

## If–Then Contingencies and the Differential Effects of the Availability of an Attractive Alternative on Relationship Maintenance for Men and Women

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In 7 experiments, the causal effects of the availability of an attractive alternative (AA) relationship partner on current relationship thoughts and intentions were tested using confederates, mental simulations, and virtual reality. Men behaved consistent with traditional relationship-commitment theories, showing decreased willingness to tolerate their partner's transgressions after the availability of an AA was made salient. However, consistent with a motivated cognition approach to commitment and work on relational self-construals, women increased their tolerance when presented with the relationship threat of an alternative. Word-fragment and lexical decision data suggested that AAs may activate threat for women, and their ability to dampen threat accessibility is associated with prorelationship responses. Finally, this "if relationship is threatened, then defend the relationship" contingency was induced in men with an implementation intention induction.

*Keywords:* commitment, gender, close relationships, social cognition

Media reports suggest that the rich and famous trade relationship partners at a rate that is difficult for the average person to fathom. Popular accounts suggest that this is due to a gulf in values between cultural superstars and ordinary folk, with celebrities being thought of as "just different kinds of people." However, a social psychological analysis takes into account the fact that celebrities, more than any other group, are besieged by the temptations of attractive alternative relationship partners.

All of the major social psychological theories of commitment predict that the availability of an attractive alternative relationship partner should have a negative impact on commitment and relationship survival because it is in one's rational self-interest to pursue one's attraction to the alternative. The social exchange model of cohesiveness (Levinger, 1965, 1976), the investment model of commitment (Rusbult, 1980, 1983), and M. P. Johnson's (1991) commitment framework have all emphasized the lack of attractive alternatives as a key factor in the maintenance of romantic relationships. Therefore, the

frequency with which celebrities tend to have their relationships dissolve may be due, in no small part, to the "occupational hazard" of often being confronted with attractive alternatives.

Consistent with theory, research demonstrates correlations between the perceived availability of alternatives and relationship commitment (Jemmott, Ashby, & Lindenfeld, 1989). For example, the comparison level for alternatives (i.e., the availability and attractiveness of an alternative) is predictive of the rate of relationship breakup (Felmlee, Sprecher, & Bassin, 1990; J. A. Simpson, 1987). In essence, the availability of attractive alternatives is thought to reduce relationship commitment and dependency and thereby increase the risk of relationship dissolution (Drigotas & Rusbult, 1992; Rusbult & Buunk, 1993). However, we are unaware of any research that has experimentally manipulated the availability of alternatives and examined its effects on commitment and commitment-related behaviors.<sup>1</sup>

The seemingly straightforward hypothesis outlined above is that the availability of alternatives should decrease commitment. However, a motivated-cognition approach to close relationships suggests otherwise (Lydon, Burton, & Menzies-Toman, 2005). Commitment is a motivational construct in that it motivates people to see, think, and act in ways that help to sustain their romantic relationships. Commitment is associated with perceiving bad behaviors by a partner as less severe than impartial observers perceive the same behaviors (Menzies-Toman & Lydon, 2005), with making benign attributions for poor behavior (Finkel, Rusbult,

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<sup>1</sup> In a role-playing experiment, individuals expected the attractiveness of an alternative to influence the protagonist's commitment (Rusbult, 1980).

Kumashiro, & Hannon, 2002), and with the ability to be tolerant and forgiving of such poor behavior (termed *accommodation*; Rusbult, Verette, Whitney, Slovik, & Lipkus, 1991). Arguably, one of the most important insights in relationship-commitment research in the past 20 years is that the arrow between relationship threats and commitment is bidirectional (Lydon, 1999). This means that just as the threat of attractive alternatives can undermine commitment and the viability of a relationship, commitment may motivate individuals to minimize such threats to maintain and protect the relationship.

A logical question then arises: "How might one minimize the threat of an attractive alternative?" One strategy is to simply ignore the alternative (Miller, 1997). Another strategy is to devalue, or underrate, the attractiveness of the alternative (D. J. Johnson & Rusbult, 1989; Simpson, Gangestad, & Lerma, 1990), although those in dating relationships are less successful at devaluation when they are led to believe that the alternative is attracted to them (Lydon, Meana, Sepinwall, Richards, & Mayman, 1999).

Now imagine a real-world interaction with an attractive alternative, rather than the casual perusal of a picture and a file folder. The attractive person is showing a great interest in you, maintaining eye contact, and maybe even being a bit flirtatious. The threat is strong. In contrast with the laboratory, in the real world, people may not have the opportunity to stop for a few minutes and consciously reflect on the situation in order to make a deliberate judgment of devaluation. Instead, the threat may be experienced quickly and implicitly.

We theorize that in the face of a strong, implicit relationship threat posed by the availability of an attractive alternative, commitment alone may not be sufficient to ward off the threat. We hypothesize that, instead, individuals need to have learned and developed strong commitment-motivated "if-then" contingencies in the form of: "If an attractive alternative approaches me, then I will protect my relationship."

Our proposition is derived from Mischel and Shoda's (1995) cognitive-affective personality system. The cognitive-affective personality system model proposes that individuals have learned and have available in memory if-then contingencies in the form of "If I am in situation X, then I will respond with behavior Y." To predict an individual's behavioral response to a situation, one must consider the cognitive-affective mediating units activated by the situation, such as the encoding of the situation, the goals and values implicated, and the self-regulatory strategies learned and accessible in the situation. Moreover, one needs to recognize that these units are not independent of each other so that the activation of a particular set of goals and values may correspond with a particular encoding of the situation, and the two units may contribute to the eliciting of an associated behavioral response.

The situation of encountering an attractive alternative can be encoded in an egoistic self-interested manner consistent with exchange theories (Blau, 1964; Homans, 1961). Consequently, the situation should decrease commitment and commitment-related behaviors. However, taking a motivated-cognition approach, we see that the same situation can be encoded as a threat to one's relationship, conjuring up the values associated with the relationship and thereby eliciting behaviors that protect and enhance the relationship. Just as there are stable individual differences in personality signatures, we expect that there are stable individual differences in relationship signatures elicited by a situation such as the availability of an attractive alternative.

What may account for stable individual differences in relationship signatures? Theory and research suggest that men and women should differ in response to the availability of an attractive alternative. Men are theorized to have a more individualistic sense of self that is differentiated from others, whereas women are theorized to have more interdependent self-construals (Cross, Morris, & Gore, 2002; Josephs, Markus, & Tafarodi, 1992). Women also tend to be more communal and are more likely to define themselves in terms of their relationships with others (Helgeson, 1994; Guimond, Chatard, Martinot, Crisp, & Redersdorff, 2006). An extensive program of research has shown that women have higher relationally interdependent self-construals (RISCs) and that such self-construals predict a wide range of relationship-enhancing behaviors, such as disclosure, responsiveness, and trust (Cross, Bacon, & Morris, 2000). Moreover, when receiving relationship primes, women are more willing to make benign attributions for their partner's bad behavior, and the effect is specific to women high on the RISC. Women low on the RISC and men who are similarly low on the RISC do not show this same effect of relationship-priming on benign attributions (Lydon et al., 2005). Finally, previous studies have indicated that psychological femininity and relationship centrality are positive correlates of accommodation (Agnew, Van Lange, Rusbult, & Langston, 1998; Kilpatrick, Bissonnette, & Rusbult, 2002) and that self-centeredness is a negative correlate (Campbell & Foster, 2002).

Therefore, we expect men to respond to relationship alternatives in a more individualistic, self-interested manner, whereas women should respond in a more relational manner. We anticipate that men will become less motivated to defend and protect their relationships when faced with an attractive alternative but that an attractive alternative will activate a sense of relationship threat and commitment for women, leading them to increase their willingness to defend and protect their relationships.

Note that a weaker form of the motivated-cognition hypothesis is that women will maintain their commitment, and related behaviors will remain stable. However, successfully warding off threats can strengthen a relationship (Brehm, 1985; Murray & Holmes, 1993). From a dissonance perspective, commitment should escalate when one perceives that an appealing alternative has been freely sacrificed (Brickman, 1987). Thus, the strong test of the motivated-cognition approach is that a person will engage in even greater commitment-related behaviors in response to the availability of alternatives.

Given this theoretical background, we first sought to examine whether men and women differ in the extent to which an attractive alternative cognitively and behaviorally activates a sense of threat and commitment. If threat and commitment are not activated, then it is unlikely that there will be commitment-related relationship-protection behaviors. We expected that an available alternative would activate thoughts of threat and commitment for women but not for men (Hypothesis 1). In a first study, we used a mental simulation procedure whereby participants visualized an interaction with someone of the same sex versus an attractive person of the opposite sex. We then used word-fragment completions to explore possible gender differences in the cognitive activation of threat and commitment.

In Study 2, to examine behavioral differences between men and women in response to an attractive alternative, we presented intimates with images of attractive opposite-sex targets in virtual reality and assessed the distance at which participants placed the attractive others relative to neutral images. We hypothesized that

in a neutral, decontextualized control condition, we would not obtain gender differences but that in a relationship context, women would avoid the attractive target by moving his image further away (Hypothesis 2). We created a relationship context by having some participants complete a short relationships questionnaire within a larger package of self and personality questionnaires.

