed us to keep everyone’s data in the sample. When we reran the analyses without the four women with missing values, the pattern of results was unchanged, so we present regression analyses of the full sample of partnered women ( $n = 37$ ).

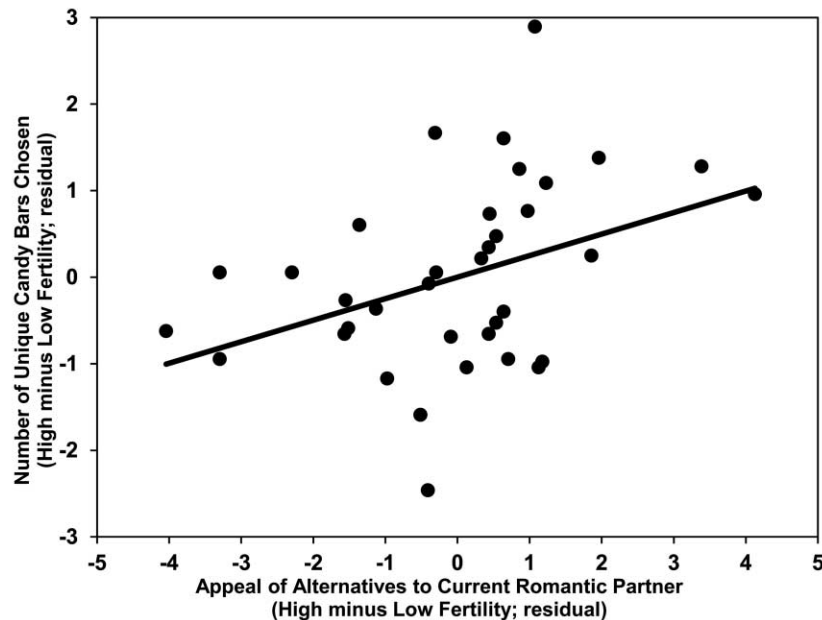
As expected, women reported higher appeal-of-alternatives scores at high fertility ( $M_{\text{high fertility}} = 5.05, SD = 2.42$ ) compared to when they were at low fertility ( $M_{\text{low fertility}} = 4.36, SD = 2.22; b = 0.69, t(36) = 2.48, p = .018, r_p = .38$ ). And there was a significant positive association between appeal of alternatives in men and consumer variety seeking at high fertility ( $b = 0.13, t(35) = 2.08, p = .045, r_p = .33$ ) but not at low fertility ( $b = 0.086, t(35) = 0.99, p = .33, r_p = .17$ ). Looked at a different way, there was a significant positive association between the fertility shift in appeal of alternatives (high minus low fertility) and the fertility shift in variety of candy chosen (high minus low fertility),  $r = .40, p = .01$  (see fig. 3).

We next examined whether the effect of fertility on women’s desire for variety in consumer choice is mediated by the effect of fertility on desire for alternative options in men. We analyzed the data following standard procedures for testing mediation in simple within-person designs (Judd, Kenny, and McClelland 2001). The effect of fertility on variety of candy chosen after controlling for the effect of fertility on appeal of alternatives was reduced to nonsignificance (all  $b = 0.81 \rightarrow 0.32$ , all  $t = 4.78 \rightarrow 1.72$ , all  $p = .00003 \rightarrow .085$ , all  $r_p = .63 \rightarrow .30$ ). However, testing the alternative mediation model showed that the effect of fertility on variety of candy chosen fully suppressed the direct relationship between fertility and the appeal of alternatives (all  $b = 0.69 \rightarrow 0.70$ , all  $t = 2.48 \rightarrow 0.68$ , all  $p = .02 \rightarrow .49$ , all  $r_p = .38 \rightarrow .12$ ).

**Attachment Bond Strength.** Bond strength did *not* moderate the effect of fertility on appeal of alternatives ( $b = -0.24, t(35) = -1.17, p = .25, r_p = -.19$ ). However, consistent with hypothesis 3, there was a significant fertility by attachment bond strength interaction for variety of candy bars chosen ( $b = -0.31, t(35) = -2.45, p = .019, r_p = -.38$ ). There was a negative association between bond strength and variety seeking at high fertility ( $b = -0.28, t(35) = -2.48, p = .018, r_p = -.39$ ) but no association at low fertility ( $b = 0.030, t(35) = 0.21, p = .84, r_p = .04$ ). Women with a weak attachment bond to their partner ( $-1$  SD) sought more variety during high (vs. low) fertility ( $b = 1.23, t(35) = 5.10, p < .001, r_p = .65$ ). Although women with a strong attachment bond to their partner (9 on a 9-point scale [testing at  $+1$  SD would have exceeded the maximum score possible]) also sought more variety at high

FIGURE 3

APPEAL OF ALTERNATIVES DIFFERENCE (HIGH MINUS LOW FERTILITY) CORRELATES POSITIVELY WITH THE DIFFERENCE IN NUMBER OF UNIQUE CANDY BARS CHOSEN (HIGH MINUS LOW FERTILITY) (STUDY 2)



(vs. low) fertility ( $b = 0.465$ ,  $t(35) = 2.11$ ,  $p = .042$ ,  $r_p = .34$ ), they did so to a far lesser degree (see fig. 4).

