

Some Evidence for Heightened Sexual Attraction Under Conditions of High Anxiety

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Male passersby were contacted either on a fear-arousing suspension bridge or a non-fear-arousing bridge by an attractive female interviewer who asked them to fill out questionnaires containing Thematic Apperception Test pictures. Sexual content of stories written by subjects on the fear-arousing bridge and tendency of these subjects to attempt postexperimental contact with the interviewer were both significantly greater. No significant differences between bridges were obtained on either measure for subjects contacted by a male interviewer. A third study manipulated anticipated shock to male subjects and an attractive female confederate independently. Anticipation of own shock but not anticipation of shock to confederate increased sexual imagery scores on the Thematic Apperception Test and attraction to the confederate. Some theoretical implications of these findings are discussed.

There is a substantial body of indirect evidence suggesting that sexual attractions occur with increased frequency during states of strong emotion. For example, heterosexual love has been observed to be associated both with hate (James, 1910; Suttie, 1935) and with pain (Ellis, 1936). A connection between "aggression" and sexual attraction is supported by Tinbergen's (1954) observations of intermixed courting and aggression behaviors in various animal species, and a series of experiments conducted by Barclay have indicated the existence of a similar phenomenon in human behavior. In one study, Barclay and Haber (1965) arranged for students

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in one class to be angered by having their professor viciously berate them for having done poorly on a recent test; another class served as a control. Subsequently, both groups were tested for aggressive feelings and for sexual arousal. A manipulation check was successful, and the angered group manifested significantly more sexual arousal than did the control group ($p < .01$) as measured by explicit sexual content in stories written in response to Thematic Apperception Test (TAT)-like stimuli. Similar results were obtained in two further studies (Barclay, 1969, 1970) in which fraternity and sorority members were angered by the experimenter. The 1970 study employed a female experimenter, which demonstrated that the aggression-sexual arousal link was not specific to male aggression; the 1969 study provided additional support for the hypothesis by using a physiological measure of sexual arousal (acid phosphatase content in urine samples).

Barclay has explained his findings in terms of a special aggression-sexuality link and has cited as support for his position Freud's (1938) argument that prehistoric man had to physically dominate his potential mates and also a study by Clark (1952) in which increased sexual arousal produced by viewing slides of nudes yielded increased aggression in TAT responses. Aron (1970), on the other hand, argued that an aggression-sexuality link exists, but it is only a special case of a more general relationship between emotional arousal of all kinds and sexual attraction. To demonstrate this point, he designed a study in which instead of anger, residual emotion from intense role playing was the independent variable. In this experiment, each of 40 male subjects role played with the same attractive female confederate in either a highly emotional or a minimally emotional situation. Subjects enacting highly emotional roles included significantly more sexual imagery in stories written in response to TAT-like stimuli ($p < .01$) and indicated significantly more desire to kiss the confederate ($p < .05$) than did subjects in the control condition. One possible explanation is suggested by Schachter's theory of emotion (Schachter, 1964; Schachter and Singer, 1962). He argued that environmental cues are used, in certain circumstances, to provide emotional labels for unexplained or ambiguous states of arousal. However, it is notable that much of the above-cited research indicates that a sexual attraction-strong emotion link may occur even when the emotions are unambiguous. Accordingly, taking into account both the Schachter position and findings from sexual attraction research in general, Aron (1970) hypothesized that strong emotions are relabeled as sexual attraction whenever an acceptable object is present, and emotion-producing circumstances do not require the full attention of the individual.

The present series of experiments is designed to test the notion that an attractive female is seen as more attractive by males who encounter her while they experience a strong emotion (fear) than by males not experiencing a strong emotion. Experiment 1 is an attempt to verify this proposed emotion-sexual attraction link in a natural setting. Experiments 2 and 3 are field and laboratory studies which attempt to clarify the results of Experiment 1.

EXPERIMENT 1

METHOD

Subjects

Subjects were males visiting either of two bridge sites who fit the following criteria: (a) between 18 and 35 years old and (b) unaccompanied by a female companion. Only one member of any group of potential subjects was contacted. A total of 85 subjects were contacted by either a male or a female interviewer.

Site

The experiment was conducted on two bridges over the Capilano River in North Vancouver, British Columbia, Canada. The "experimental" bridge was the Capilano Canyon Suspension Bridge, a 5-foot-wide, 450-foot-long, bridge constructed of wooden boards attached to wire cables that ran from one side to the other of the Capilano Canyon. The bridge has many arousal-inducing features such as (a) a tendency to tilt, sway, and wobble, creating the impression that one is about to fall over the side; (b) very low handrails of wire cable which contribute to this impression; and (c) a 230-foot drop to rocks and shallow rapids below the bridge. The "control" bridge was a solid wood bridge further upriver. Constructed of heavy cedar, this bridge was wider and firmer than the experimental bridge, was only 10 feet above a small, shallow rivulet which ran into the main river, had high handrails, and did not tilt or sway.

Procedure

As subjects crossed either the control or experimental bridge, they were approached by the interviewer.¹

Female interviewer. The interviewer explained that she was doing a project for her psychology class on the effects of exposure to scenic attractions on creative expression. She then asked potential subjects if they would fill out a short questionnaire. The questionnaire contained six filler items such as age, education, prior visits to bridge, etc., on the first page. On the second page, subjects were instructed to write a brief, dramatic story based upon a picture of a young woman covering her face with one hand and reaching with the other. The instructions and the picture

¹The interviewers were not told of the experimental hypothesis to prevent unintentional differential cueing of subjects in experimental and control groups.

(TAT Item 3GF) employed were adapted from Murray's (1943) *Thematic Apperception Test Manual*. A similar measure of sexual arousal has been employed in the Barclay studies (1969, 1970; Barclay and Haber, 1965) and in other sex-related experiments (Aron, 1970; Clark, 1952; Leiman and Epstein, 1961). The particular TAT item used in the present study was selected for its lack of obvious sexual content, since projective measures of sexual arousal based on explicit sexual stimuli tend to be highly sensitive to individual differences because of sexual defensiveness (Clark and Sensibar, 1955; Eisler, 1968; Leiman and Epstein, 1961; Lubin, 1960). If the subject agreed, the questionnaire was filled out on the bridge.