In Studies 3–5, we conducted laboratory experiments in which we manipulated information regarding the relationship status of an attractive opposite-sex confederate and examined what effect this had on the commitment-related relationship-protective response of accommodation (Rusbult et al., 1991), or one's willingness to tolerate a romantic partner's transgression by responding in a way that helps to sustain, rather than undermine, the stability of the relationship. Accommodation has been examined in numerous studies on commitment, and it has been shown to predict actual relationship behavior (Rusbult et al., 1991) and relationship longevity (Amodio & Showers, 2005).

In Study 3, we hypothesized that men would show a decrease in the willingness to accommodate their dating partners' transgressions after an interaction with an available attractive alternative (Hypothesis 3). In contrast, in Studies 4 and 5, we hypothesized that women would increase their willingness to accommodate in response to the same threat (Hypothesis 4). In Study 4, we also explored whether or not the dominance versus warmth of the confederate would moderate women's responses, as it has been theorized that these interpersonal orientations may affect the perceived attractiveness of available alternatives (Kenrick, Neuberg, Zierk, & Krones, 1994; Fletcher, Tither, O'Loughlin, Friesen, & Overall, 2004; Li & Kenrick, 2006). One possible reason why women might increase their accommodation is guilt elicited by their attraction to an alternative that violates ought standards. Therefore, in Study 5, we examined whether or not feelings of guilt aroused by the interaction would mediate accommodation responses.

In Study 6, using the same paradigm as in Studies 3–5, we added a lexical decision task to assess the cognitive accessibility of commitment and threat. We examined correlations between these accessibility measures and accommodation for women in the available-alternative condition, compared with those in a no-confederate control condition. We also included a premeasure of self-reported commitment. On the basis of previous research, we expected that the self-report measure of commitment would predict accommodation in the control condition (Hypothesis 5). In line with our theorizing, we expected that women's ability to regulate and dampen the cognitive accessibility of threat when faced with the confederate would be associated with greater accommodation (Hypothesis 6). We also expected that the implicit accessibility of commitment would predict accommodation, above and beyond the explicit self-report measure of relationship commitment (Hypothesis 7). In addition, we explored the possibility that the accessibility of commitment may be more strongly associated with accommodation in the threat (available-alternative) condition than in the control condition.

Finally, we reasoned that, if the difference between male and female responses is due, at least in part, to differences in the encoding of the attractive alternative as a relationship threat that then activates relationship-protection mechanisms, then it should be possible to train men to respond in a fashion similar to that of women. Drawing on theory and research on implementation intentions (Gollwitzer, 1999), in Study 7, we hypothesized that

teaching men if–then contingencies in the form of “When I am in situation X, I will engage in behavior Y” would be effective at inducing relationship-protective responses. Our rationale was that by forming the contingencies a priori, the individual's response would be automatically cued by the situation, allowing him to act immediately, without needing to question and formulate an appropriate response. This would be consistent with previous research finding, for example, that students who were equally committed to the goal of writing an essay about Christmas Eve varied substantially in their completion of the essay as a function of having formed or not formed an implementation intention such as “On December 26, in the morning, I will go to my desk and write the essay.” We theorized that implementation intentions would provide men with an if–then contingency that would signal to them that the situation with an attractive alternative is actually a relationship threat that should be addressed rather than a situation to be experienced in an egoistic, independent-self manner.

## Study 1

As previously stated, the purpose of our first study was to examine whether men and women differ in the extent to which an attractive alternative cognitively activates a sense of threat and commitment. A mental simulation procedure was used whereby participants visualized an interaction with a peer of the opposite sex versus a peer of the same sex (control condition). In a subsequent, ostensible filler task, participants completed word fragments, some of which could be completed as threat words and others that could be completed as commitment words. We hypothesized that men and women in the experimental condition would differ in their implicit encoding of the situation as indicated by their word-fragment completions.

## Method

### Participants

Three hundred heterosexual male and female participants (147 men and 153 women) who were on average 22.2 years of age ( $SD = 3.02$ ) and who were all involved in a romantic relationship ( $M$  duration = 21.3 months;  $SD = 18.7$ ) were recruited from both the McGill University campus and surrounding areas of Montreal (Quebec, Canada) for a study ostensibly regarding their ability to visualize social situations. Participants kindly agreed to take part in the study without compensation. These participants were randomly assigned to conditions whereby 100 visualized an interaction with an attractive alternative who asked for the participant's phone number (unambiguous threat condition), 101 visualized an interaction with an attractive alternative who made a passing reference to his/her dating partner (ambiguous threat condition), and 99 visualized an interaction with a member of the same sex (control condition).

### Procedure

Upon completion of the informed-consent form, participants were presented with the following instructions:

In the first part of this survey you will be given a short passage to read. We ask that you try to imagine the scenario that it describes as vividly as you possibly can. The main character in the passage is YOU and we

ask that you try to visualize the scenario as if the events described were really happening. After you read the passage you will be asked to complete some word puzzles. This is designed to distract your attention from the passage that you read. After you complete the word puzzles you will be asked how vividly you recall the scenario that you read. This is why it is very important that you try to imagine the scenario as best as possible.

These instructions were used as a cover story for the use of word fragments as a dependent measure. Participants then read the assigned visualization, completed commitment and threat word fragments, and then answered various questions regarding their ability to visualize the scenario.

### Materials

*Visualization procedure.* In the unambiguous threat condition, the participant visualized an interaction with an attractive member of the opposite sex from one of their classes with whom they met and struck up a conversation at a coffee shop. The interaction ended with the attractive person offering his or her phone number to get together at a later date to study, but the alternative made no reference to a dating partner. In the ambiguous threat condition, the interaction was exactly the same, except the alternative made a passing remark in reference to their dating partner (that their partner had not yet purchased the issue of the magazine the participant was currently reading). In the control condition, the interaction was identical to the unambiguous threat condition, except that in this condition, the interaction partner was the same sex as the participant.

*Word-fragment completion task.* This task consisted of 16 word fragments (six of which had possible commitment word completions and neutral word completions, three of which had possible threat word completions and neutral word completions, and seven of which served as filler and control word fragments with other/neutral word completions). Examples of the commitment word fragments included *lo\_al* (*loyal* or *local*), *de\_ \_ted* (*devoted* or *deleted*), and *c\_ \_mi\_ \_e\_* (*committed* or *committee*). The six commitment word-fragment target completions constituted words that have been identified by Aron and Westbay (1996) and Fehr (1988) as closely related to commitment. The threat word fragments consisted of words that we generated and thought to be representative of the concept of threat: *thr\_ \_t* (*threat* or *throat*), *be\_a\_e* (*beware* or *became*), and *t\_m\_ \_ing* (*tempting* or *tumbling*). The word completions were coded as either a hit or a miss for each target word, with the cognitive accessibility of commitment and threat determined by the sum of the number of hits in each category. More specifically, the accessibility of commitment was determined by the number of hits to the target words *loyal*, *devoted*, *attachment*, *committed*, *dedicated*, and *invested*, whereas the accessibility of threat was determined by the number of hits to the target words *beware*, *tempting*, and *threat*.

### Results

Because we found no differences between the unambiguous and ambiguous threat conditions in the frequency of either threat or commitment word-fragment completions, we collapsed across these two conditions and compared both of these threat conditions with the control condition. A 2 (Condition: threat vs. control)  $\times$  2

(Gender: male vs. female) analysis of covariance (ANCOVA) was conducted with threat-word completions as the dependent measure and the total length of the romantic relationship, how realistic the participant thought the scenario was, and the total number of neutral filler words each participant completed as covariates. Although there was not a significant interaction,  $F(1, 293) = 2.07$ ,  $p = .15$ , men in the control condition ( $M = 1.16$ ,  $SD = 0.87$ ) and women in the control condition ( $M = 1.16$ ,  $SD = 0.93$ ) completed the same mean number of threat words,  $t(97) = .02$ , *ns*, but in the experimental condition, women ( $M = 1.22$ ,  $SD = 0.85$ ) reported significantly more threat words than did men ( $M = 0.90$ ,  $SD = 0.83$ ),  $t(199) = 2.70$ ,  $p < .01$ , effect size  $r = .19$ .

This same gender difference was obtained for the activation of commitment when the same analysis was conducted using commitment word fragments as the dependent measure. The overall main effects for gender and condition were significant,  $F_s(1, 293) = 4.55$  and  $4.53$ ,  $p_s < .05$ , and the interaction was not,  $F < 1$ . In particular, there was not a significant gender difference between men ( $M = 1.55$ ,  $SD = 1.17$ ) and women ( $M = 1.88$ ,  $SD = 1.24$ ) in the control condition,  $t(97) = 1.36$ , *ns*, but there was a significant difference between men ( $M = 1.78$ ,  $SD = 1.09$ ) and women ( $M = 2.24$ ,  $SD = 1.45$ ) in the experimental threat condition,  $t(199) = 2.58$ ,  $p < .05$ , effect size  $r = .18$ , such that women also completed more commitment word fragments.