## Discussion

Study 2 found an increase in actual variety-seeking behavior at high fertility. Conceptually replicating study 1, women chose a greater number of unique candy bars at a high fertility point in the cycle compared to when the same women were at a lower fertility point and the effect was stronger for women in relationships. Consistent with previous research demonstrating that decreased feelings of security within a social relationship can increase preference for variety in consumer choice (Ybarra et al. 2012), individual differences in attachment bond strength moderated the effect of fertility on variety seeking (hypothesis 3).

Additional findings revealed that the fertility shift in variety of candy chosen was positively related to the fertility shift in appeal of alternative mates. And consistent with our conceptual model, the effect of fertility on consumer variety seeking was mediated by the fertility shift in desire for alternative options in men. Although reversing the model with the proposed mediator—desire for variety in men—as the dependent measure also revealed evidence for mediation, it is possible that this outcome is a statistical artifact that may have emerged due to shared variance or the difficulty of running meditational tests on small, within-subject samples.

## STUDY 3: SUPPRESSING THE EFFECT OF FERTILITY ON VARIETY SEEKING

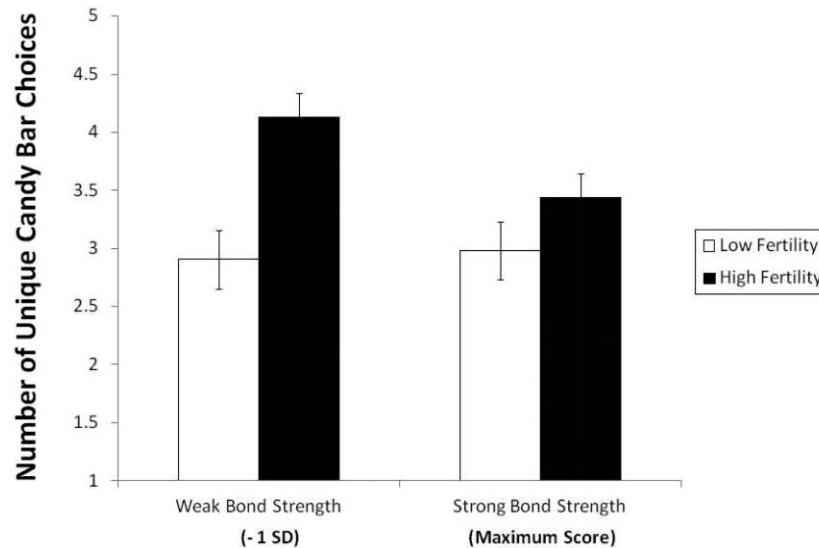
Studies 1 and 2 found that the effect of fertility on variety seeking was stronger for women in relationships. And study 2 found that the effect of fertility was moderated by the strength of a woman's bond to her current partner. If the effect of fertility on desire for variety in consumer choice is weaker in women with a strong attachment bond to their partner, the effect should be attenuated in all women by manipulating thoughts about loyalty to one's current mate, which is consistent with previous research that has manipulated thoughts about relationship security and found a decrease in consumer variety seeking (Ybarra et al. 2012).

Study 3 sought to investigate whether a mate retention motive would suppress the effect of fertility on variety seeking. We tested this idea by activating in women a motive to retain a current partner who displays markers of genetic fitness and appears to be bonded to her (i.e., a man who is physically attractive and attentive to her) and measured the effect of fertility on consumer variety seeking. A mate attraction motive was used as a control manipulation because a goal to attract the best partner available likely underlies the effect of fertility on variety seeking. Compared to the mate attraction motive, the mate retention motive should suppress desire for variety because it is designed to bolster feelings of loyalty for the partner one already has. Specifically, we predict that imagining a high-quality romantic



FIGURE 4

NUMBER OF UNIQUE CANDIES CHOSEN AS A FUNCTION OF FERTILITY AND ATTACHMENT BOND STRENGTH AT  $\pm 1$  STANDARD DEVIATION FROM THE MEAN (STUDY 2)



partner that you have already secured should suppress the effect of ovulation on variety seeking. More formally:

**H4A:** Enhancing women's loyalty to one man by manipulating thoughts about an attractive and devoted partner should suppress the effect of fertility on variety seeking.