Stories were later scored for manifest sexual content according to a slightly modified version of the procedure employed by Barclay and Haber (1965). Scores ranged from 1 (no sexual content) to 5 (high sexual content) according to the most sexual reference in the story. Thus, for example, a story with any mention of sexual intercourse received 5 points; but if the most sexual reference was "girl friend," it received a score of 2; "kiss" counted 3; and "lover," 4.

On completion of the questionnaire, the interviewer thanked the subject and offered to explain the experiment in more detail when she had more time. At this point, the interviewer tore the corner off a sheet of paper, wrote down her name and phone number, and invited each subject to call, if he wanted to talk further. Experimental subjects were told that the interviewer's name was Gloria and control subjects, Donna, so that they could easily be classified when they called. On the assumption that curiosity about the experiment should be equal between control and experimental groups, it was felt that differential calling rates might reflect differential attraction to the interviewer.

Male interviewer. The procedure with the male interviewer was identical to that above. Subjects were again supplied with two fictitious names so that if they phoned the interviewer, they could be classified into control or experimental groups.

RESULTS

Check on Arousal Manipulation

Probably the most compelling evidence for arousal on the experimental bridge is to observe people crossing the bridge. Forty percent of subjects observed crossing the bridge walked very slowly and carefully, clasping onto the handrail before taking each step. A questionnaire was administered to 30 males who fit the same criteria as the experimental subjects. Fifteen males on the experimental bridge were asked, "How fearful do you think the average person would be when he crossed this bridge?" The mean rating was 79 on a 100-point scale where 100 was equal to extremely fearful. Fifteen males on the control bridge gave a mean rating of 18 on

the same scale ($t = 9.7$, $df = 28$, $p < .001$, two-tailed). In response to the question "How fearful were you while crossing the bridge?" experimental-bridge males gave a rating of 65 and control-bridge males a rating of 3 ($t = 10.6$, $p < .001$, $df = 28$, two-tailed). Hence, it can be concluded that most people are quite anxious on the experimental bridge but not on the control bridge. To prevent suspicion, no checks on the arousal of experimental subjects could be made.

Thematic Apperception Test Responses

Female interviewer. On the experimental bridge, 23 of 33 males who were approached by the female interviewer agreed to fill in the questionnaire. On the control bridge, 22 of 33 agreed. Of the 45 questionnaires completed, 7 were unusable either because they were incomplete or written in a foreign language. The remaining 38 questionnaires (20 experimental and 18 control) had their TAT stories scored for sexual imagery by two scorers who were experienced with TAT scoring. (Although both were familiar with the experimental hypothesis, questionnaires had been coded so that they were blind as to whether any given questionnaire was written by a control or experimental subject.) The interrater reliability was +.87.

Subjects in the experimental group obtained a mean sexual imagery score of 2.47 and those in the control group, a score of 1.41 ($t = 3.19$, $p < .01$, $df = 36$, two-tailed). Thus, the experimental hypothesis was verified by the imagery data.

Male interviewer. Twenty-three out of 51 subjects who were approached on the experimental bridge agreed to fill in the questionnaire. On the control bridge 22 of 42 agreed. Five of these questionnaires were unusable, leaving 20 usable in both experimental and control groups. These were rated as above. Subjects in the experimental group obtained a mean sexual imagery score of .80 and those in the control group, .61 ($t = .36$, ns). Hence the pattern of result obtained by the female interviewer was not reproduced by the male interviewer.

Behavioral Data

Female interviewer. In the experimental group, 18 of the 23 subjects who agreed to the interview accepted the interviewer's phone number. In the control group, 16 of 22 accepted (see Table 37.1). A second measure of sexual attraction was the number of subjects who called the interviewer. In the experimental group 9 of 18 called, in the control group 2 of 16 called ($X^2 = 5.7$, $p < .02$). Taken in

TABLE 37.1
Sexual attraction under conditions of high anxiety
Behavioral responses and thematic apperception test imagery scores for each experimental group

Interviewer	No. filling in questionnaire	No. accepting phone number	No. phoning	Usable questionnaires	Sexual imagery score
Female					
Control bridge	22/23	16/22	2/16	18	1.41
Experimental bridge	23/33	18/23	9/18	20	2.47
Male					
Control bridge	22/42	6/22	1/6	20	.61
Experimental bridge	23/51	7/23	2/7	20	.80

conjunction with the sexual imagery data, this finding suggests that subjects in the experimental group were more attracted to the interviewer.

Male interviewer. In the experimental group, 7 of 23 accepted the interviewer's phone number. In the control group, 6 of 22 accepted. In the experimental group, 2 subjects called; in the control group, 1 subject called. Again, the pattern of results obtained by the female interviewer was not replicated by the male.

Although the results of this experiment provide prima facie support for an emotion-sexual attraction link, the experiment suffers from interpretative problems that often plague field experiments. The main problem with the study is the possibility of different subject populations on the two bridges. First, the well-advertised suspension bridge is a tourist attraction that may have attracted more out-of-town persons than did the nearby provincial park where the control bridge was located. This difference in subject populations may have affected the results in two ways. The experimental subjects may have been less able to phone the experimenter (if they were in town on a short-term tour) and less likely to hold out the possibility of further liaison with her. If this were the case, the resulting difference due to subject differences would have operated *against* the main hypothesis. Also, this difference in subject populations could not affect the sexual imagery scores unless one assumed the experimental bridge subjects to be more sexually deprived than controls. The results using the male interviewer yielded no significant differences in sexual imagery between experimental and control subjects; however, the possibility still exists that sexual deprivation could have interacted with the presence of the attractive female experimenter to produce the sexual imagery results obtained in this experiment.

Second, differences could exist between experimental and control populations with respect to personality variables. The experimental population might be more predisposed to thrill seeking and therefore more willing to chance phoning a strange female to effect a liaison. Also, present knowledge of personality theory does not allow us to rule out the combination of thrill seeking and greater sexual

imagery. Accordingly, a second experiment was carried out in an attempt to rule out any differential subject population explanation for the results of Experiment 1.

EXPERIMENT 2

METHOD

Subjects

Subjects were 34 males visiting the suspension bridge who fit the same criteria as in Experiment 1.

