Journal for Articles in Support of the Null Hypothesis
Vol. 1, No. 4
 1539-8714
www.jasnh.com

Fear Primes May not Affect Women's Implicit and Explicit Mate Preferences

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Two studies explored the effect of fear priming on women's mate preferences. In Study 1, 53 females completed Implicit Attitudes Tests (IATs) that measure preferences for strong-versus-weak and friendly-versus-aggressive mates. Participants listened to a fear-prime or control scenario, completed IATs and an emotion scale. Reaction times indicated overall (non-significant) preferences for strong and friendly mates. Fear-prime condition participants reported no more negative affect than did control-condition participants. In Study 2, 66 females listened to scenarios and completed emotion scale, ideal mate questionnaire, and IATs to determine preference for strong and tall mates. Participants showed overall preferences for strong mates, as well as for mates who were 7.7" taller and 44.5 pounds heavier than themselves, with no significant difference between groups.

Evolutionary psychologists have noted that men and women seek different traits when looking for a mate. Men value physical characteristics in women such as smooth skin, a small waist-to-hip ratio, and a youthful appearance (Buss, 1995). It has been argued that such traits are desirable because they signal fertility. Women value physical characteristics in men such as height, muscularity, and broad shoulders (Buss, 1994; Barber, 1995; Franzoi & Herzog 1987) and personality characteristics such as power, ascendance, and dominance (Botwin, Buss, & Shackelford, 1997). It has been argued that such traits are desirable because they signal the ability to provide resources. However, such traits could also signal the ability to provide protection from a variety of threats, including sexual predators.

Because of physical sex differences in size and strength, ancestral women were at a greater risk for predation than were ancestral men. A further disadvantage of women's smaller stature was the potential for injury caused by male attempts to override female sexual choice, as in the instance of rape, or by the attempt to limit women's sexual access to other males through violence or intimidation. As a result, women should have evolved preferences for stronger mates who could provide protection from predators and other males (Buss and Schmitt, 1993).

An additional mechanism shaping female preference for stronger mates could have been the increased survival benefits conveyed to offspring. Smuts and Gubernick (1992) point out that in many non-human primate species, infants benefit from paternal involvement in that they are less at risk of injury by predators and conspecific males with tendencies for infanticide. These authors extend this logic to humans such that male investment in offspring is purported to have evolved through sexual selection based on females' preference for indicators of men's abilities and willingness to protect offspring. Preferences for protection benefited ancestral women by increasing the survival chances of their offspring. Attributes associated with offering greater protection benefited ancestral men by giving them more sexual access to women. In support of the idea that women prefer mate characteristics related to protection, Buss found that women, more than men, valued height and physical strength in a potential mate.

While sex differences in the physical attributes that are attractive in a potential mate have been documented, recent evidence suggests that mate preference might be malleable. Nelson and Morrison (2002) reported that hungry women desired taller mates than did sated women. The authors interpreted this finding as indicative of the fact that people use internal physiological cues to infer environmental conditions and that these inferences influence the attributes desired in a mate. Hunger signals the scarcity of nutritional resources, making women more sensitive to cues such as height that signal the ability of potential mates to provide those resources.

The goal of the present study was to replicate conceptually the finding of Nelson and Morrison that women's mate preferences are influenced by perceptions about their environment. Instead of hunger, we examined how women's mate preference might be influenced by fear. Because physical features such as height, broad shoulders, and muscularity, as well as personality characteristics such as dominance might signal a mates ability to offer protection, such features should be potential desirable when women are primed to be think about the danger of sexual predators in their environment.

The present paper describes two studies aimed at showing an increased preference among women for strong mates when thoughts of the dangers of potential sexual predators are made salient. In addition to explicit measures of mate preference the Implicit Associations Test (IAT; Greenwald, McGhee & Schwartz, 1998) was used to assess implicit mate preference. The IAT assesses unconscious attitudes by measuring one's ability to quickly match certain categories of words together. A high time score on the IAT indicates that one was slower when pairing the words together on the test and that the pairing of these words or concepts together is contrary to the unconscious attitudes one holds. A low time score on the IAT indicates that one was faster when pairing the words together on the test and that the pairing of these words or concepts together is analogous to the unconscious attitudes one holds.