## Method

**Participants.** Five hundred US women 18–40 years of age were originally recruited from Amazon Mechanical Turk (MTurk). Women were paid \$1 for participation. Of the women originally recruited, 218 women were excluded from the data set because they met one or more of the criteria outlined in study 1. The final sample included 282 female participants ( $M_{\text{age}} = 27.08$ ,  $SD = 6.04$ , ranging 18–42 years).

**Assessing Fertility.** As in study 1, we obtained from participants (1) the start date of their last menstrual period and previous menstrual period, (2) the expected start date of their next menstrual period, and (3) the typical length of their menstrual cycle. On the basis of the RCD method, women were divided into a *high fertility* group (cycle days 9–17,  $n = 123$ ) and a *low fertility* group (cycle days 1–8 and 18–28;  $n = 159$ ).

**Design and Procedure.** The experiment had a 2 (fertility: high vs. low)  $\times$  2 (condition: mate retention vs. mate attraction) between-subjects design. Participants were told that the study involved multiple parts and different tasks. The

first task involved reading a short story and providing some feedback on the story. The second task involved making various product choices.

To manipulate mating goals, participants were randomly assigned to one of two guided visualization conditions adapted from previous research (Maner et al. 2007, 2009). Each manipulation involved a series of three questions that prompted participants to write a brief response. Participants were told that the task assessed how people process information and visualize different events. Participants were asked to carefully read the story and try to put themselves in the shoes of the main character and experience the emotions as if they were the character in the story. This visual cuing method has been shown to activate automatic, motivational states that can influence perceptual processing (Maner et al. 2007, 2009). Thus, the basic cognitive aspects of mating appear to be activated by having participants imagine that they are in a relationship.

**Mate Retention Condition.** Women in the mate retention condition were asked to imagine that they are at a party being embraced tightly by their handsome boyfriend and overhear other women commenting on how attractive he is. At this point, participants were asked to write a few sentences about how they envision the situation and how they would feel. Next, the women were asked to imagine that their boyfriend is very attentive and affectionate toward her, ignoring all the other women in the room. Participants were again asked to write how they would envision the situation and how they would feel. Finally, women were told to imagine that they noticed some of the people around them looking

at her and her boyfriend and smiling, with one woman at the party whispering “lucky girl” from across the room. Participants were then asked to write for the third and final time how they would envision the situation and how they would feel.

*Mate Attraction Condition.* Women in the mate attraction condition were asked to imagine that they were at a party and single. At the party they imagined meeting several highly attractive and friendly men. Participants were then prompted to write a few sentences about how they would feel. Women were then told to imagine that one of the men began to flirt with them and that they are enjoying the conversation. Participants again were prompted to write a few more sentences. Finally, participants imagined that the man leaned in to kiss them. Participants then were asked to write for a final time about how they would feel in the situation.

*Variety-Seeking Measure.* To assess variety seeking, participants were asked to select 15 options for an upcoming 15 days from four consumer product categories: nail polish, high heels, restaurants, and candy bars. As in study 1, the number of unique options chosen from each category represented a measure of variety seeking. Product type (attractiveness enhancing [nail polish, high heels] vs. not [restaurants, candy bars]) produced no main effect nor any interaction effects (all  $p > .32$ ). Therefore, the four product categories were again converted into a variety-seeking composite for final analysis ( $\alpha = .77$ ).

## Results and Discussion

We again examined whether relationship status had any main effect or interaction effects on our dependent measures. However, because we were explicitly manipulating women’s thoughts about attracting or retaining a partner (i.e., we were leading all women, including single women, to imagine being in a committed relationship), no effect of relationship status was expected. Indeed, no effect of relationship status (single,  $n = 78$  vs. in a relationship,  $n = 204$ ; missing value,  $n = 1$ ) emerged, nor were there any interaction effects with fertility on the dependent measure (all  $p > .81$ ), and the variable was dropped from final analysis.

An ANOVA revealed a significant fertility by condition interaction,  $F(1, 278) = 8.15, p = .005$ . Conceptually replicating the previous studies, women in the mate attraction condition chose a greater variety of products at high fertility ( $M_{\text{high fertility}} = 10.35, SD = 3.79$ ) compared to low fertility ( $M_{\text{low fertility}} = 8.65; SD = 3.33$ ),  $F(1, 278) = 6.20, p = .013, d = .48$ . However, our key prediction concerned the effect of fertility on variety seeking when a mate retention goal was activated. Consistent with hypothesis 4A, there was no difference in variety seeking between high and low fertility in the mate retention condition ( $M_{\text{high fertility}} = 8.50, SD = 3.19$  vs.  $M_{\text{low fertility}} = 9.40, SD = 3.37$ ),  $p = .14$ . Women sought less variety at high fertility in the mate retention condition compared to women at high fertility in the

mate attraction condition,  $F(1, 278) = 5.62, p = .018, d = .53$  (see fig. 5).