Procedure

The chief problem of Experiment 2 was choosing a site that would allow contact with aroused and nonaroused members of the same subject population. One possibility was to use as a control group suspension-bridge visitors who had not yet crossed the bridge or who had just gotten out of their cars. Unfortunately, if a substantial percentage of this group subsequently refused to cross the bridge, the self-selecting-subject problem of Experiment 1 would not be circumvented. Alternatively, males who had just crossed the bridge could be used as a control. The problem with this strategy was that this group, having just crossed the bridge, may have felt residual anxiety or elation or both, which would confound the study. To avoid this latter problem, control subjects who had just crossed the bridge and were sitting or walking in a small park were contacted at least 10 minutes after crossing the bridge. This strategy, it was hoped, would rule out residual physiological arousal as a confounding factor. Except that a different female experimenter was used in Experiment 2 and no male interviewer condition was run, all other details of the study were identical to Experiment 1.

RESULTS

Check on Arousal Manipulation

As with Experiment 1, no arousal manipulation check was given to experimental subjects in order not to arouse suspicion about the real intent of the experiment. Data for a group of nonexperimental subjects of the same age and sex as experimental subjects are reported in Experiment 1.

Thematic Apperception Test Responses

In the experimental group, 25 of 34 males who were approached agreed to fill in the questionnaire. In the control group, 25 of 35 agreed. Of the 50 questionnaires completed, 5 were unusable because they were incomplete. The remainder (23 experimental and 22 control) were scored for sexual imagery as in Experiment 1. The interrater reliability in Experiment 2 was +.79.

Subjects in the experimental group obtained a mean sexual imagery score of 2.99 and those in the control group, a score of 1.92 ($t = 3.07$, $p < .01$, $df = 36$, two-tailed). Thus the experimental hypothesis was again verified by the imagery data.

Behavioral Data

In the experimental group, 20 of the 25 subjects who agreed to the interview accepted the interviewer's phone number. In the control group, 19 of 23 accepted. In the experimental group, 13 of 20 called, while in the control group, 7 of 23 phoned ($X^2 = 5.89$, $p < .02$). Thus the behavioral result of Experiment 1 was also replicated.

Experiment 2 enables the rejection of the notion of differential subject populations as an explanation for the control-experimental-bridge differences for female interviewers in Experiment 1. However, some additional problems in the interpretation of the apparent anxiety-sexual attraction link require the superior control afforded by a laboratory setting.

First, although the female experimenter was blind to the experimental hypothesis and her behavior toward the subjects was closely monitored by the experimenter, the possibility of differential behavior toward the subjects occurring was not excluded. Distance of the interviewer from the subjects was controlled in both Experiments 1 and 2, but more stable nonverbal forms of communication (such as eye contact) could not be controlled without cueing the female interviewer to the experimental hypothesis.

Second, even if the interviewer did not behave differentially in experimental and control conditions, she may have appeared differently in the two conditions. For example, the gestalt created by the experimental situation may have made the interviewer appear more helpless or frightened, virtually a "lady in distress." Such would not be the case in the control situation.

If this different gestalt led to differences in sexual attraction, the apparent emotion-sexual arousal link might prove artifactual. Accordingly, a laboratory experiment was run in which tighter control over these factors could be obtained. This experiment involved a 2×2 factorial design, where (a) the male subject expected either a painful or nonpainful shock (subject's emotion was manipulated) and (b) the female confederate also expected either a painful or nonpainful shock (the lady-in-distress gestalt was manipulated).

EXPERIMENT 3

METHOD

Subjects

Eighty male freshmen at the University of British Columbia took part in this experiment. All subjects were volunteers.

Much of the initial phase of the procedure was patterned after that used in Schachter's (1959) anxiety and affiliation research. Subjects entered an experimental room containing an array of electrical equipment. The experimenter welcomed the subject and asked him if he had seen another person who looked like he was searching for the experimental room. The experimenter excused himself "to look for the other subject," leaving the subject some Xeroxed copies "of previous studies in the area we are investigating" to read. The articles discussed the effects of electric shock on learning and pain in general.

The experimenter reentered the room with the "other subject," who was an attractive female confederate.² The confederate took off her coat and sat on a chair three feet to the side and slightly in front of the subject. The experimenter explained that the study involved the effects of electric shock on learning and delivered a short discourse on the value and importance of the research. At the end of this discourse, the experimenter asked if either subject wanted out of the experiment. As expected, no subject requested to leave.

The experimenter then mentioned that two levels of shock would be used in the experiment, describing one as quite painful and the other level as a "mere tingle, in fact some subjects describe it as enjoyable," and concluded by pointing out that the allocation of subjects to shock condition had to be "completely random so that personality variables won't affect the outcome." At this point, the experimenter asked both subjects to flip a coin to determine which shock level they would receive.³ Hence, the subject reported "heads/tails," the confederate reported "heads/tails," and the experimenter said, "Today heads receives the high shock level." The ex-

²The female confederate knew that the study involved sexual attraction but did not know the experimental hypothesis. Her every action in the experimental room was carefully rehearsed to avoid any possibility of differential behavior among experimental conditions. Spacing of the confederate's chair from the subject's was carefully controlled, and the confederate was instructed to avoid any eye contact with the subject after their initial introduction. Hence, eye contact was restricted to the confederate's entering the room and returning to her chair after removing her coat. Both the confederate's and the subject's chairs faced the same direction (toward the experimenter), so that eye contact was easily avoided. In addition, the confederate's chair was somewhat closer to the experimenter than was the subject's chair, so that the subject could see the confederate while the experimenter delivered the instructions.

³The confederate was told to report either the same result as the subject or a different result (of the coin flip) to facilitate obtaining equal *ns* for experimental conditions as quickly as possible.

perimenter then described the way in which the shock series would take place, the method of hooking subjects into electrodes, etc.

The experimenter then asked if the subjects had any questions, answered any that arose, and then said

It will take me a few minutes to set up this equipment. While I'm doing it, I would like to get some information on your present feelings and reactions, since these often influence performance on the learning task. I'd like you to fill out a questionnaire to furnish us with this information. We have two separate cubicles down the hall where you can do this—you will be undisturbed and private, and I can get this equipment set up.