The IAT was used in order to control for social desirability and demand characteristics that might influence self-report measures. Social desirability comes into play because some women might be reluctant to admit that they want a strong man to offer protection. Demand characteristics may come into play if participants suspect that fear primes are supposed to influence their mate preference. Because the IAT measure of implicit mate preference is based on reaction time and not conscious reports it should be less susceptible to problems related to social desirability and demand characteristics. Further, studies exploring other implicit attitudes have found the IAT to be sensitive to priming. For example, Dasgupta and Greenwald (2001) found that exposure to admired Blacks and disliked Whites reduced participants' pro-White implicit attitudes as measured by the IAT.

Study 1

This study was designed to assess the effects of priming fear about sexual predators on women's implicit mate preference. While it was expected that women would show an initial implicit preference for strong rather than weak mates, priming women about the potential dangers in the environment would increase this preference.

Method

Participants

Sixty-one female undergraduate psychology students, participated in partial fulfillment of a course research requirement. Eight participants were dropped because they failed to complete the IATs. The mean age of participants was 21 years (SD = 6).

Participants reported to a social psychology laboratory where they were informed that the study concerned implicit attitudes about the self and social concepts. Participants completed several IATs using a palm pilot administration (Dabbs, Bassett & Dyomina, 2002). Participants first completed two practice IATs that included 'flower' words (daffodil, daisy, tulip) and 'insect' words (gnat, mosquito, roach). These words were alternatively paired with 'good' words (great, terrific, wonderful) and 'bad' words (cancer, horrible, great). Participants then completed two sets of IATs designed to measure mate preference. The first IAT was designed to measure preference for a strong or a weak mate and included 'mate' words (husband, boyfriend, mate) and 'other' words (stranger, person, other). These words were alternatively paired with 'strong' words (strong, powerful, tough) and 'weak' words (weak, timid, mild). The second IAT was designed to measure preference for an aggressive or a friendly mate and included 'mate' words (husband, boyfriend, mate) and 'other' words (stranger, person, other). These words were alternatively paired with 'aggressive' words (combative, aggressive, hostile) and 'friendly' words (friendly, warm, kind). Participants were instructed to pair the words as each test required as fast as possible while making as few mistakes as possible.

Participants then listened to a scenario read to them by one of the researchers. They were instructed to close their eyes as they listened and to imagine themselves in the scenario as it was read. Participants either heard a scenario in which they were being chased by a male stranger through the dark parking lot of a shopping center (fear prime condition) or a scenario in which the trip through the parking lot was uneventful (control condition).

Participants then completed an emotion measure, on which they indicated using a 7-point Likert scale the degree to which they felt anxious, calm, positive and negative. Lastly, participants were tested again using the two IATs designed to measure mate preference.

Results

As a manipulation check, negative affect was examined as a function of treatment condition. An overall score of negative affect was derived by combining the calm and positive scores and subtracting this total from the combined anxious and negative scores. Although women in the fear prime condition (mean = -1.0) reported more negative affect than did women in the control condition (mean = -1.7), the effect was not significant ($t(52) = 1.1$).

An IAT score indicating initial implicit preference for a strong mate was created by subtracting the mean reaction time when pairing mate with strong from the mean reaction time when paring mate with weak. An IAT score indicating post-treatment implicit preference for a strong mate was created by subtracting the mean reaction time on the second test when pairing mate with strong from the mean reaction time on the second test when paring mate with weak. The extent to which participants' implicit preference for a strong mate had changed as a function of treatment was measured by subtracting initial implicit preference scores from post-treatment preference scores. Positive values on these change scores would indicate that participants' implicit liking for a strong mate increased from baseline.

An IAT score indicating initial implicit preference for a friendly mate was created by subtracting the mean reaction time on the first test when pairing mate with friendly from the mean reaction time on the first test when paring mate with aggressive. An IAT score indicating post-treatment implicit preference for a friendly mate was created by subtracting the mean reaction time on the second test when pairing mate with friendly from the mean reaction time on the second test when paring mate with aggressive. The extent to which participants' implicit preference for a friendly mate had changed as a function of treatment was measured by subtracting initial implicit preference scores from post-treatment preference scores. Positive values on these change scores would indicate that participants' implicit liking for a friendly mate increased from baseline.

An examination of the IAT data revealed an overall implicit preference for flowers over insects as evidenced by significantly faster reaction times when pairing flower with good (X = 870 ms) than when pairing flower with bad (X = 996 ms), $F(1,7\ 65) = 58$, $p < .01$. Although this effect does not directly bear on the research, it does indicate that participants understood and were competent with the IAT. It has been previously demonstrated that to a large effect people are faster at pairing flower with good than when pairing flower with bad (Greenwald, McGhee & Schwartz, 1998). We expected that the participants in this study also would show this effect: failure of participants to show such an effect would have made us skeptical of their understanding of the IAT.