To examine whether women in the threat condition experienced greater overall activation of threat and commitment, we standardized scores for the threat and commitment activation measures and then conducted a repeated-measures analysis of covariance (ANCOVA) contrasting women in the threat condition with women in the control condition and men in both conditions. Women in the threat condition experienced greater overall activation of threat and commitment compared with the other three groups,  $F(1, 296) = 7.85$ ,  $r = .16$ ,  $p < .01$ .

The results of Study 1 provided preliminary evidence consistent with our theorizing that men and women would construe an interaction with an attractive alternative in different ways. Women and men did not differ at all in the activation of threat words in the control condition, but they differed significantly in the experimental condition. The same gender difference in the experimental condition was obtained for commitment words, although the non-significant difference in the control condition was not as close to zero as it was with threat words. This hints at the possibility that commitment may be more chronically accessible for women than for men across situations.

Although we do not want to overstate these results, the purpose of this study was to investigate whether or not there is any empirical basis to suggest that men and women will construe an experimental manipulation of the availability of an attractive alternative in different ways. To the extent that we overestimate the effects of Study 1, we should then have more difficulty obtaining differences in relationship-protecting behavior such as accommodation.

### Study 2

Whereas in Study 1, we examined cognitive activation when imagining an interaction with an attractive alternative, in Study 2, we sought to demonstrate gender differences in behavior using a virtual reality paradigm. Men and women in intimate relationships manipulated objects in virtual reality. Because of the artificiality of



the environment and the remoteness of the images, we reasoned that we needed to create some subtle cues providing a relationship context for the virtual reality task. Therefore, we had participants manipulate images either in a neutral, decontextualized control condition or in a relationship-contextualized prime condition. The hypothesis was that in a relationship context, women would avoid the attractive alternative by moving the image further away relative to other objects (e.g., a giraffe, basket of fruit).

### Method

#### Participants

Fifty-eight women and 57 men, ranging in age from 17 to 50 years ( $M = 26$  years), who were involved in heterosexual relationships at the time of the study ( $M$  relationship length = 53 months) were tested. Participants agreed to take part in a study about the use of virtual reality. They were recruited from the undergraduate population of McGill University, the Continuing Education program of the university, a shopping mall in the downtown area of Montreal, as well from the general English-speaking population of the city, using an advertisement placed in a prominent local English-language newspaper.

Participants were told that the purpose of the study was to examine the ease of use of virtual reality with regard to its employment in future studies. Participants were led to believe that the experimenters were interested in their experiences with the virtual reality task, given that virtual reality in research was relatively new. They were not aware that the study concerned romantic relationships.

#### Materials

*Prime.* Participants completed a 14-item relationship-attitudes survey that was embedded within a self and personality questionnaire, which served to cognitively activate implicit thoughts about relationship status. They were asked to rate how they felt about their relationship (e.g., enthusiastic, satisfied, committed). The idea was that thinking about these questions would place participants in a relationship frame of mind so that when they were immersed in virtual reality a few minutes later, they would react within a relationship context. Participants randomly assigned to not complete these questions before the virtual reality task served as a relationship-decontextualized control group.

*Virtual reality distancing task.* The dependent variable, the avoidance of an attractive alternative in virtual reality, was assessed using a distancing exercise created by Bell and Lydon (1997). The virtual reality software-development kit used to create this program was Sense8's WorldToolKit, Version 2.04 (Engineering Animation). In the task, the experimenter first fits the participant with a virtual reality headset, a CyberMaxx (VictorMaxx Technologies) head-mounted display unit, with a resolution of 180,000 pixels per square inch and an immersion factor of  $56^\circ$  in the field of vision, and gives oral instructions regarding the use of a joystick. The virtual reality program then begins by flying participants into a black space. In this virtual environment are four photographic images suspended in random order at the horizon, in a semicircle around the participant. Participants are stationary but can rotate to the right or left to view the horizon. The experimenter

explains that the participant's task is to create an arrangement with which he or she is satisfied by adjusting the distances of the images using the joystick. Three of the images are of a control nature, in that they are photographs of the nonhuman subjects: a giraffe, a mountain, and some tree fruit. The remaining image is a photograph of an age-appropriate, attractive person of the participant's preferred sex. It is this image that is thought to represent an attractive alternative. Participants are able to adjust the distances of each image individually, using the joystick to push them away or pull them closer. When they report being satisfied with their arrangements, the distances are saved in virtual units.

#### Procedure

Participants took part in individual sessions of the experiment. At the beginning of each session, they completed a short background survey with questions regarding their age and sexual preference embedded in the items. This information was later used in the virtual reality task to select an appropriate image as an attractive alternative. So as to not lead participants to be suspicious of the true nature of the experiment, we asked them a number of additional demographic-type, such as their field of study or employment, the number of hours per week that they typically work, and scales about self and personality.

Following the demographics questionnaire, we primed participants assigned to the experimental condition by having them complete the measure of relationship attitudes. They then engaged in the virtual reality distancing task in which the dependent variable was assessed. In the control condition, however, participants were not primed and so completed the virtual reality distancing task immediately following the demographics questionnaire.

### Results

To compute an index of the avoidance of the attractive alternative image, we first calculated a mean control-image distance by averaging the virtual unit distances of the three control images from the center point of the participant. This was then subtracted from the image distance of the attractive alternative, creating a difference score, whereby the greater the score, the larger the distance placed between the participant and the image of the attractive alternative relative to the control images. A score of 0 reflects no difference between the placement of the attractive alternative and control images.

We then performed a  $2$  (Condition)  $\times$   $2$  (Gender) ANOVA, which revealed a significant interaction effect,  $F(1, 111) = 5.49$ ,  $MSE = 47.30$ ,  $p = .02$ . This interaction revealed that it was only the women in the prime condition ( $M = 7.01$ ) who distanced the image of the attractive alternative from themselves. Participants in the three other conditions showed essentially no differences in their placement of the images, as is reflected in their near-zero scores. The average primed women's distance was significantly greater than that of the women in the control condition ( $M = .46$ ),  $t(111) = 3.64$ ,  $MSE = 47.30$ ,  $r = .33$ ,  $p < .01$ ; men in the prime condition ( $M = .12$ ),  $t(111) = 3.55$ ,  $r = .32$ ,  $p < .01$ ; and men in the control condition ( $M = -.37$ ),  $t(111) = 4.22$ ,  $r = .37$ ,  $p < .01$ . Men in the prime condition ( $M = .12$ ) did not differ from men in the control condition ( $M = -.37$ ),  $t < 1$ ,

*ns.* Similarly, men and women in the control condition did not differ from each other ( $t < 1$ , *ns*).<sup>2</sup>

Despite the artificiality of Study 2, clear evidence was obtained that men and women in relationships react differentially to the presence of an attractive alternative. Women showed clear avoidance of the attractive alternative in a relationship context, and men showed no evidence of this behavior. Given these results and the word-fragment data from Study 1, there appears to be sufficient evidence to suggest that men and women may respond differentially to an experimental manipulation of the availability of an attractive alternative

### Study 3

Having demonstrated that the imagined situation in Study 1 did not activate threat and commitment for men and that even when primed to think about their relationship, men failed to distance themselves from the image of the attractive alternative (Study 2), in Study 3 we created a laboratory experimental paradigm that mimicked the mental simulation of an attractive alternative to examine the effects of the manipulation of the availability of a real-life attractive alternative on the relationship-protective behavior of accommodation. We anticipated that a real-life attractive alternative would pose an even stronger threat than we previously had been able to induce and that this paradigm would lend ecological validity to our findings.

### Method

#### Participants

Seventy-one male participants who were all currently involved in a heterosexual romantic relationship were recruited from the McGill University campus to take part in a study purported to be on reactions to conflict situations in relationships. However, the recruitment process was such that participants believed that the study was open to both men and women who were either single or currently involved in a relationship, with single people reporting on their most recent relationship. Data from 4 participants were not usable because of procedural problems, 6 participants reported suspicion, and 1 participant did not complete the dependent measures. The final sample consisted of 60 men who were, on average, 19 years of age ( $SD = 5.56$ ) and who were involved in a romantic relationship for a median length of 12 months ( $SD = 17.6$ ). Participants were university students who had agreed to participate either in exchange for course credit for an introductory psychology class or without any compensation. These participants were randomly assigned to conditions whereby 31 interacted with an attractive and available confederate of the opposite sex (threat condition) and 29 interacted with an attractive but unavailable confederate of the opposite sex (control condition).

#### Procedure

The participant and a confederate (posing as another participant scheduled for the same time slot) entered the laboratory and were asked to sign a letter of informed consent. The experimental conditions were manipulated by the use of a single question on the part of the experimenter—"I'm missing a response from your telephone interview data. Are you in a relationship?"—to which

the confederate either replied "No, I'm single" (available condition) or "Yes, I'm married" (unavailable condition). The confederate also wore a wedding ring in the unavailable condition. In both conditions, the experimenter left the two alone in the room for several minutes, having told them that she had run out of questionnaires and needed to make additional copies.