The confederate then got up, walked in front of the subject to her coat, which was hanging on the wall, rummaged around for a pencil, and returned to her chair. The experimenter then led the subject and the confederate to the cubicles, where they proceeded to fill out the questionnaires.

RESULTS

A three-part questionnaire constituted the dependent measure of this study. Part 1 (feelings about the experiment) included a check on the anxiety manipulation, Part 2 (feelings toward your co-subject) included two attraction questions found to be most sensitive in experimental situations of this sort (Aron, 1970), and Part 3 included the TAT picture used in Experiments 1 and 2, which was again scored for sexual imagery.

Anxiety

Anxiety was measured by the question "How do you feel about being shocked?" (cf., Schachter, 1959) to which subjects could respond on a 5-point scale where scores greater than 3 indicated dislike. (The greater the score, the greater the anxiety.) Table 37.2 presents the results on this measure. In conditions where the subject anticipated receiving a strong shock, subjects reported significantly more anxiety than in conditions where the subject anticipated receiving a weak shock

TABLE 37.2
Reported anxiety in experimental conditions

Subject expects:	Female confederate to get strong shock	Female confederate to get weak shock	No female confederate
Strong shock	3.17	3.05	3.80
Weak shock	2.42	2.28	

Note: *n* per cell = 20.

TABLE 37.3
Attraction ratings by experimental condition

Subject expects:	Female confederate to get strong shock	Female confederate to get weak shock
Strong shock	3.7	3.4
Weak shock	2.9	2.7

Note: Strongest attraction rating is 5.

($t = 4.03$, $p < .001$, $df = 39$, one-tailed). In conditions where the subject anticipated receiving a strong shock with the female cosubject present, subjects reported significantly less anxiety than in a control condition ($n = 20$), where two male subjects were run ($t = 2.17$, $p < .025$, $df = 19$, one-tailed). No significant differences in the subject's anxiety occurred as a function of the confederate receiving a strong versus a weak shock (see Table 37.2).

Attraction to Confederate

Two questions assessed attraction to the confederate in this study: (a) How much would you like to ask her out for a date? and (b) how much would you like to kiss her? (An alternative set of questions was provided for those subjects who ostensibly had a male copartner. The experimenter instructed subjects in this condition to overlook these.) Attraction ratings were established by taking the mean rating made by subjects on these two questions. Table 37.3 shows the results, by condition, of those ratings. A 2×2 analysis of variance revealed a significant main effect for subjects anticipating strong shock to themselves on attraction ratings ($F = 22.8$, $p < .001$). Subjects' expectations of strong versus weak shock to the female confederate produced no significant increase in attraction ($F = 2.61$, ns). (There was no significant interaction.) Hence, the lady-in-distress effect on attraction did not seem to appear in this study.

Thematic Apperception Test Responses

Sexual imagery scores on the TAT questionnaire were obtained as in Experiments 1 and 2 and are shown in Table 37.4. In the present study, sexual imagery was higher when the subject expected strong shock but only when the female confederate also expected strong shock ($F = 4.73$, $p < .05$). When the female confederate expected weak shock, differences in sexual imagery scores as a function of strength of shock anticipated by the subject failed to achieve significance ($F = 4.22$, $p = .07$).

TABLE 37.4
Sexual imagery scores by experimental condition

Subject expects:	Female confederate to get strong shock	Female confederate to get weak shock
Strong shock	2.27	2.19
Weak shock	1.52	1.69

Note: Strongest imagery score is 5.

GENERAL DISCUSSION

The results of these studies would seem to provide a basis of support for an emotion-sexual attraction link. The Barclay studies (Barclay, 1969, 1970; Barclay and Haber, 1965) have already demonstrated such a link for aggression and sexual arousal, and the present findings seem to suggest that the link may hold for fear as well. Indeed, the present outcome would seem to be particularly satisfying in light of the very strong differences obtained from the relatively small subject populations, and because these results were obtained, in Experiments 1 and 2, outside of the laboratory in a setting in which real-world sexual attractions might be expected to occur.

The strong result of Experiment 3 supports the notion that strong emotion per se increases the subject's sexual attraction to the female confederate. Brehm, Gatz, Goethals, McCrimmon, and Ward (1967) obtained results consistent with Experiment 3 in a similar study. They also had male subjects threatened by impending electric shock in two experimental groups and not threatened in the control group. They obtained an F significant at the 5 percent level for differences between the threat and no-threat groups.

The theoretical implications of these results are twofold. First, they provide additional support in favor of the theoretical positions from which the original hypothesis was derived: the Schachter and Singer (1962) tradition of cognitive labeling of emotions and the Aron (1970) conceptual framework for sexual attraction processes. Second, these data seem to be inconsistent with (or at least unpredictable by) standard theories of interpersonal attraction. Both the reinforcement (Byrne, 1969) and the cognitive consistency (Festinger, 1957; Heider, 1958) points of view would seem to predict that a negative emotional state associated with the object would decrease her attractiveness; and neither theory would seem to be easily capable of explaining the arousal of a greater sexual emotion in the experimental condition of the present experiments.

Although the present data support the cognitive relabeling approach in general, they are consistent with more than one interpretation of the mechanics of the process. The attribution notions of Nisbett and Valins (1972), self-perception theory (Bem, 1972), and role theory (Sarbin and Allen, 1968) can all provide possible explanations for the anxiety-sexuality link. A further possible explanation is that

heightened emotion, instead of being relabeled as sexual, serves merely to disinhibit the expression of preexistent sexual feelings. It is known that inhibition and sexual defensiveness influence sexual content in TAT stories (Clark, 1952), and this alternative cannot be ruled out by the present data. Yet another alternative suggested by Barclay (personal communication, 1971), is that the aggression-sexuality and anxiety-sexuality links may be independent phenomena and not necessarily subcases of a general emotion-sexuality link.

Some evidence for the mechanics of the anxiety-sexual arousal link in the current research may be obtained from the fear ratings made by subjects in Experiment 3. When subjects anticipated receiving a strong shock and the female confederate was present during the anxiety manipulation, subjects reported significantly less fear than when no potential sexual object was present ($t = 2.17$, $df = 19$, $p < .025$). Since the questionnaires were filled out in private in both groups, it is unlikely that subjects' reporting merely reflects appropriate behavior in the presence of the opposite or same sex. One possible explanation for this result is that, having relabeled anxiety as sexual arousal, the subject is less likely to feel anxious. A more conclusive explanation of the mechanics of the anxiety-sexual arousal link must await the conclusion of present laboratory studies designed specifically to investigate this problem. However, regardless of the interpretation of the mechanics of this link, the present research presents the clearest demonstration to date of its existence.