Participants showed an initial overall implicit preference for a strong mate, as evidenced by faster reaction times when pairing mate with strong (mean = 936 ms) than when pairing mate with weak (mean = 967 ms), $F(1, 52) = 6.02$, $p < .01$. Participants showed an initial overall implicit preference for a friendly mate as evidenced by faster reaction times when pairing mate with friendly (mean = 877 ms) than when pairing mate with aggressive (mean = 907 ms), $F(1, 52) = 6.97$, $p < .05$. Women in the fear prime condition exhibited a slightly larger change in implicit preference for a strong mate (mean = 36 ms) than did women in the control condition (mean = 33 ms); however, this effect failed to reach statistical significance. Although all participants showed a change towards associating a mate less with aggressive, women in the fear prime condition did so to a lesser extent (mean = -15 ms) than did women in the control condition (mean = -25 ms), $t < 1.0$.

As hypothesized, all women tended to show an initial implicit preference for strong mates; however, the fear prime condition failed to significantly increase this preference. Also as expected, all women tended to show an initial implicit preference for friendly mates; however, the fear prime condition failed to significantly increase this preference. Although no effect of priming fear on implicit mate preference was observed in this study, it is possible that the results were obscured by demand characteristics associated with completing the IAT measures both before and after listening to the scenario.

Demand characteristics also could be associated with the researchers reading of the scenarios. It is possible that researchers could have unconsciously read the control and treatment scenarios differently, which would confound the participants' responses. In both studies presented here, such an effect does not seem likely due to the fact that the expected results were not obtained. In this situation, one would assume that either there were no unconscious demands from the researchers, or that the participants did not respond to the demands. In future research, however, this possible confound could be addressed by the use of a recording device to present the previously-recorded scenarios to the participants.

Study 2

Study 2 was designed to further explore the possibility that priming fear could increase women's preference for strong mates. To control for the possibility of fatigue effects or practice effects, participants completed the IAT measures only after listening to the scenario. In addition to the IAT as a measure of implicit attitudes, explicit attitudes were assessed by having participants write a description of their ideal mate, including his height and weight.

Method

Participants

Sixty-six female undergraduate psychology students participated in partial fulfillment of a course research requirement. The variable age was not collected in this study, however, the participants for this study were from the same population as in Study one. It is therefore assumed that the mean age of participants is the same as in Study one.

Procedure

Participants reported to a social psychology laboratory, where they were informed that this study concerned implicit attitudes about the self and social concepts. Participants first listened to a scenario read to them by one of the researchers. They were instructed to close their eyes as they listened and to imagine themselves in the scenario as it was read. Participants either heard a scenario in which they were being chased by a male stranger through the dark parking lot of a shopping center (fear prime condition) or a scenario in which the trip through the parking lot was uneventful (control condition).

Participants completed the same emotion measure as used in Study one. Participants were then instructed to spend the next few minutes thinking about their ideal mate. They were asked to indicate their ideal mate's height, weight, physical appearance and personality characteristics as well as their own height and weight. Difference scores between self and ideal mate were derived for height and weight in order to control for the tendency to desire mates who are similar to oneself in height and weight.

As described in study one, participants completed the two practice IATs (flower/insect, good/bad) as well as the set of IATs designed to measure the preference for a strong or weak mate (mate/other, strong/weak). Participants were instructed to pair the words as each test indicated as fast as possible while making as few mistakes as possible.

Results

As a manipulation check, negative affect was examined as a function of treatment condition. An overall score of negative affect was derived by combining the calm and positive scores and subtracting this total from the combined anxious and negative scores. Women in the fear prime condition (mean = 1.8) reported significantly more negative affect than did women in the control condition (mean = -2.0), $t(62) = 5.9$, $p < .01$.

An experimenter blind to treatment condition read each ideal mate description and recorded descriptors related to physical strength. The following items were identified as those mentioned by participants that were related to an ideal mate's physical strength: strong, muscles, muscle, muscled, built, build, body, well-built, muscular, tall, big, tone, toned, well-toned, well-tone, athlete's, athletic, athlete, and thick. Each participant was given a score of 1 if their description of an ideal mate contained any of these items and a score of 0 if their description of an ideal mate did not contain any of these items. Participants in the fear prime condition were not significantly more likely to include these items in their description of an ideal mate (87.5%) than were participants in the control condition (68.0%), $X2 = 2.6$, $p > .05$.