In the available condition the confederate proceeded to engage the participant in a scripted conversation. The confederate maintained prolonged eye contact with the participant, expressed deep interest in the conversation, and provided encouraging feedback (such as nodding and smiling), and she flicked her hair at one point. During the conversation, the confederate mentioned that she had been in another experiment and said "You wouldn't believe what I had to do." At that point, she laughed and gently touched the participant. All of these elements were designed to express the confederate's interest in the participant, with the intention of making the confederate seem behaviorally available (cf. Eibl-Eibesfeldt, 1989). The experimenter listened and observed from the other side of a one-way mirror that was almost completely covered with poster board, and confirmed the confederate's performance of these key behaviors. In the unavailable condition, the female confederate did none of these things. To avoid any conversation that might be initiated by the participant, the confederate took out an agenda and made notes for the duration of the interaction period. At the end of the interaction period, the experimenter returned and once the participant was separated from the confederate, the study materials were distributed. Accommodation was assessed immediately, with a one-item measure of commitment embedded in a demographic-information survey that assessed the length of the participant's current romantic relationship, among other things, such as age and gender.

#### Materials

*Accommodation.* The accommodation questionnaire consisted of four scenarios that were presented in a random order. Each scenario required that the participant imagine that his partner had transgressed in some manner. Two low-severity transgressions involved the following: (a) the partner being late and leaving the participant waiting outside in the cold of winter for 20 min or (b) the partner revealing to others an embarrassing thing that the participant had done. The two more severe transgressions involved the following: (a) the partner failing to hand in the participant's assignment for a course or (b) the partner lying that she had to cancel a dinner date in order to study, but the participant finds her out at a bar that night. Four possible responses were available to be rated for each scenario, and each involved either voice (active-constructive response), loyalty (passive-constructive response), exit (active-destructive response), or neglect (passive-destructive response). The participant rated on an 11-point scale how likely it was that they would engage in each behavior (0 = *not at all likely* and 10 = *extremely likely*). The participant's willingness to engage

<sup>2</sup> These results were obtained by comparing image-difference scores (attractive alternative image – control image mean). However, we also analyzed the data using a repeated-measures ANOVA. Results revealed a similar Gender  $\times$  Condition  $\times$  Image interaction,  $F(1, 111) = 5.49$ ,  $MSE = 23.65$ ,  $p = .02$ . For ease of presentation, only the analysis-of-difference scores are presented.

in constructive behaviors (voice and loyalty) versus destructive behaviors (exit and neglect) was measured for each of the four scenarios. Accommodation was computed (as in Wieselquist, Rusbult, Foster, & Agnew, 1999) by subtracting the tendency to respond destructively (exit and neglect) from the tendency to respond constructively (voice and loyalty), with the scale ranging from  $-20$  to  $20$ .

**Commitment.** This was assessed with a single item whereby the participant rated his response to the question "How committed are you to your relationship?" on a 5-point scale (1 = *not very* and 5 = *very*).

**Debriefing.** Given the nature of the study, we gave a great deal of attention and care to the debriefing. First, participants were asked to write about their thoughts and any concerns or questions they had about the experiment. Second, in a face-to-face debriefing interview, the experimenter used a funneled questioning technique to gradually probe for suspicion. Finally, the experimenter addressed concerns about the possible residual effect of the experiment on the participant and his relationship. The experimenter explained that laboratory situations at times prompt participants to think about certain aspects of their relationships and their partners, rather than other aspects, and that the experimental situation is likely to elicit thoughts and feelings that are not representative of the relationship as a whole and are consequently not a good basis for making relationship judgments.

### Results

A 2 (Confederate: available vs. unavailable)  $\times$  2 (Transgression: mild vs. severe) repeated-measures ANOVA was performed on accommodation to mild and severe partner transgressions. The main effect for transgression was significant,  $F(1, 58) = 1.62, p < .001$ , confirming the distinction between the severity of the transgressions. We also obtained our hypothesized main effect for the manipulation,  $F(1, 58) = 4.62, r = .27, p < .05$ . However, these two main effects were qualified by a Transgression  $\times$  Availability interaction,  $F(1, 58) = 8.61, p < .01$ . As can be seen in Table 1, the effect of the availability manipulation was highly significant for less severe transgressions,  $t(58) = 4.90, r = .54, p < .01$ , and even more so for the severe transgressions,  $t(58) = 9.04, r = .76, p < .01$ .

Given that we employed more than one confederate, we also tested for differences in the effects of the different confederates. Results indicated that there were no significant differences in accommodation as a function of confederate,  $F(1, 56) = 2.80, ns$ , and that the individual confederate did not qualify the main effects or the interaction reported above,  $F_s < 1$ . In addition, there were no differences between experimental conditions on the demographic variables of age, relationship length, or the single-item commitment measure as a function of the manipulation ( $t_s < 1.01$ ).

Table 1  
Mean Accommodation Scores in Study 3 by Threat Condition and Severity of Transgression

Transgression	Alternative	
	Available	Unavailable
Mild	2.56	4.97
Severe	-2.95	1.50

Note. Higher scores mean greater willingness to accommodate.

### Study 4

Having shown that the induction of a real-life relationship threat (the availability of an attractive alternative dating partner) does, as theories of commitment (e.g., Levinger, 1976; Rusbult & Buunk, 1993) would suggest, decrease the tendency to enhance and protect intimate relationships for men, we aimed to show that this would not hold true for women. Because of women's relational self-construal, one might expect that situations are experienced in terms of their implications not only for the self but also for the relationship. In this study, we sought to examine our hypothesis that because interactions with attractive and available members of the opposite sex are experienced by women as threats to their relationship (Study 1), such interactions will increase commitment-motivated responses (in this case, accommodation).

In this study, we also explored possible differences in the warmth and intimacy versus power and dominance of the alternative. Early accounts suggested that dominance in an alternative may lower women's evaluations of their partners (Kenrick et al., 1994). More recent research suggests that warmth may be more appealing than status for short-term mating (Fletcher et al., 2004), and when forced to prioritize, women give priority to warmth for potential long-term mates (Li & Kenrick, 2006). Therefore, we manipulated the presentation of the confederate as either high in power and dominance but low in warmth and intimacy or high in warmth and intimacy but low in power and dominance. Finally, as an added refinement, we assessed and statistically controlled for participant attractiveness as a potential correlate of participant's attraction to the confederate.

### Method

#### Participants

Fifty-eight female participants who were all currently involved in a heterosexual romantic relationship were recruited from the McGill University campus to take part in what was purported to be an interpersonal relationships study. Again, the recruitment process was such that participants believed that the study was open to both men and women who were either single or currently involved in a relationship. Participants were, on average, 19 years of age ( $SD = 2.11$ ), were involved in a romantic relationship for a median length of 13.5 months ( $SD = 17.6$ ), and were compensated with either course credit for an introductory psychology class or \$5. Participants were randomly assigned to one of three conditions whereby 13 interacted with an attractive and available confederate of the opposite sex who exhibited high dominance (power/dominance threat condition), 21 interacted with an attractive and available confederate of the opposite sex who exhibited high warmth (intimacy/warmth threat condition), and 21 interacted with an attractive but unavailable confederate of the opposite sex (control condition). The data of 3 participants were omitted from the study because of suspicion: 2 in the available-dominant condition and 1 in the available-warm condition.

#### Procedure

The participant and a confederate (posing as another participant scheduled for the same time slot) entered the laboratory and were asked to sign a letter of informed consent. As before, we manip-

ulated experimental condition by having the experimenter ask a diagnostic relationship-status question of the confederate. Once again, the experimenter left the participant and the confederate alone together, under the guise of needing to make additional copies of the questionnaire.

In the experimenter's absence, the confederate again either proceeded to engage the participant in a scripted conversation (high-power/dominance and high-intimacy/warmth threat conditions) or avoid any conversation that might be initiated by the participant (control/unavailable condition). After a short while, the experimenter returned, and once the participant was separated from the confederate, questionnaires were distributed. Again, accommodation was assessed immediately, and the single-item measure of commitment was embedded in a demographic-information survey at the end of the experimental session. We included a manipulation check to ensure that both power/dominance and intimacy/warmth had been manipulated successfully (a coding error resulted in missing data on the manipulation check for 14 participants), and the attractiveness of each participant was rated by both the experimenter and the confederate so that it could later be used as a control variable.

### Materials

*Manipulation of high power/dominance and high intimacy/warmth.* In both of the threat conditions, the confederate was presented as single/available. The experimenter said "I'm sorry, but I have a piece of information missing—are you in a relationship?" In both conditions, the confederate was to sustain eye contact, run his hand through his hair at some point, and present himself as a medical student. For the high-power/dominance threat condition, the confederate said that he was studying medicine because he loved research and that he was working toward an MD/PhD in neurochemistry. He said "I'm going to specialize in neurosurgery. It's a tough field but I know I'll be good at it." He was trained in terms of body language to sit leaning back, with legs apart. He was to direct conversation, being polite but taking charge of the conversation. For the high-intimacy/warmth threat condition, the confederate said that he was studying medicine and stated the following: "Because I love kids, I've decided to go into pediatrics. I'm going to specialize in pediatric oncology. It's a tough field but I know it'll be really rewarding." He was trained in terms of body language to lean forward, prop his head in his hands, and nod a lot to affirm the participant's statements.

*Accommodation.* This was assessed and calculated in the same manner as in the previous study.

*Commitment.* As in the previous study, commitment was assessed with a single-item measure.