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Arbitrary Social Norms Influence Sex Differences in Romantic Selectivity

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Men tend to be less selective than women when evaluating and pursuing potential romantic partners. The present experiment employed speed-dating procedures to test a novel explanation for this sex difference: The mere act of physically approaching a potential romantic partner (vs. being approached), a behavior that is more characteristic of men than of women, increases one's attraction to that partner. This hypothesis was supported in a sample of speed daters ($N = 350$) who attended a heterosexual event where either men (eight events) or women (seven events) rotated from one partner to the next while members of the other sex remained seated. Rotators were significantly less selective than were sitters, which meant that the tendency for men to be less selective than women at events where men rotated disappeared at events where women rotated. These effects were mediated by increased self-confidence among rotators relative to sitters.

In an attempt to impress the gorgeous woman sitting at the bar, Maverick finds a microphone, approaches the woman, and serenades her with an off-key rendition of the Righteous Brothers' classic hit, "You've Lost That Loving Feeling." His decision to pursue her with such boldness is unusual, requiring the sort of uncommon self-confidence that causes people to earn nicknames like "Maverick." We suggest, however, that a toned-down version of Maverick's romantic initiation strategy is the norm rather than the exception in Western cultures. Strip away the microphone and the singing, and what remains? A man sees an attractive woman, and he approaches her to try to initiate a potential romantic relationship. What could be more mundane?

Reversing the male and female roles, however, renders this relationship-initiation process much less ordinary. To be sure, there are women in Western cultures who

regularly approach men to initiate romantic relationships, but such women are the exception rather than the rule. Although women frequently play an important role in initiating the courtship process (e.g., with eye contact, smiles, or hair flips; see Moore, 1985), even egalitarian men and women expect men to play the assertive, approach-oriented role when initiating romantic relationships, and women to play the more passive role, waiting to be approached (e.g., C. L. Clark, Shaver, & Abrahams, 1999; Laner & Ventrone, 1998; Rose & Frieze, 1993). In the present article, we examine whether the mere act of physically approaching potential romantic partners (vs. being approached by them)—even in the absence of any internal motivation to do so and when removed from the context of a traditional dating script—causes individuals to evaluate these partners as more desirable, to experience greater romantic chemistry with them, and to enact behaviors that increase the likelihood of a romantic relationship developing.

ROMANTIC SELECTIVITY

Heterosexual women tend to be more selective than heterosexual men in the dating realm. Indeed, a best-selling introductory psychology textbook recently summarized the relevant literature as follows: "People *select* their reproductive and sexual partners, and perhaps the most striking fact about this selection is that women are more selective than men" (Schacter, Gilbert, & Wegner, 2009, p. 631, *italics in original*). In a recent, large-scale study of on-line dating behavior, for example, men were approximately 1.5 times more likely than women to send a first-contact e-mail after viewing a given opposite-sex person's on-line dating profile—an effect that is all the more striking when considering that men browsed approximately twice as many profiles in the first place (Hitsch, Hortaçsu, & Ariely, 2009). In a well-controlled study, men were more willing than women to go on a date with an attractive opposite-sex target depicted in a photograph (Townsend & Wasserman, 1998). In addition, across three samples, men were approximately 1.2 times more likely than women (58% vs. 48%) to accept a date from an opposite-sex research confederate who approached them on campus (R. D. Clark, 1990; R. D. Clark & Hatfield, 1989).

Several additional studies have employed speed-dating procedures to demonstrate this sex difference in romantic selectivity (Fisman, Iyengar, Kamenica, & Simonson, 2006; Kurzban & Weeden, 2005; Todd, Penke, Fasolo, & Lenton, 2007). Such procedures, which are characterized by both strong internal and strong external validity (see Finkel & Eastwick, 2008), are in many ways ideally suited to testing hypotheses related to romantic selectivity because participants indicate their romantic attraction toward numerous potential partners whom they have met in person. In speed-dating, participants attend an event where they

go on a series of brief "dates" (approximately 4 minutes each) with members of their preferred sex (for an overview of speed-dating procedures, see Finkel, Eastwick, & Matthews, 2007). After the event, they indicate whether they would ("yes") or would not ("no") be interested in seeing each partner again. Men and women who *match* (mutual "yes" responses) are provided with the means to contact each other to arrange a follow-up meeting. Speed-dating studies reliably demonstrate that men respond "yes" to a larger proportion of their partners than women do (Fisman et al., 2006; Kurzban & Weeden, 2005; Todd et al., 2007).

Many scholars explain the robust sex difference in romantic selectivity in terms of the different adaptive problems facing ancestral women and men (e.g., Buss & Schmitt, 1993; C. L. Clark et al., 1999; Symons, 1979; Todd et al., 2007; Townsend & Wasserman, 1998; Trivers, 1972). According to this evolutionary perspective, human females, like other mammalian females, generally invest more resources in a given offspring than males do. Women's minimum investment is 9 months of gestation, whereas men's is a single act of sexual intercourse. Largely because of this asymmetry, the reproductive costs of an ill-advised mating decision are considerably higher for women. Evolutionary scholars have suggested that the sex difference in romantic selectivity reflects a domain-specific adaptive mechanism that evolved to manage these sex-differentiated costs and benefits among *Homo sapiens*' ancestors. Indeed, the evidence for greater female selectivity is so obviously congruent with well-established evolutionary theorizing that one speed-dating research team played down its own evidence for this effect as "unsurprising" (Kurzban & Weeden, 2005, p. 240).¹

The compelling evidence for greater female selectivity notwithstanding, definitive evidence for this sex difference awaits an empirical test that rules out the pervasive confound that, in romantic contexts, men are far more likely to approach women than women are to approach men (C. L. Clark et al., 1999; Lamer & Ventrone, 1998; Rose & Frieze, 1993). Published speed-dating studies of romantic selectivity provide particularly striking examples of this confound: In all of them, men always rotated from partner to partner, whereas women always remained seated. Such procedures mimic the rotational scheme employed in virtually all events hosted by professional speed-dating companies, and correspond to normative initiation dynamics in most other dating environments (i.e., men approach and women are approached).