Whereas the mate attraction condition replicated the effect of fertility on variety seeking, there was no effect of fertility in the mate retention condition. In fact, high fertility women in the mate retention condition sought less variety than women in the same condition who were at a low fertility point in the cycle. Results provide further support for our theoretical model and suggest that increasing a woman’s desire to retain a current partner (even an imagined partner) can suppress the effect of fertility on women’s desire for variety.

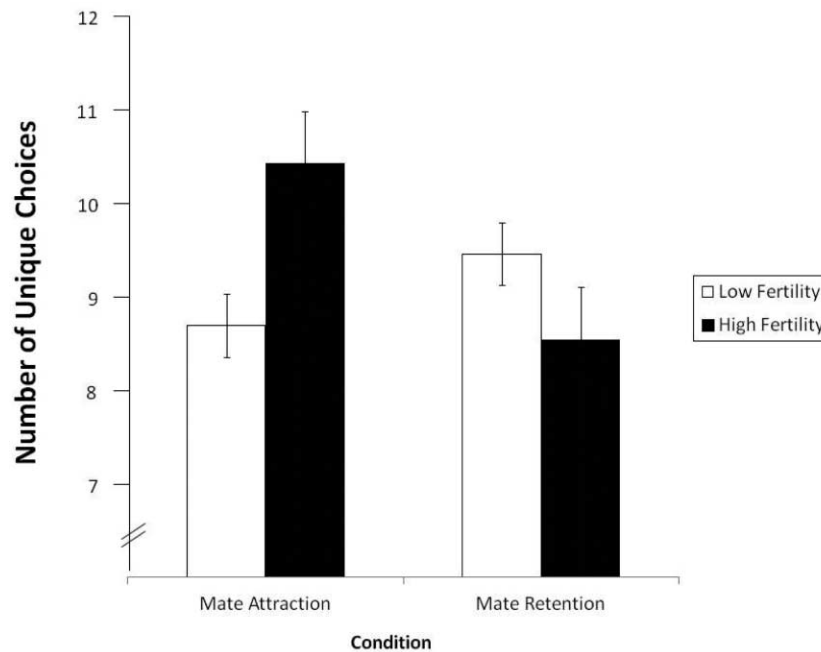
## STUDY 4: ENHANCING THOUGHTS OF COMMITMENT VIA REMOVAL AND REPLACEMENT OF A WEDDING RING

Study 3 found that the effect of fertility on variety seeking was attenuated by manipulating women’s thoughts about loyalty to an imagined partner. What about encouraging loyalty to an actual partner? A reminder of an existing commitment to one’s partner should also serve as a boundary condition for the effect of fertility on desire for variety. Consider a married woman. While fertility may lead her to sexually desire attractive men who are not her husband (Thornhill and Gangestad 2008), this does not imply that married women do not want to protect their marriage. In fact, some research finds that while women in relationships have increased attraction to other men, they nonetheless do not want their current relationship to end (Durante, Rae, and Griskevicius 2013; Larson et al. 2012). Because married women are likely to be especially invested in their relationships and have important aspects of their lives tied to the relationship (e.g., financial, emotional) and perhaps even have children together, they have considerably more to lose from the dissolution of their marriage. Thus, if the effect of fertility on women’s desire for variety is influenced by mating goals, reminding married women of an existing commitment to their current relationship should also suppress the effect of fertility on variety seeking.

Married women also differ from nonmarried women in that they have made a public commitment to one man and often wear a symbol of that commitment in the form of a wedding ring. A wedding ring is considered to be a strong and universal symbol of commitment to one partner (Chesser 1980; Uller and Johansson 2003). We reasoned that the physical act of removing or replacing a wedding ring should activate feelings of commitment because research finds that sensorimotor stimulation often translates to cognitions associated with that stimulus (Ackerman, Nocera, and Bargh 2010; Chandler, Reinhard, and Schwarz 2012). For example, people evaluate heavy books as more important than lighter books (Chandler et al. 2012). Thus, the sensorimotor stimulation of removing and replacing one’s wedding ring is likewise expected to lead to cognitions that reflect common metaphors of removing a wedding ring (e.g., feeling less

FIGURE 5

NUMBER OF UNIQUE OPTIONS CHOSEN AS A FUNCTION OF FERTILITY AND MATING MOTIVATION (STUDY 3)



committed) and of placing a wedding ring on one's finger (e.g., feeling more committed).