A difference score was derived for height and weight by subtracting participant's own height and weight from the indicated height and weight of their ideal mate. This difference score was used instead of the raw scores in order to control for the tendency to desire mates who are similar to oneself in height and weight. As in Study one, an examination of the IAT data revealed an overall implicit preference for flowers over insects as evidenced by significantly faster reaction times when pairing flower with good (mean = 870 ms) than when pairing flower with bad (mean = 996 ms), $F(1, 65) = 58$, $p < .01$. Although this effect does not directly bear on the research, it does indicate that participants understood and were competent with the IAT.

Participants showed an overall implicit preference for a strong mate as evidenced by faster reaction times when pairing mate with strong (mean = 922 ms) than when pairing mate with weak (mean = 985 ms), $F(1, 65) = 23$, $p < .01$. An IAT score indicating implicit preference for a strong mate was created by subtracting the mean reaction time when pairing mate with strong from the mean reaction time when paring mate with weak. There was no significant difference in this score between the fear prime (mean = 65 ms) and control groups (mean = 61 ms), $t < 1.00$.

On average, women preferred a mate who was 7.7 inches taller than themselves (SD = 3.1) and 44.5 pounds heavier than themselves (SD = 28.9). Women in the fear prime condition (mean = 7.5) did not prefer a significantly taller mate than did women in the control condition (mean = 7.9), $t < 1.00$. Women in the fear prime condition (mean = 40.8) did not prefer a significantly heavier mate than did women in the control condition (mean = 47.7), $t < 1.00$.

Discussion

As in Study 1, the results failed to show any impact of priming fear on women's mate preference. Unlike Study 1, the fear prime did produce change in negative affect, suggesting that the manipulation was effective in priming fear. However, this fear did not translate into either implicit or explicit preferences for stronger mates. It is possible that the failure to find an effect of priming fear on mate preference may reflect the fact that women responded to the fear treatment in different ways. The fear primes in the studies presented here could have had different effects making a strong mate seem desirable for some women because of the potential protection he could offer while making a strong mate seem undesirable to other women because of the potential for such a man to become an attacker himself. The possibility that a strong mate can be viewed as both protective and threatening has been addressed by evolutionary psychologists. Miller (2001) points out that "From a female's point of view, a strong male partner would be a mixed blessing. He could fend off unwanted attention from other males, but he could also beat you up if he got jealous or angry" (p. 191).

General Discussion

The studies reported here failed to find a relation between fear and mate preference using the IAT, but some limits to this test have been reported. For example, Brendl, Markman, and Messner (2001) provide evidence that scores on the IAT should not be considered the result of one cause. Part of this limitation reflects an inability to distinguish how much of the IAT effect is due to each comparison category. In the present study, the strength of association between strength more than weakness with mates as well as non-mates. While the IAT score was designed to assess implicit attitudes about mates, the score may also reflect implicit attitudes about other people in general. We recognize this limitation in the IAT, but argue that an alternate interpretation of the IAT findings that views them as a result of implicit attitudes about other people in general does not account very well for the observed findings that all women, regardless of experimental condition, were significantly faster when pairing mate with strong and other with weak. It seems unlikely that the participants would all possess an implicit attitude association people in general with weakness.

It also is possible that personality characteristics moderate the effects of fear on mate preference. Personal and relationship history likely influence the effect of fear prime on mate preference. For example, a woman who has experienced an attack at the hands of a stranger might react to the fear prime by desiring a stronger mate, whereas a woman who has experienced an attack at the hands of a mate might react to the fear prime with increased fear of a strong mate.

Some women may respond to fear primes differently based on their sex role ideology, dominance, conventionality, and social support networks. For example, women who adopt the traditional submissive sex roles and who do not have a lot of female friends might feel especially dependent on a mate for protection and respond to fear primes with enhanced preference for a strong mate; whereas women who adopt more egalitarian and independent sex roles and who have a large network of female friends might feel less dependent on a mate for protection and respond to fear primes with decreased preference for a strong mate.

In conclusion, there is likely to be a more complex relationship between fear primes and women?s preference for mate strength than was previously believed. Future research should focus on the possibility of women?s personal history of assault as a moderating variable.

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Received: January 9, 2003
Accepted: February 13, 2003
Revised: February 12, 2003