¹Many evolutionary psychologists argue that the sex difference in selectivity will be large in short-term mating contexts, such as one-night stands, but small (or even nonexistent) in long-term mating contexts, such as selecting a marital partner (R. D. Clark, 1990; R. D. Clark & Hatfield, 1989; Buss & Schmitt, 1993; Kenrick, Groth, Trost, & Sadalla, 1993). Dating, including speed dating, likely represents a middle ground between emotionally meaningless, one-time sexual encounters and long-term, committed pair bonding, so perhaps sex differences in such contexts should be of intermediate magnitude.

MIGHT APPROACHING (VS. BEING APPROACHED) MAKE INDIVIDUALS LESS SELECTIVE?

Could a confound as trivial as which sex romantically approaches the other cause (or at least contribute to) the robust sex difference in romantic selectivity? There are reasons to think that it might. One reason, which is grounded in the extensive literature demonstrating the subtle mutual influence between the body and the mind (see Barsalou, Niedenthal, Barbey, & Ruppert, 2003), is that physical, embodied approach could lead to romantic approach. In other words, physical approach could lead to a tendency to find a given romantic target appealing, or, in other words, to be unselective. Although no previous research has examined the effects of embodied approach in romantic contexts, many studies suggest that it causes individuals to experience approach-related cognitions in nonromantic contexts, including positive evaluations of target stimuli. For example, seated participants who placed their palms on the bottom of a table and pressed up (a pose associated with approach) rated neutral Chinese ideographs as more appealing than did seated participants who placed their palms on the top of the table and pressed down (a pose associated with avoidance; Cacioppo, Priester, & Berntson, 1993). In addition, non-Black participants who had been trained to pull a joystick toward themselves (approach) when a picture of a Black person appeared subliminally on the computer screen and to push the joystick away from themselves (avoidance) when a picture of a White person appeared subsequently exhibited more positive implicit attitudes toward Blacks and behaved more warmly toward them than did non-Black participants who performed either the opposite joystick task or a side-to-side (neutral) joystick task (Kawakami, Phillips, Steele, & Dovidio, 2007).

Speed dating provides an efficient means of examining the effects of approaching (vs. being approached by) potential romantic partners in part because it has an embodied-approach manipulation inherently embedded in its core structure. At all heterosexual speed-dating events, one sex (virtually always the men) rotates from partner to partner while the other sex sits to await the next partner's arrival. Just as pressing one's hand upward on the bottom of the table or pulling a joystick toward oneself causes individuals to experience approach-related cognitions, we suggest that walking toward speed-dating partners (i.e., approaching them) could result in more positive evaluations than staying seated while partners approach.

We further suggest that such approach behavior should make individuals feel more self-confident on their speed dates. The logic underlying this self-confidence prediction derives from the concept of *situated conceptualization*, which suggests that general categories become meaningful when paired with particular contexts (Barsalou et al., 2003). We suggest that, just as anger becomes meaningful when in context (e.g., anger at one's spouse, the world, or oneself), approach behavior takes on a particular meaning in romantic contexts. Specifically, approach behavior is meaningfully

related to self-confidence and to the male gender role, two constructs that are highly correlated (Spence & Helmreich, 1978). Building on evidence that "embodied states can function as cues that trigger situated conceptualizations" (Barsalou et al., 2003, p. 84), we suggest that embodied romantic approach (a traditionally masculine behavior) promotes feelings of self-confidence, and that this bolstered self-confidence may mediate the link between embodied approach and romantic approach.

A second reason why having men approach and women be approached in romantic settings could cause (or contribute to) the robust sex difference in romantic selectivity is that being repeatedly approached could make individuals feel particularly desirable, which could in turn cause them to become selective. According to the *scarcity principle*, individuals tend to place less value on objects or opportunities that are plentiful than on those that are rare (Cialdini, 2001). An individual who is approached repeatedly by opposite-sex individuals could make the attribution that these approaching individuals like and want to be near him or her. Participants in a speed-dating study might be sufficiently preoccupied with their own behavior that they fail to adjust this attribution to account fully for situational factors (i.e., speed-dating procedures *require* that the members of one sex approach the members of the other) that could have caused them to be repeatedly approached (see Osbourne & Gilbert, 1992). These approached individuals, gaining confidence as they sense that they are desired by many potential partners, might become more romantically selective. (Indeed, speed daters who are well liked tend to experience less romantic desire for their partners than do speed daters who are not well liked; Eastwick, Finkel, Mochon, & Ariely, 2007.)

HYPOTHESES

If either the embodied-approach or the scarcity explanation is correct, then speed daters who approach their partners (*rotators*) should be less selective regarding their partners than should speed daters who are seated (*sitters*), and should evaluate these partners as more desirable, experience greater chemistry with them, and say "yes" to a larger percentage of them (*rotation hypothesis*). Results supporting this hypothesis would have implications for the sex differences in selectivity discussed earlier. We predicted that, consistent with the general tendency for men to be more oriented toward romantic approach than women, male participants would show greater romantic approach (romantic desire, romantic chemistry, and "yes" responses) toward their speed-dating partners (i.e., they would be less selective) when they approached and women sat, but that this sex difference would diminish and perhaps even disappear when women approached and men sat (*sex-moderation hypothesis*). We did not predict that the robust finding that women are more selective than men would be significantly reversed when women approached and men

sat (we thought that subtly reversing embodied-approach dynamics at a speed-dating event would probably be insufficient to reverse a lifetime of men approaching and women being approached), but rather expected that this effect would be significantly and perhaps completely diminished.

Finally, we examined whether the level of self-confidence participants experienced on their speed dates statistically mediated these sex-moderation effects. Assessing mediation by self-confidence allowed us to test whether the potential effects of rotating versus sitting were due to embodied-approach or to scarcity dynamics. The embodied-approach idea—that approaching in romantic contexts activates masculine, agentic self-perceptions—predicts the following mediational model: rotating → increased confidence → strong romantic approach (low selectivity). In contrast, the scarcity idea—that being repeatedly approached in romantic contexts makes individuals feel like they have many options—predicts the following mediational model: sitting → increased confidence → weak romantic approach (high selectivity). If the sex-moderation effects are driven by embodied-approach processes rather than by scarcity processes, then the mediational analyses should support the former mediation model rather than the latter.