*Manipulation checks.* Participants were asked to rate the confederate's degree of attractiveness from 0 = *very unattractive* to 10 = *very attractive*, dominance from 0 = *submissive* to 10 = *dominant*, and warmth from 0 = *cold* to 10 = *warm*. The attractiveness of participants was also rated on this same 11-point scale by the experimenter and the confederate.

### Results

#### Manipulation Checks

First, we examined participants' ratings of the attractiveness, dominance, and warmth of the confederate. One-way, three-group

ANOVAs were performed, comparing responses in the unavailable, available–dominant, and available–warm conditions. There were no between-group differences for overall attractiveness of the confederate as a function of condition,  $F(2, 38) = 2.31$ , *ns*, indicating that the availability manipulation did not alter perceptions of attractiveness (the confederate was selected for the experiment because he was seen as highly attractive). However, as expected, there were main effects for dominance,  $F(2, 39) = 6.13$ ,  $p < .01$ , and for warmth,  $F(2, 39) = 23.52$ ,  $p < .01$ . Participants rated the confederate as more dominant in the dominant condition ( $M = 7.67$ ;  $SD = 1.09$ ) than in the unavailable ( $M = 5.81$ ;  $SD = 1.49$ ) or available–warm conditions ( $M = 5.76$ ;  $SD = 1.77$ ). Conversely, participants rated the confederate as warmer in the warmth condition ( $M = 8.01$ ;  $SD = 1.39$ ) than in the unavailable ( $M = 4.90$ ;  $SD = 1.15$ ) or available–dominant conditions ( $M = 4.75$ ;  $SD = 1.67$ ).

#### Accommodation

A 3 (Confederate: unavailable vs. available–dominant vs. available–warm)  $\times$  2 (Transgression: mild vs. severe) repeated-measures ANOVA was performed on accommodation to mild and severe partner transgressions. The main effect for transgression was significant,  $F(1, 52) = 71.4$ ,  $p < .001$ , replicating the distinction between the severity of the transgressions. We also obtained our hypothesized main effect for the manipulation,  $F(2, 52) = 3.52$ ,  $r = .25$ ,  $p < .05$ . These two main effects were not qualified by a Transgression  $\times$  Availability interaction,  $F < 1$ . A comparison of the two available conditions versus the unavailable condition was highly significant,  $t(52) = 2.63$ ,  $r = .34$ ,  $p < .01$ . Accommodation was greater in the two available conditions than in the unavailable condition ( $M = -3.71$ ;  $SD = 5.36$ ), but there was no difference between the available–dominant ( $M = 0.44$ ;  $SD = 5.35$ ) and available–warm conditions ( $M = 0.01$ ;  $SD = 5.36$ ).

Participants in the two threat conditions reported less commitment on the one-item measure ( $M_s = 3.90$  and  $3.62$ , respectively;  $SD_s = 0.97$  and  $1.50$ , respectively) than did individuals in the unavailable condition ( $M = 4.62$ ;  $SD = 0.80$ ),  $F(2, 51) = 4.19$ ,  $p < .05$ , indicating that the threat manipulation challenged felt commitment. One could have imagined the opposite patterns of results, with participants in the threat conditions immediately defending by reporting higher commitment. Controlling for commitment did not reduce the effect of the threat manipulation on accommodation. Instead, the effect was somewhat stronger,  $F(2, 50) = 5.01$ ,  $r = .30$ ,  $p < .02$ .

We also obtained ratings of the perceived attractiveness of the participants from the experimenter and confederate. A one-way ANOVA revealed, unexpectedly, that participants in the unavailable condition were perceived as relatively less attractive ( $M = 5.82$ ;  $SD = 1.11$ ) than those in the available–dominant ( $M = 6.62$ ;  $SD = 1.02$ ) and available–warm ( $M = 6.69$ ;  $SD = 1.08$ ) conditions. Therefore, we reanalyzed the accommodation data, treating participants' attractiveness as a covariate. The effect of the manipulation was actually slightly stronger in the ANCOVA,  $F(2, 51) = 4.72$ ,  $r = .29$ ,  $p < .02$ .

#### Study 5

Having shown the hypothesized association between the availability of the attractive alternative and accommodation for women,



we sought to rule out an alternative explanation for our findings. That is, we sought to rule out the possibility that increases in accommodation on the part of women, when faced with the attractive alternative, were merely the byproduct of feelings of guilt aroused by their attraction to the alternative. Previous research has shown that “when people experience guilt, they typically feel regret regarding their transgression, are empathic toward those they have hurt, and try to correct the situation through apology and reparation” (Leary, 2007, p. 333).

In this study, we also streamlined the design, dropping the warmth-versus-dominance manipulation because we did not find significant differences between these conditions and, more important, because the streamlined design for Study 5 was more similar to that of Study 3, thereby facilitating a cross-study meta-analytic comparison of the effect of our availability manipulation on men versus women. We also added a one-item premeasure of commitment for greater statistical control and used a different male confederate for replication purposes.

### Method

#### Participants

Fifty-nine female participants who were all currently involved in a heterosexual romantic relationship were recruited from the McGill University campus to take part in what was purported to be an interpersonal relationships study. Again, the recruitment process was such that participants believed that the study was open to both men and women who were either single or currently involved in a relationship. Seven participants reported some suspicion, and their data were omitted from the study. Participants were, on average, 20 years of age ( $SD = 1.75$ ), were involved in a romantic relationship for a median length of 18 months ( $SD = 17.1$ ), and were compensated with \$5. Participants were again randomly assigned to one of two conditions: 26 individuals interacted with an attractive and available confederate of the opposite sex, and 26 interacted with an attractive but unavailable confederate of the opposite sex (control condition).

#### Procedure

First, 1–2 weeks prior to the experimental session, participants were telephoned and told that the experimenters were “looking for both single people and those in relationships to fill out a simple questionnaire.” This allowed us to confirm relationship status and legitimize the confederate as single. It also set up a question on the telephone: “Would you say that you are not at all committed, slightly committed, moderately committed, very committed, or totally committed to your current relationship?”

Later, in the laboratory, the participant and a confederate (posing as another participant scheduled for the same time slot) entered the lab and were asked to sign a letter of informed consent. As before, the experimental conditions were manipulated with a diagnostic relationship-status question asked of the confederate by the female experimenter. In this study, to decrease the likelihood of suspicion, the experimenter left the room under the guise of searching for a lost participant who was scheduled for that same study.

In the experimenter’s absence, the confederate again either engaged the participant in a scripted conversation (threat condi-

tion) or avoided any conversation that might be initiated by the participant (control/unavailable condition). After a short while, the experimenter returned, and once the participant was separated from the confederate, the questionnaires were distributed. In this study, the participants filled out the emotion measure before accommodation was assessed.

#### Materials

*Emotions scale.* This was assessed with adjectives from the Differential Emotions Scale (Izard, 1977). Shame, guilt, embarrassment, happiness, surprise, and interest were assessed using two adjectives that are representative of each emotion. These adjectives were presented in alphabetical order and were rated on a 5-point scale (1 = *not at all* and 5 = *very much*).

*Accommodation.* This was assessed and calculated in the same manner as in the previous studies.

### Results

Because half the sample reported five out of five on the one-item premeasure of commitment, we dichotomized participants into two commitment groups, with five being high and less than five being low. We then conducted a 2 (Commitment: high vs. low)  $\times$  2 (Confederate: available vs. unavailable)  $\times$  2 (Transgression: mild vs. severe) repeated-measures ANCOVA on accommodation with ratings of the participants’ attractiveness as a covariate. The sole statistically significant effect was the main effect for the experimental manipulation,  $F(1, 47) = 4.75$ ,  $r = .30$ ,  $p < .05$ . Women in the available-confederate condition reported greater willingness to accommodate ( $M = 1.73$ ;  $SD = 8.92$ ) than did women in the unavailable-confederate condition ( $M = -3.70$ ;  $SD = 8.57$ ). The covariate for participant’s attractiveness was not significant ( $F < 1$ ). Also, the dichotomized premeasure of commitment was not significant,  $F(1, 47) = 1.3$ , *ns*, although the means were in the expected direction ( $M = 0.37$  for high commitment and  $M = -2.33$  for low commitment).

The measure of guilt from the emotion scale was positively associated with accommodation across conditions,  $r(51) = .29$ ,  $p < .05$ . However, there were no significant differences in guilt between experimental conditions ( $F < 1$ ), and when guilt was treated as a covariate, it did not reduce the main effect of the manipulation.

#### Cross-Study Comparison

Because Study 5 with female participants was very similar to Study 3 with male participants, we compared the effect sizes for the manipulation of the availability of attractive alternatives for men and women, respectively. Using the Fisher  $Z$  transformation of the two  $r$  effect sizes resulted in a highly significant difference between the two studies,  $Z = 3.04$ ,  $p < .01$ . For further comparison, we calculated the accommodation scores of participants in the available condition in Studies 3–5, relative to the unavailable, baseline condition for each study. For Study 4, we combined the scores for the two available-alternative conditions. As seen in Figure 1, men in Study 3 accommodated less after interacting with the available alternative, whereas women in Studies 4 and 5 accommodated more after interacting with the available alternative.