Because the increase in women's variety seeking near ovulation appears to be related to an increased openness to different men (study 2), we predicted that putting on one's wedding ring would serve as a reminder of relationship commitment and loyalty to one partner and effectively suppress the effect of fertility on variety seeking in married women. In turn, removing one's wedding ring should bolster the effect of fertility on desire for variety in married women. Just as putting on a pair of pants that have become too snug serves as a reminder to avoid a desirable piece of chocolate cake, removing and replacing a wedding ring should serve as a reminder of commitment to one's partner. Study 4 therefore examined how increasing and decreasing feelings of commitment (or loyalty to one partner) via the removal and replacement of one's wedding ring would influence the effect of fertility on variety seeking. Specifically, we predict that reminders of commitment via the sensorimotor stimulation of putting on a wedding ring should suppress the effect of fertility on variety seeking. Formally:

**H4B:** Increasing the salience of commitment and loyalty to one partner via placing a wedding ring back on should suppress the effect of fertility on variety seeking.

## Method

**Participants.** Eighty married women were originally recruited to participate for \$1 payment via MTurk. Again, only women who had regular monthly menstrual cycles and were not on hormonal contraception were invited to participate in the study. Of these women, we were able to estimate fertility status for 54 women. However, two women reported that they did not remove their ring as instructed and two women reported not wearing their wedding ring. The final sample included 50 female participants ( $M_{\text{age}} = 29.92$ ,  $SD = 5.27$ ; ranging 19–40 years).

All of the participants were heterosexual women married to men. Median length of the relationships was 6.5 years with a range of less than 1 year to more than 20 years; 64% of the participants had children. Relationship length and having children had no main effect or interaction effect on the dependent measure (all  $p > .70$ ).

**Assessing Fertility.** Fertility was estimated using the RCD method as outlined in studies 1 and 3. Women across the entire cycle were divided into two groups: (1) a *high fertility* group (days 9–17,  $n = 21$ ) and (2) a *low fertility* group (days 1–8 and days 18–28,  $n = 29$ ).

**Design and Procedure.** The experiment had a 2 (fertility: high vs. low; between-subjects)  $\times$  2 (condition: ring off vs. ring on; within-subjects) mixed design. Participants were

told that the study involved various tasks including a product selection task. As a cover story for the ring manipulation, women were told they would be asked to remove jewelry such as their wedding ring at a certain point in the study so that it would not impair their reaction time. Debriefing revealed that none of the participants were aware of the research hypothesis at the time of testing.

For the ring manipulation, participants were first asked to take off their wedding ring. Specifically, participants were told a white screen would flash for 3 seconds, and after the screen disappeared they should remove their wedding ring. Immediately after participants removed their wedding ring, they were asked to make 15 choices for the upcoming 15 days for either candy bars or restaurants (from study 3; counterbalanced). After participants indicated their choices, they completed a filler task that involved answering demographic questions (e.g., age, ethnicity, gender). After participants completed the filler task, they were asked to put their wedding ring back on. Specifically, participants were told a white screen would flash for 3 seconds, and after the screen disappeared they should put their wedding ring back on. Immediately after putting their ring back on, participants were asked to make 15 choices for the upcoming 15 days for either candy bars or restaurants (whichever product category they did not view in the previous choice task). The number of unique items chosen for candy bars and restaurants served as a measure of variety seeking at two times: time 1 (when participants removed their wedding ring) and time 2 (when participants put their wedding ring back on). Order of presentation (candy bars vs. restaurants first) had no effect on the dependent measure nor an interaction with fertility (all  $p > .91$ ).

To ensure that the ring manipulation elicited the expected levels of decreased and increased commitment, a separate sample of 36 married female participants ( $M_{\text{age}} = 30.5$ ) completed the same ring manipulation procedure used in the study. Participants were prompted to remove their wedding ring and shortly after indicated the “degree to which you feel committed right now” (7-point scale; 1 = not at all; 7 = very much). Later, participants were asked to put their wedding ring back on and again report how committed they felt. Participants felt significantly less committed when they were asked to take their wedding ring off compared to when they were asked to put their wedding ring back on ( $M_{\text{ring off}} = 5.22$  vs.  $M_{\text{ring on}} = 6.32$ ),  $F(1, 36) = 9.76$ ,  $p = .004$ . Thus, the ring manipulation elicited the expected levels of decreased and increased commitment.