METHOD

We hosted 15 heterosexual speed-dating events for 350 undergraduates (174 women and 176 men; mean age = 19.57 years, $SD = 1.10$). Participants went on 4-minute speed dates with approximately 12 opposite-sex individuals. For each event, we randomly determined whether men (eight events) or women (seven events) rotated.

Immediately after each date, participants completed three-item measures of their *romantic desire* for that partner (e.g., "I was sexually attracted to my interaction partner"; $\alpha = .88$) and their *romantic chemistry* with that partner (e.g., "My interaction partner and I had a real connection"; $\alpha = .91$), using scales from 1 (*strongly disagree*) to 9 (*strongly agree*). They also reported the degree to which they experienced *self-confidence* on that date (1 = *not at all*, 9 = *extremely*). Shortly after returning home from the event, participants recorded on the study's Web site whether they would ("yes") or would not ("no") be interested in seeing each partner again.

RESULTS

Results from multilevel modeling analyses, which accounted for the nonindependence deriving from the fact that each participant rated approximately 12 targets,

supported the rotation hypothesis. Relative to sitters (coded -0.5), rotators (coded 0.5) experienced greater romantic desire for ($M_s = 4.83$ vs. 5.13), $b = 0.29$, $t(3,739) = 2.72$, $p = .007$, $p_{rep} = .959$, and greater romantic chemistry with ($M_s = 4.67$ vs. 4.94), $b = 0.27$, $t(3,739) = 2.72$, $p = .007$, $p_{rep} = .959$, their speed-dating partners, and they responded "yes" to a significantly larger percentage of them (43.07% vs. 47.86%), $b = 0.21$, $eb = 1.23$, $t(349) = 1.96$, $p = .051$, $p_{rep} = .876$. These effects were not significantly moderated by participant's sex, $|t|s < 1.15$, $ps > .252$.

As depicted in Figure 39.1, our results also supported the sex-moderation hypothesis (sex coded: -0.5 = men, 0.5 = women; rotation sex coded: -0.5 = men ro-

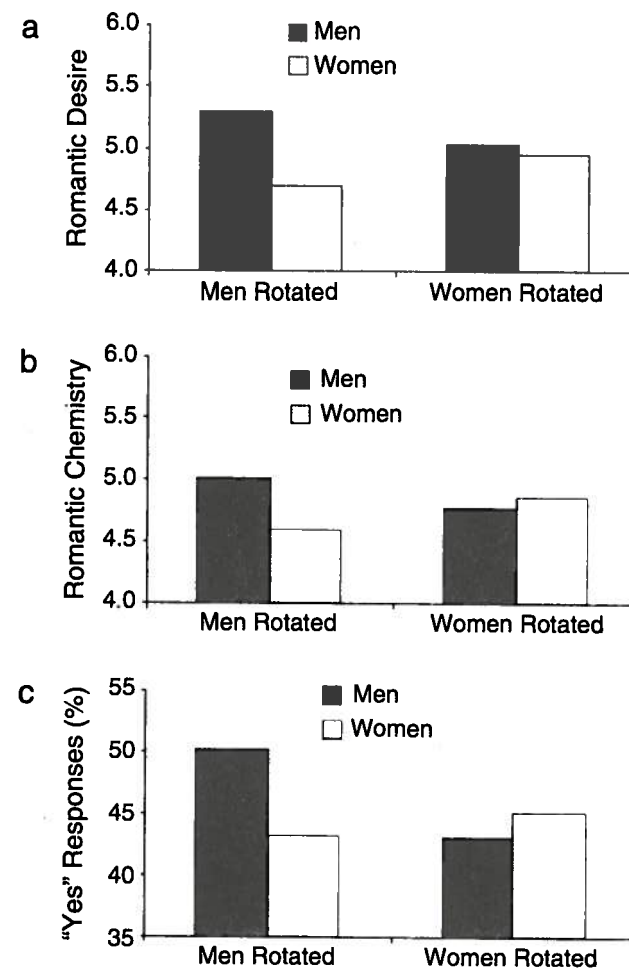


FIGURE 39.1. Men's and women's (a) romantic desire for their speed-dating partners, (b) romantic chemistry with their partners, and (c) percentage of "yes" responses to their partners as a function of which sex rotated.

tate, 0.5 = women rotate). The Sex $\times$ Rotation Sex interaction was significant (or marginally significant) for all three dependent measures—romantic desire: $b = 0.51$, $t(3,739) = 2.43$, $p = .015$, $p_{rep} = .938$; romantic chemistry: $b = 0.50$, $t(3,739) = 2.55$, $p = .011$, $p_{rep} = .947$; and percentage of "yes" responses: $b = 0.40$, $t(349) = 1.87$, $p = .063$, $\chi^2 = .860$. When men approached and women sat (as was the case in all previous studies), men experienced greater romantic desire for, $b = -0.59$, $t(2,091) = -3.97$, $p < .001$, $p_{rep} = .986$, and greater romantic chemistry with, $b = -0.41$, $t(2,091) = -3.09$, $p = .002$, $p_{rep} = .979$, their speed-dating partners than women did, and they responded "yes" to a larger percentage of these partners, $b = -0.29$, $eb = 0.75$, $t(190) = -1.91$, $p = .058$, $p_{rep} = .867$. In contrast, when women approached and men sat, none of these sex differences approached significance, $|t|s < 0.74$, $ps > .459$.