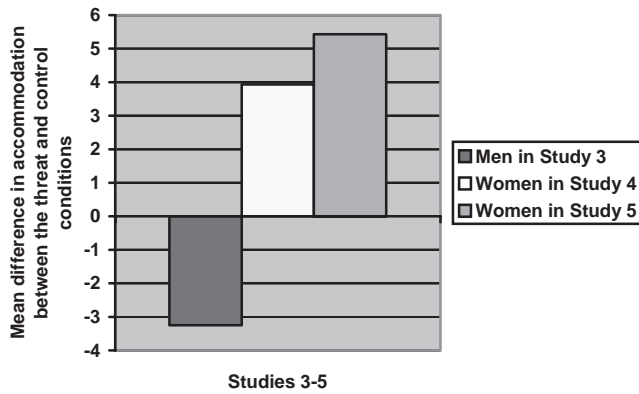


Figure 1. Mean differences in accommodation between the threat and control conditions for Studies 3–5.

### Study 6

After establishing in Studies 4 and 5 that the presence of an available attractive alternative leads women to increase their willingness to accommodate their partners' transgressions, we sought to examine the cognitive processes that may be implicated in these relationship-maintenance responses. Our primary candidate, as outlined in the introduction and in Study 2, is threat elicited by the attractive alternative. If we are correct that threat contributes significantly to the psychological process underlying our obtained experimental effects, then the accessibility of threat should only be associated with accommodation in the experimental condition. In a control condition, the variability in threat accessibility should be irrelevant to accommodation responses (Spencer, Zanna, & Fong, 2006).

A second possible process is commitment accessibility. We know that self-reported commitment is associated with accommodation in general, so one might expect that the cognitive accessibility of commitment should also be associated with accommodation across conditions (Etcheverry & Le, 2005). However, we explored the possibility that commitment accessibility may be more strongly linked to accommodation in a relationship-threat context.

In Study 6, following the encounter with the attractive alternative, participants completed a lexical decision task that permitted the examination of the cognitive accessibility of the constructs of threat and commitment. We theorized that women's ability to regulate threat (decreased accessibility of threat words) would be positively associated with accommodation. Moreover, we expected that implicit commitment (greater accessibility of commitment words) would predict accommodation above and beyond explicit self-reported commitment. Also in Study 6, we included a no-confederate control group that permitted the comparison between women under conditions of high relationship threat and those under neutral conditions.

### Method

#### Participants

Forty-one female participants who were all currently involved in a heterosexual romantic relationship were recruited from the

McGill University campus to take part in what was purported to be a social situations and cognitive processes study. Again, the recruitment process was such that participants believed that the study was open to individuals who were either single or currently involved in a relationship. Participants were, on average, 19.4 years of age ( $SD = 1.96$ ) and had been involved in a romantic relationship for a mean length of 16 months ( $SD = 15.2$ ). Participants were compensated either with course credit for an introductory psychology class or with \$5. These participants were randomly assigned to conditions whereby 16 individuals interacted with an attractive and available confederate of the opposite sex and 25 individuals did not interact with a confederate (control/no-threat condition).

#### Procedure

Prior to participation in the experiment, individuals were contacted by telephone and were asked to respond to a relationship survey for a study that was ostensibly unrelated to the present investigation. Participants were then contacted approximately 1–2 weeks later by a different experimenter to schedule their appointment for this study.

In this study, the participant sat alone in a waiting room while the experimenter left to prepare the computers for the laboratory session. In the threat condition, the confederate arrived during the experimenter's absence, acting the part of another participant scheduled for the same time slot, engaged the participant in the same scripted conversation as in the previous studies, with one exception: The confederate himself revealed his relationship status as available by mentioning that he had only just moved to the city and did not have a girlfriend. The experimenter then returned, acknowledged the confederate's arrival as if he were a second participant, and asked the true participant to accompany her to the computer room where the study was to take place. In the control/nonthreat condition, the experimenter returned after 2 min (during which time no confederate had interacted with the participant). All participants then completed a lexical decision task, the accommodation measure, and again completed the relationship survey.

#### Materials

**Commitment.** A 14-item relationship-attitudes scale administered by phone 1 or 2 weeks prior to the study included the six-item Assessment of Relationship Commitment (constructed and used originally by Gagné & Lydon, 2003), in which participants are asked the extent to which they feel committed to, attached to, devoted to, loyal to, dedicated to, and invested in their relationship. These items were scored on a 5-point scale (1 = *not at all* and 5 = *extremely*). Four participants did not complete this premeasure.

**Lexical decision task.** In this task, participants were instructed to decide whether strings of letters constituted either words or nonwords by pressing keys labeled "word" and "non-word" on the keyboard as quickly and as accurately as possible. The elapsed time between the presentation of the stimulus and the participant's response was measured in milliseconds and was used as an index of construct accessibility whereby the more accessible a construct was, the shorter was the response latency. Participants completed 11 practice trials, followed by 90 test trials. The test trials con-

sisted of 45 words, of which 8 were prototypical of the construct of commitment, 5 were related to the notion of threat, and 32 had either a positive valence or a neutral valence. The remaining 45 items were nonwords in that they had letters missing or letters out of order. The words representing commitment were *devotion*, *attachment*, *sacrifice*, *protectiveness*, *commitment*, *dependency*, *loyalty*, and *security* and were selected on the basis of the work of Aron and Westbay (1996) and Fehr (1988) that demonstrated that such words are prototypic of the concept of commitment. Words of positive valence, taken from the Affect Balance Scale (Derogatis, 1975), were included to control for the inherent positivity of commitment-related words. Threat-related words included those that we generated to be highly representative of the concept of threat and consisted of the following: *danger*, *threat*, *trouble*, *beware*, and *tempting*. The remaining words were neutral words that were used as a control for within-participant baseline reaction times. We computed measures of commitment and threat accessibility by capping reaction times at 3,000 ms, performing a logarithmic transformation of the data, and then computing residual scores for each, controlling for reaction times to neutral words, and positive words in the case of commitment (Fazio, 1990).

*Accommodation.* This was assessed and calculated in the same manner as in the previous studies.

## Results

### Preliminary Analyses

First, we performed a 2 (Condition: threat vs. control)  $\times$  2 (Scenario: mild vs. severe) repeated-measures ANCOVA with the explicit premeasure of commitment entered as a covariate. The covariate was significant,  $F(1, 34) = 4.02, p = .053$ , but it also interacted somewhat with the severity of the scenario,  $F(1, 34) = 2.95, p < .10$ , as the explicit measure tended to correlate more with accommodation to the milder transgressions.

Severity of the transgression also interacted with the experimental manipulation,  $F(1, 34) = 4.66, p < .05$ , such that for milder transgressions, the presence of the available alternative increased individuals' willingness to accommodate their partners' transgression ( $M = .41$ ) compared with those individuals in the no-confederate control group ( $M = -.26$ ),  $t(34) = 2.58, p < .05$ .

To examine the effects of the measures of the accessibility of commitment and threat, we then conducted a regression analysis on total accommodation scores by first standardizing scores for the mild and severe transgressions and averaging these values. The predictor variables were self-reported commitment, the experimental manipulation, the accessibility of commitment, the accessibility of threat, and the interactions between the accessibility measures and the experimental manipulation. The total model accounted for 40% of the variance, ( $R = .63$ ),  $F(7, 29) = 2.72, p < .05$ . The accessibility of commitment was associated with accommodation in general ( $r = -.36, \beta = -.39, p < .05$ ), such that the more that commitment was cognitively accessible, the more individuals were willing to accommodate their partners' transgressions. This, however, did not interact with the manipulation ( $p = .49$ ). The accessibility of threat did interact with the manipulation ( $\beta = .45, p < .05$ ). Whereas in the control condition, the accessibility of threat was not associated with accommodation,  $r(39) = .12$ , in the threat condition, it was predictive of accommodation ( $r = .47, p < .05$ )

such that the dampened (decreased) accessibility of the concept of threat was associated with individuals' greater willingness to accommodate. Finally, the self-reported measure of commitment interacted with the manipulation ( $\beta = -2.58, p = .05$ ) such that self-reported, premeasured commitment was associated with accommodation in the control condition ( $r = .52, p < .01$ ), but it was not associated with accommodation in the threat condition ( $r = .12$ ). Consistent with the repeated-measures ANCOVA, regression results were stronger and significant for the milder transgression than for the more severe transgression, although the model accounted for greater explanatory variance when using responses to both sets of transgressions in a total score.

### Study 7

One interpretation of the previous six studies is that men are unwilling to ward off temptation. We do not subscribe to this. Instead, we theorize that the differences between men and women are due to differences in encodings and relationship-regulatory strategies that are quickly and easily activated in response to the encoding of the situation as a threat. In theory, if men were equipped with the if-then contingency that is chronically accessible for women, then men would respond to a threat prime with a relationship-protective response.

To test this idea, we drew on theory and research concerning implementation intentions, whereby a person in a single act of mental will states "When I am in situation X, then I will do Y." We hypothesized that randomly assigning males to an implementation-intentions condition in which they state "When I am approached by the attractive girl, I will then \_\_\_\_\_ to defend and protect my relationship" would increase their tendency to engage in subsequent relationship-maintenance behavior.