## Results and Discussion

A repeated measures ANOVA revealed a significant interaction between fertility and condition,  $F(1, 48) = 5.03$ ,  $p = .03$ . While there was no difference in variety seeking by condition for women at low fertility ( $M_{\text{ring off}} = 8.38$ ,  $SD = 4.55$  vs.  $M_{\text{ring on}} = 9.10$ ,  $SD = 3.99$ ;  $p = .37$ ), our key prediction concerned how removing and replacing a wedding ring would affect variety seeking in women who were at a high fertility point in their cycle. At high fertility, women

sought more variety in product choice after they removed their wedding ring ( $M_{\text{ring off}} = 10.52$ ,  $SD = 3.52$ ) and less variety when they put their wedding ring back on ( $M_{\text{ring on}} = 8.48$ ,  $SD = 4.15$ ),  $F(1, 48) = 4.73$ ,  $p = .035$ ,  $d = .53$  (see fig. 6).

Reminding women about commitment—by having them place their wedding ring back on their finger—suppressed the effect of fertility on variety seeking. Because removing and replacing one’s wedding ring serves as a reminder of commitment, and because the wedding ring manipulation had no effect on variety seeking at low fertility, study 4 provides additional support for the prediction that the ovulatory effect on variety seeking in product choice may be driven by women’s increased openness to alternative options in men at high fertility. Results demonstrate a novel way to manipulate thoughts of commitment and further illustrate how mating goals might underlie greater preference for variety seeking in consumer choice.

## GENERAL DISCUSSION

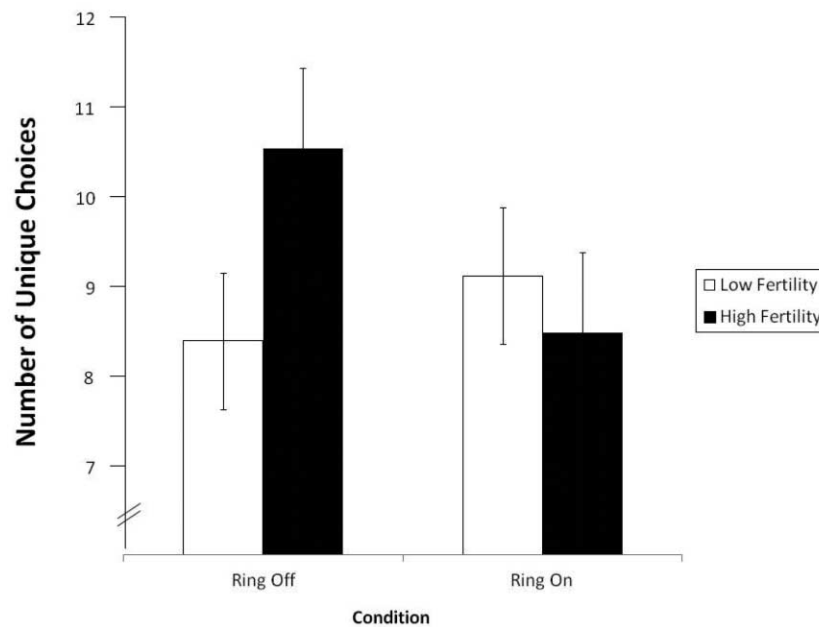
Can women’s preference for more or less variety in consumer choice be influenced by the hormones that regulate women’s fertility? We sought to investigate this question by examining how, why, and when women’s preference for variety in consumption changes with fertility. Drawing on the ovulatory shift hypothesis and recent research on loyalty in social relationships transferring to consumer loyalty, we predicted that fertility-regulated shifts in women’s mating goals (e.g., increased sexual desire for men high in genetic fitness; Gildersleeve et al. 2014), influenced women’s desire for variety—not just in men—but in consumer choice sets. Four studies using both hormone tests and counting methods to predict fertility status yielded several converging sets of findings.

First, we found an increase in women’s desire for variety in consumer choice at high fertility that was particularly strong for women in relationships. Drawing on the behavioral mind-set literature (Wyer and Xu 2010; Xu and Wyer 2008), we provide process evidence that a fertility-activated variety-seeking mind-set mediates the effect of fertility on desire for variety. The effect of fertility on desire for variety in men likely activates a variety-seeking mind-set that is subsequently carried over into preference for variety in consumer choice sets (as depicted in fig. 1).

Second, we found that women chose a greater number of unique candy bars at high compared to low fertility in a measure of actual variety-seeking behavior. The fertility shift in desire for variety in candy bars was positively correlated to a fertility-regulated shift in women’s desire for alternative options in men, and desire for alternative options in men at high fertility mediated the effect of fertility on consumer variety seeking. Additional findings showed that the effect of fertility on women’s desire for variety was moderated by the strength of a woman’s attachment bond to her current partner. When security in the primary relationship was high, the effect of fertility on desire for variety was weaker. This is consistent with previous research showing that people who

FIGURE 6

NUMBER OF UNIQUE OPTIONS CHOSEN AS A FUNCTION OF FERTILITY AND COMMITMENT MANIPULATION (STUDY 4)



feel like their relationships are more secure prefer *less* choice and variety (Ybarra et al. 2012) and that women with strong attachment bonds exhibit increased sexual intimacy motivations toward their partner at high fertility (Eastwick and Finkel 2012; Sheldon 2007). This provides further evidence that mating goals underlie the effect of fertility on variety seeking. Women with strong attachment bonds to their current partner simply have less motivation to consider better options in men near ovulation.