Finally, mediational analyses supported our embodied approach perspective rather than the scarcity perspective. The Sex $\times$ Rotation Sex interaction positively predicted self-confidence, $b = 0.51$, $t(3,697) = 2.39$, $p = .017$, $p_{rep} = .934$. In addition, three mediated moderation analyses (Baron & Kenny, 1986)—one each for romantic desire, romantic chemistry, and percentage of "yes" responses—revealed that the Sex $\times$ Rotation Sex interaction effects were significantly reduced (two to non-significance) after including self-confidence in the model, Sobel z s > 2.33 , $ps < .020$, p_{rep} s $> .927$. This mediation was also relevant to the rotation hypothesis (which collapsed across participant sex): Rotators reported more self-confidence than sitters, $b = 0.23$, $t(3,697) = 2.16$, $p = .031$, $p_{rep} = .907$, and three mediational analyses (one for each dependent measure) revealed that the effect of the approach manipulation on the dependent variables was significantly reduced (one to non-significance after including self-confidence in the model, Sobel z s > 2.12 , $ps < .034$, p_{rep} s $> .902$). Consistent with the embodied-approach idea, our results showed that approaching (vs. being approached) made women and men feel more confident, and this confidence seemed to promote their tendencies to experience romantic desire toward and romantic chemistry with their speed-dating partners—and to respond "yes" to their partners at a significantly higher rate.

DISCUSSION

Results supported the hypothesis that speed daters who approached partners (rotators), relative to those who stayed seated (sitters), would experience greater romantic desire toward and greater romantic chemistry with their speed-dating partners, and that they would respond "yes" to their partners at a higher rate. These results replicated the well-established finding (Fisman et al., 2006; Kurzban & Weeden, 2005; Todd et al., 2007) that women are more selective than men at speed-dating events—but this replication emerged only when men rotated.

When women rotated (a procedural feature absent from previous speed-dating studies), sex differences in romantic desire, romantic chemistry, and percentage of "yes" responses disappeared. The Sex $\times$ Rotation Sex interaction effects were significantly mediated through feelings of self-confidence on the speed date, with participants who rotated experiencing greater self-confidence than those who sat.

These mediational results were more consistent with the embodied-approach explanation than with the scarcity explanation. It seems that embodied approach in romantic settings (a traditionally masculine behavior) significantly boosted individuals' self-confidence, which in turn increased their tendencies toward romantic approach (i.e., made them less selective). That said, the evidence for the embodied-approach mechanism is preliminary. Indeed, an alternative explanation that, like the scarcity explanation, situates the mechanism within the sitters rather than within the rotators is also consistent with the present results. According to this alternative explanation, just as being presented with a large array of options can be demotivating and cause individuals not to make a choice (Iyengar & Lepper, 2000), perhaps being repeatedly approached by romantic partners can be overwhelming, causing individuals to experience less self-confidence and ultimately to eschew romantic approach (i.e., to be selective). Definitive conclusions about the mechanisms driving our effects await future research.²

Implications

The present findings have implications for the social norms surrounding the initiation of romantic relationships. Although Western civilization has become increasingly egalitarian over the past century, certain social institutions remain gendered, some in subtle, almost invisible, ways. The present research identified powerful consequences of a particularly subtle gender bias: the near-universal tendency to have men rotate and women sit at heterosexual speed-dating events. At first blush, this rotational scheme feels like an arbitrary, trivial solution to the logistical problem of ensuring that all of the women speed-date all of the men and vice versa. Executives from a popular speed-dating company confided in us that they have men rotate because (a) women often have more accessories with them at

²Other alternative explanations are also plausible. For example, perhaps approaching potential romantic partners (vs. being approached by them) influences how much anxiety one experiences; influences self-perceptions that one is action oriented, risk taking, or invested in making this dyadic interaction successful; and so forth. Another alternative explanation builds on the idea that individuals can misattribute their own physiological arousal to incorrect sources (Schachter & Singer, 1962). Perhaps standing up and walking several steps to the next partner caused rotators to experience increased physiological arousal (e.g., elevated heart rate), which they misattributed to romantic interest (see Foster, Witcher, Campbell, & Green, 1998). Although we cannot rule out this explanation, we find it implausible in part because our rotation manipulation would be the weakest arousal induction in the misattribution literature—far weaker, for example, than the low-arousal condition in Dutton and Aron's (1974) classic bridge study.

events (e.g., purses), (b) men never seem to mind rotating, and (c) it just seems more chivalrous that way. Speed-dating scholars have appropriately adopted many procedures from professional speed-dating companies, so it is not surprising that this gendered norm has largely persisted, even for events organized and hosted by scholars. The present results, however, present a cautionary note: Even subtle gender norms can have important consequences for romantic dynamics.

What implications do the present findings have for the extensive literature demonstrating that women are more selective than men when choosing mates (e.g., Fisman et al., 2006; Kurzban & Weeden, 2005; Symons, 1979; Todd et al., 2007; Trivers, 1972)? On the one hand, this sex difference did not significantly reverse at events where women rotated, so on average there was at least an overall trend in the present data for men to experience greater romantic approach (i.e., to be less selective) than women.³ On the other hand, the gendered norm we manipulated in the present study is just one of a universe of possible norms that could in principle affect romantic attraction, and our participants almost certainly had a lifelong history of navigating such norms that no subtle laboratory manipulation could readily erase. Given that men are generally expected, if not required (as at professional speed-dating events), to approach in romantic contexts, perhaps this factor alone could be sufficient to explain why women tend to be more selective than men. The present results are at least partially consistent with this possibility.⁴

Conclusion

In summary, we experimentally manipulated a small component of the gender script across speed-dating events: who physically approaches whom. Having women approach and men sit caused women to behave more like men (less selective than usual) and men to behave more like women (more selective than usual), thereby eradicating the robust sex difference in romantic selectivity. It would be fascinating to examine whether changes over time in embodied-approach sex differences (who physically approaches whom) predict changes over time in romantic-selectivity sex differences. To the degree that romantic-approach sex differences disappear, perhaps romantic-selectivity sex differences will follow suit.

³The main effect of participant's sex was significant for romantic desire, $p < .001$; marginally significant for romantic chemistry, $p = .059$; and nonsignificant for the percentage of "yes" responses, $p = .292$.

⁴Some scholars have argued that the tendencies in romantic settings for men to approach and for women to be approached reflect humans' evolutionary heritage, not socialization processes alone (e.g., Grammer, 1989). The present research was not designed to distinguish between cultural and evolutionary origin theories for human romantic approach tendencies. Rather, we sought to suggest that even a slight normative manipulation is sufficiently powerful to override the robust tendency for men to be less selective than women when evaluating potential romantic partners, regardless of the cultural or evolutionary origin of approach tendencies.

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