We had to then find a paradigm different from that of Studies 4–6 to examine relationship protection in response to threat. We reasoned that if participants had an interaction with an attractive alternative after forming an implementation intention, there would have been a great deal of demand in the experiment, and most participants would have detected our purpose. Therefore, we instead had participants engage in a number of perception tasks, including the viewing and manipulating of objects that included an image of an attractive person of the opposite sex. In Study 2, we found that women, but not men, moved the image of the attractive alternative further away from themselves than other images when primed to think about their current romantic relationship. In addition to this distancing task, we also designed a second task to assess a tendency to *not approach* an attractive image. Participants had to carry a balloon into one of four rooms in a virtual environment, two of which had been primed with the image of the attractive alternative during an earlier exploration of the environment. In Study 7, all participants received a nonevaluative relationship prime ("imagine that your partner is away for the weekend . . ."). We hypothesized that we would replicate the distancing effect from Study 2 in the control condition but that the gender difference would be reduced by having men form implementation intentions. Moreover, we predicted the same pattern of results for the balloon-placement task—that women in general but only men in the implementation-intention condition would avoid the rooms primed with the attractive alternative.

## Method

### Participants

Eighty participants (40 male and 40 female) who were all currently involved in a heterosexual romantic relationship were recruited from the McGill University campus to take part in a study purported to be on the effects of cognitive tasks on one's experience in virtual reality. The recruitment process was such that participants believed that the study was open to individuals who were either single or currently involved in a relationship. In fact, 7 male and 2 female participants were not dating at the time of their experimental session, and their data were therefore discarded. Also, 1 participant was deleted because of suspicion. Participants were, on average, 19.7 years of age and had been involved in a romantic relationship for 17 months and were compensated with \$10 or a movie pass. Participants were randomly assigned to conditions whereby 35 individuals formed the intention to defend their relationships (relationship-implementation-intention/treatment condition) and 35 individuals formed the intention to focus while studying (academic-implementation-intention/control condition).

### Procedure

Having signed a consent form, participants received written instructions about a series of cognitive and perceptual tasks and then received instructions orally from the experimenter. Participants were told that they could choose one of five envelopes, each one containing a different scenario to read and visualize. In truth, all of the five envelopes contained the same scenario. In the experimental condition, the scenario described the participant's partner being away for the weekend, the participant spending a night out on the town with friends, and the participant being approached by an attractive alternative (a single and attractive member of the opposite sex who has taken a liking to the participant). The scenario concluded with instructions to form a relationship-defending implementation intention. Individuals in the control group also received a scenario about their dating partners leaving for the weekend; however, instead of visualizing a Friday evening out with friends and being approached by an attractive alternative, those in the control condition were instructed to visualize a Saturday afternoon out with friends and thinking of an academic goal. The purpose of this procedure was to have the participants in both conditions form an implementation intention so that we would be able to control for the use of cognitive resources that are inherent in forming an implementation intention. We also made relationship status salient in both conditions. Participants then completed a series of computer tasks, including the dependent measures of avoiding versus approaching an image of an attractive person of the opposite sex.

### Materials

*Manipulation of implementation intentions.* Implementation intentions were manipulated through instructions to form either a relationship-defending implementation intention (experimental condition) or an academic-goal implementation intention (control condition). After imagining being approached by the attractive alternative, participants were provided with either of the following:

“When the guy/girl approaches, I will \_\_\_\_\_ to protect my relationship,” or “When I get distracted while studying, I will \_\_\_\_\_ to regain my focus.”

*Distancing task.* Distancing from an attractive alternative, a form of avoidance, was measured using a task in which participants manipulated the image of an attractive alternative in virtual space. Eight equally spaced images depicting an attractive alternative and various neutral images were presented on a computer monitor. Participants were stationary but could rotate on a vertical axis to alter their own perspective to view each of the images in turn. In addition, they could use the arrow keys to adjust the distance of each image, bringing it closer or pushing it further away. Participants were simply instructed to arrange the pictures in whatever configuration satisfied them. Once participants completed their arrangement, the placement of the images was recorded in virtual units. The variable for avoidance of the attractive alternative was then calculated by subtracting the distance at which the image of the alternative was placed relative to the average distance at which the neutral images were placed.

*Balloon-placement task.* Participants were placed in a large virtual lobby with a table in the center and four rooms leading off one end of the lobby. Participants were asked to thoroughly explore each of four rooms, using arrow keys on the keyboard to direct their navigation through the virtual environment. In two of these rooms (randomly selected by the computer program), the image of an attractive person of the opposite sex was flashed on the fore of the screen for 10 ms, followed immediately by a retinal interruption image and a neutral mask for another 20 ms. Because they flashed on the fore of the screen, the images were detached from the animation, so the image appeared in a consistent, stationary position slightly off the center of the screen for all participants, regardless of the participant's movement or perspective. In the neutral rooms, control images were flashed on the back wall. Participants were not able to detect images of people. After the exploration of the rooms, participants returned to a large hall with a small table in the center; a balloon appeared on the table, and a robotic arm emerged. Participants were instructed to grasp the balloon, lift it from the table, and carry it to a room.

### Results

We performed two sets of analyses to examine the hypothesis that men would differ from women in their approach versus avoidance of alternatives but that this difference would be lessened by having men form relationship-implementation intentions. First, we conducted a 2 (Gender: male vs. female)  $\times$  2 (Condition: experimental vs. control)  $\times$  2 (Image: attractive alternative vs. control) repeated-measures ANOVA of the distancing task. This produced a significant Gender  $\times$  Image interaction,  $F(1, 66) = 5.82, p < .05$ . Women avoided the target image,  $t(66) = 2.08, p < .05$ , whereas men did not,  $t = -0.57$ . There were no main effects or interactions for the relationship-implementation-intentions manipulation.

The second set of analyses concerned the balloon-placement task. Thirty-six of the 70 participants placed the balloon in a room primed with the attractive alternative, and this did not differ from chance. There also was no main effect of gender or experimental condition on balloon-placement behavior,  $\chi^2 < 1$ . However, room selection differed for men in the relationship-implementation-



intentions condition compared with men in the control condition,  $\chi^2(1, N = 32) = 4.57, p < .05$ . Specifically, men in the experimental condition avoided the primed room (75%),  $\chi^2(1, N = 16) = 4.0, N < .05$ , and men in the control condition did not (38.5%),  $\chi^2(1, N = 17) = 1.00, ns$ . Women were random in their room-selection behavior, with 11 of 19 in each condition going to the primed room,  $\chi^2 < 1$  across and within conditions for women.

Across the two dependent measures, we found evidence for our hypothesis that women in general and men primed with implementation intentions would evidence relationship maintenance in their reactions to attractive alternatives. Unexpectedly, the results for women were obtained on one dependent measure, the distancing task, and the results for men were obtained on the other dependent measure, the balloon task. One possible explanation is that the distancing task involves the avoidance of an attractive other, whereas the balloon task involves inhibiting the approach of an attractive other (not taking the balloon to the room). The dynamic of responses to attractive alternatives may be more of women avoiding attractive alternatives and men not seeking attractive alternatives, but this possible differential response requires further research.

### General Discussion

A series of seven controlled experiments provided evidence of the causal effects of the availability of an attractive alternative on relationship-maintenance processes. Consistent with theories of commitment, greater availability of a potential alternative dating partner decreased accommodation. However, this was only true for men. Women responded to the experimental manipulation in quite the opposite way—by increasing their willingness to accommodate their partner's transgressions. Merely imagining an interaction with an attractive member of the opposite sex was sufficient to activate women's thoughts of commitment and threat, whereas for men, the same manipulation did not increase the activation of commitment and threat. Women's ability to successfully regulate this threat activation when faced with the availability of the alternative led to greater accommodation. Finally, men's propensity to approach an attractive alternative was dampened when they were trained to form the contingency of "if attractive other approaches, then protect the relationship."

Serving as an environmental cue, an attractive alternative elicited very different responses from men and women. We believe that women have available in memory a chronic if-then contingency, such that "if an attractive alternative approaches, then I will defend the relationship." This leads to the ease with which they engage in processes that protect the relationship. Although men in dating relationships may not have this contingency chronically accessible, they may be capable of forming such a contingency and applying the knowledge structure appropriately in a given context when such contingencies are made more accessible through priming.

The situational trigger in these studies was the availability of an attractive alternative, which is important in its own right, as all major theories of relationship commitment identify the availability of alternatives as an essential feature of their models. However, Holmes (2002) suggested that a psychology of situations should move beyond the concrete situation and consider what that situation represents in terms of a latent theoretical structure. In this

case, the availability of alternatives represents an exemplar of the class of relationship threats. Thus, the contingency can be abstracted to "If my relationship is threatened, then I will defend it." Framed in this way, we may begin to develop a deeper analysis of the obtained gender differences and better understand them in terms of basic principles of interpersonal motivation and situations. Therefore, one explanation for the gender difference in response to alternatives may be that the latent theoretical structure activated by this particular situation is different for men and women. As we saw in Study 1, men are less likely to construe the attractive alternative as a relationship threat. For relationship-maintenance behaviors to be activated via the link between relationship threat and potential responses to such threats, the situation must first be construed as one that would require such a response. In addition, individuals can have different relationship signatures in response to interpersonal situations, and these differences may covary with gender.