Notably, we did not find that attachment bond strength moderated the effect of fertility on the appeal of alternative men. It is possible that attachment bond strength does not influence the effect of fertility on thoughts about other men to a great extent. Indeed, some research has found that bond strength *does not* influence women's sexual thoughts about other men near ovulation (Eaton et al. 2012). Attachment bond strength may exert the most influence in measures of actual variety-seeking behavior at ovulation such as choosing a greater variety of candy bars or, in mate selection, saying yes to meeting a greater variety of men in speed dating (e.g., Finkel and Eastwick 2008).

Finally, the effect of fertility on desire for variety was suppressed when women's commitment to one man was experimentally manipulated (via an imagined high-quality partner and the removal and replacement of a wedding ring). Imagining a high-quality romantic partner that you have already secured (i.e., an attractive partner who is warm and attentive) suppressed the effect of fertility on variety seeking. Further, reminders of commitment via the sensorimotor

stimulation of removing and replacing a wedding ring effectively enhanced and suppressed the effect of fertility on variety seeking. Taken together, we identify when, why, and how the hormones that regulate women's fertility can enhance desire for variety in consumer choice. These effects emerged in a within-subjects experiment using hormones tests to detect ovulation and in diverse samples of women from the United States with data collected across the full 28-day cycle.

### Limitations and Future Directions

Our findings suggest that the effect of fertility on women's desire for new options in men activates a variety-seeking mind-set that subsequently leads women to desire greater variety in the marketplace. In addition, we showed that a weakened desire for variety in men diminished the desire for variety in products. However, the current findings do not disambiguate why and how an adaptation designed to motivate women to consider a wider pool of mating options would lead to a generalized variety-seeking mind-set. One possibility is that variety seeking at high fertility is not generalized but specific to high reward, low threat choice domains. For example, fertility should lead women to seek variety in domains that are relatively safe (e.g., saying yes to a conversation with more men in a speed-dating scenario or trying different candy bars) but not in choice domains that involve a higher degree of risk or threat (e.g., saying

yes to sex with multiple men or trying different high-risk outdoor activities).

Further, we did not find that product type (whether food, cosmetics, or fashion) moderated the effect of fertility on variety seeking. It could be that the variety-seeking effect is evident when (1) the choice domain is highly rewarding and (2) there is little cost to gather more information (via seeking variety). Another possibility is that variety seeking at high fertility serves a social facilitation goal, whereby seeking variety in products facilitates exposure to social situations that are likely to include a larger pool of high-quality mates. Either of these possibilities would lend support to the notion that variety seeking at high fertility is not the result of a generalized variety-seeking mechanism. Future research is needed to further examine the process underlying the effect of fertility on variety seeking. One way to do this would be to test whether varying the social value of the product, the cost, or the rewarding nature of the product influences the effect of fertility on variety seeking.

A noteworthy finding from this research is that the mate attraction motive in study 3 did not enhance variety seeking in women at low fertility. One possible explanation is that mating-related stimuli have less impact on women who are in the low fertility phase of the cycle—when mating goals are significantly less salient. That is, because the potential evolutionary benefits of optimizing mating outcomes are lower when women are not ovulating, it is possible that the salience of mating goals in general are much lower for women at low fertility. Instead, heightened sensitivity to mating-relevant stimuli might be saved for when women are ovulating—the time when the potential to reap the evolutionary benefits is highest. Of course, further research is needed to understand the specific nature of why the same cues are not as strong at low fertility.

What about variety seeking in men? The current research examined how the hormones that drive a specific mating goal (i.e., mate attraction) influence variety seeking in women. Future research is needed to examine how the hormones that regulate men's mating behavior influences their desire for variety. It is possible that testosterone may produce complimentary effects on men's desire for variety in consumer choice. Other fundamental motivations likely influence people's desire for variety (Griskevicius and Kenrick 2013). For example, parenting or self-protection motives are driven by different hormones and might influence variety seeking in a way that is very different from a mating motive. The hormones associated with parenting (oxytocin in women; vasopressin in men; Young and Insel 2002) and

self-protection (cortisol; Dickerson and Kemeny 2004) might decrease desire for variety. Future research is poised to examine how other hormones influence variety seeking, including the underlying motives responsible for such effects.

## Implications and Conclusion

These studies provide some of the first evidence of how mating motives and the hormones that underlie these motives can influence consumer decisions, which has important implications for marketers, researchers, and consumers. Marketers, for instance, might appeal to mate attraction motives in marketing messages to spur increased desire for variety and novelty in consumer choice. Our results also suggest that women's brand loyalty may shift at high fertility. For example, women may be more likely to respond to appeals by a competing brand to switch between brands at high fertility. Conversely, women might respond to reminders of loyalty to one brand and course-correct for the desire to switch at high fertility. Female consumers might choose to try new products and experiences depending on when during the month they make the decision. Researchers might find different effects in studies depending on the mix of women in the study and where they are in their cycle.

In sum, four studies found that—near ovulation—women seek more variety in consumption. This research contributes to the literature on how hormones can influence consumer behavior (Durante et al. 2011, 2014; Lens et al. 2012; Saad and Stenstrom 2012) and also highlights that mating motivations can play an important and previously unconsidered role in consumer variety seeking. By combining the natural sciences with marketing science, the study of how biological factors influence consumption can provide a window into the psychological mechanisms that underlie consumer choice and open an exciting new frontier for marketing research.

## DATA COLLECTION INFORMATION

Kristina Durante and Ashley Arsenia jointly managed the collection of data for all studies and supervised the data collection by research assistants at the University of Texas, San Antonio, for study 2. Data for study 1 were collected in spring 2014, and the data for study 2 were collected in fall 2013 and spring 2014. Data for studies 3 and 4 were collected in fall 2012. These data were analyzed jointly by both authors at the University of Texas, San Antonio.

**APPENDIX**  
**VARIETY-SEEKING CHOICE SETS (IN ORDER OF APPEARANCE)**

LIPSTICK



HIGH HEELS



YOGURT

<b>1 - Apricot Mango</b>	<b>2 - Vanilla</b>	<b>3- Banana Cream Pie</b>	<b>4 - Strawberry</b>	<b>5 - Blueberry</b>
<b>6 - Boston Cream Pie</b>	<b>7 - Key Lime Pie</b>	<b>8 - Orange Cream</b>	<b>9 - Raspberry Cheesecake</b>	<b>10 - Strawberries &amp; Banana</b>
<b>11 - Cherry</b>	<b>12 - Red Velvet Cakes</b>	<b>13 - Cookies n' Cream</b>	<b>14 - White Chocolate Strawberry</b>	<b>15 - Peaches &amp; Cream</b>
<b>16 - Blackberry</b>	<b>17 - Mango</b>	<b>18 - Pear</b>	<b>19 - Pineapple</b>	<b>20 - Lemon</b>

CANDY BARS

<b>1 - Twix</b>	<b>2 - Hershey's Chocolate</b>	<b>3- Mars</b>	<b>4 - Snickers</b>	<b>5 - Wonder Bar</b>
<b>6 - Reese's Cups</b>	<b>7 - Rolos</b>	<b>8 - Nestle Crunch</b>	<b>9 - M&amp;Ms</b>	<b>10 - Butterfingers</b>
<b>11 - Hershey's Kisses</b>	<b>12 - Kit Kat</b>	<b>13 - Baby Ruth</b>	<b>14 - Milky Way</b>	<b>15 - Three Musketeers</b>
<b>16 - 1000 Grand</b>	<b>17 - Almond Joy</b>	<b>18 - Whatchamacallit</b>	<b>19 - Milk Duds</b>	<b>20 - Oh Henry!</b>



## NAIL POLISH



## RESTAURANTS

<b>1 - Thai</b>	<b>2 - Italian</b>	<b>3 - French</b>	<b>4 - Mexican</b>	<b>5 - Seafood</b>
<b>6 - Sushi</b>	<b>7 - Vegetarian</b>	<b>8 - Mongolian</b>	<b>9 - American</b>	<b>10 - Indian</b>
<b>11 - German</b>	<b>12 - Moroccan</b>	<b>13 - Greek</b>	<b>14 - Chinese</b>	<b>15 - Spanish</b>
<b>16 - Mediterranean</b>	<b>17 - Pizza</b>	<b>18 - Korean</b>	<b>19 - Lebanese</b>	<b>20 - Vietnamese</b>

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CORRECTION.—Since this article was published online on December 23, 2014, corrections have been made. The title for figure 2 was changed to "Mediated Moderation Model for the Effect of Fertility by Relationship Status on Women's Variety Seeking via a Fertility Shift in Variety Seeking (Study 1)." These changes were made in both the online and print versions of the article. Corrected on February 24, 2015.