Decomposing the contingency, we can ask the following: (a) What influences whether the given *if* situation is construed as a relationship threat—one requiring the activation of a relationship maintenance response? (b) What may moderate the strength of the association between the *if* and *then* response? (c) What may influence the particular response elicited by the threat?

An explanation for the gender difference in the construal of an attractive alternative as a relationship threat is that women have been socialized to be wary of the advances of attractive men and to take care to protect their relationships because they highly value marriage. Women have been taught both explicitly and implicitly that they are the gatekeepers for sexual activity and relationships (Symons, 1979). As a result, they may have learned to be careful when an attractive alternative approaches—and not to discard a good current relationship in favor of an alternate relationship partner.

Some of these same ideas can be understood within an evolutionary framework. Parental-investment theory (Trivers, 1972) and subsequent sexual-strategies theory (Buss & Schmitt, 1993) expect women to be more discriminating and restricted in their approach to relationships because of sex differences in reproduction. In the trade-off between good genes and good parenting, women are expected to more frequently adopt long-term mating tactics than short-term strategies (Gangestad & Simpson, 2000). By contrast, men may be relatively more likely than women to seize the opportunity for short-term mating. Alternative relationship partners should not generate threat for men as much as for women, and consequently, the contingency would less likely be activated for men.

In addition to general evolutionary and sociocultural factors influencing the construal of threat, there remain more proximal relationship properties that should also influence the construal of the situation as a threat. An important theoretical explanation for these gender differences is that gender is confounded with self-construals (Cross et al., 2000, 2002). Women, more than men, are likely to define themselves in terms of their relationships and to adopt a relationally interdependent self-construal. This difference has been suggested as an explanation for gender differences in relationship illusions, whereby women in dating relationships see their partners more positively than the partners see themselves, but men in dating relationships generally do not see their partners more positively than the partners see themselves (Gagné & Lydon,

2003). Moreover, recent research suggests that because of gender differences in relational identities, women will experience relationship threats as threats to the self (Burton & Lydon, 2004). Therefore, women in the current studies may be engaging in processes that protect their relationships because the relationship represents their own self-interest.

Although there are gender differences in relational self-construals, there is also within-gender variation, with some men having more relational identities than others. Further, even men who may not be disposed to define themselves in terms of their relationships may, during the course of a specific intimate relationship, come to incorporate that one relationship into their identity. From a motivated-cognition perspective, the strength of the relational identity should influence attention to threats and the construal of the situation as a threat. We expect that individual differences in relational self-construals and priming such self-construals should predict threat activation and relationship-maintenance responses.

The connection from the *if* to the *then* response is also likely influenced by motivation and commitment, as well as relational identities. Individuals may implicitly ask themselves, "Is it worth responding to the threat by engaging in some sort of relationship-maintenance response?" Even if one does experience the threat, it could elicit capitulation rather than relationship protection. Previous research suggests that one needs to calibrate the level of threat with the level of relationship commitment to predict a relationship-maintenance response. When the level of threat exceeds one's commitment level, then one is likely to succumb to the threat. However, when the level of threat is optimally calibrated with commitment (i.e., neither too trivial nor too substantial), then one is likely to engage a response (Lydon et al., 1999). That is, commitment should moderate the if-then contingency within a given situation.

The current research expands on the calibration framework by examining both explicit and implicit reports of commitment. Whereas explicit, or self-reported, commitment predicted accommodation in the control condition but not the threat condition, implicit commitment predicted accommodation across conditions. This adds credence to the notion that the confederate presented a subtle, implicit threat that was insensitive to explicit, conscious commitment. We expect that there is a wide range of relationship threats that operate outside of an individual's conscious awareness and that these are more contingent upon implicit commitment than on explicit commitment. Moreover, some situations demand quick, effortless relationship-maintenance responses, sometimes in the face of fatigue or distraction. Implicit commitment may influence such situations more strongly than explicit commitment, just as implicit measures of prejudice predict spontaneous nonverbal behavior better than do explicit measures (Dovidio, Kawakami, & Gaertner, 2002).

Finally, in addition to the *if* situation and the connection between the situation and the response, there is the question of what type of response will be elicited. In the current studies, we focused on the general propensity to tolerate partner transgressions as a way to operationalize relationship protection. Although we did not find consistent differences between more active, voice responses and more passive, loyalty responses, following Sinclair & Fehr (2005), future research might examine the circumstances under which relationship threats elicit one of these more than the other.

When threat is cognitively activated and the motivation to respond in some way is strong, there may be a wide array of personal and relational responses available to an individual (Gagné, Khan, Lydon, & To, in press). A distinction may be made between these possible responses by considering whether the response is self-protective or relationship-protective. Research on relational insecurities and low self-esteem suggests that some individuals may respond to relational threats as confirmation that they are unworthy and that the inevitable demise of the relationship has begun (Murray, Holmes, MacDonald, & Ellsworth, 1998). This often results in self-protective strategies that undermine the relationship. Even in terms of relationship protection, we can imagine different types of responses. Consider, for example, if the threat were due to an attractive person approaching one's partner. First, we might expect the situation to elicit threat for men more than the current threat we created. Second, the response may vary. Although some men might respond by engaging in more relationship-supportive behaviors toward their partner, we might also expect mate guarding to elicit behavior directed more toward the threat itself.

This returns us to the distinction between the concrete situation and the latent theoretical structure. Our set of seven studies provides strong experimental evidence regarding the concrete situation of an attractive alternative. However, it points to directions for new research on the latent theoretical structure of "*if* relationship is threatened, *then* defend." Gender, relational identity, and relational experiences all likely contribute to whether a concrete situation is construed as a relational threat. If the situation is construed as a threat, we still need to delineate the responses that then ensue. For example, extrapolating from the male-warrior hypothesis (Van Vugt, De Cremer, & Janssen, 2007), one might expect men to see other groups as threats to their group and threats to the mating relationships they have within their group. However, even if the other group were construed as a relationship threat, it is a separate question as to how men would then respond to the construed threat.

### *Limitations and Future Directions*

Because the primary focus of this program of research was to test the causal effects of the availability of alternatives on commitment-related behavior, only three of the seven experiments examined some of the underlying components implicated in the robust gender differences we obtained on accommodation. With this set of studies in place, it would be useful in future research to focus more exclusively on the threat-protect response pattern, using a variety of social cognitive methods and relationship-threat triggers.

We also focused our efforts more on the delicate manipulation of the independent variable and relied on self-reports of accommodation in four of the seven studies. The ability of the manipulation to account for willingness to accommodate over and above self-reported commitment attests to the ability of the experimental situation to elicit something more than normative responses to the transgression scenarios. Nevertheless, the external validity of the results would be enhanced significantly by eliciting more behavioral data, such as the readiness to communicate relationship status to the attractive alternative. Ethically, it would seem inappropriate to examine real-world behavior with the romantic partner in the 24

hr following the deceptive experimental manipulation of the kind we employed.

We recognize that some of our studies had small sample sizes. Fortunately, in general, the effect sizes in the lab experiments were sufficiently large to obtain statistically significant results. However, the decreased statistical power of small samples limited our ability to test more elaborate multivariate models. We can imagine that individual differences in relational identities, unrestricted sociosexual orientations, and chronic attention to alternatives would provide additional explanatory variance accounting for commitment-related responses to relationship threats, particularly with the availability of an attractive alternative.

Although all of our studies concerned the effects of an alternative on one's current romantic relationship, we did not examine whether the alternative presented a short-term mating opportunity or a long-term mating opportunity. Men were presented with highly attractive women who were also warm and agreeable. Women were presented with attractive men who were high in status (medical students) and who varied systematically in being dominant versus warm. In this way, men and women were presented with alternatives higher in features found to appeal to both short-term and long-term mating goals (Fletcher et al., 2004; Kenrick et al., 1994; Li & Kenrick, 2006). Future research could isolate these features and see whether it is the short-term mating features of alternatives or the long-term mating features of alternatives that influence responsiveness to a current dating partner.

Finally, in Study 2, we used fully immersive virtual reality environments, and in Study 7, we used a less immersive environment to allow individuals to explore experimenter-created environments and encounter social stimuli designed to elicit theoretically predictable behavioral responses. Future research could enrich this type of environment and collect additional, more sensitive measures of behavioral responses to attractive alternatives, such as time and attention directed at the alternative. More generally, we expect that this research tool could allow researchers to study social phenomena such as the symbolic self, prejudice, and the seeking of attachment figures under stress (Blascovich et al., 2002).

### Conclusion

Research indicates that motivation can bias evaluations. Therefore, correlations between the availability of alternatives and commitment may be due to biased attention and recall of alternatives and/or to the influence of alternatives on commitment. Here, we report a set of controlled laboratory experiments demonstrating the causal effects of the availability of alternatives on commitment-related behavior. But as emerging theories on relational self-construals suggest, men and women construe the availability of alternatives in different ways. This fits well with the broader nomological net of evolutionary theory as it addresses gender and mating behavior. Moreover, this set of findings begins to identify and delineate the underlying social cognitive structures that give rise to the relationship behavior elicited by relationally threatening situations. From evolutionary forces, to relational identities, to specific if-then contingencies, we see that a simple, brief interaction can be a complex situation, especially when an intimate relationship is at stake.

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