Journal of Undergraduate Psychological Research
2008, Vol. 3

The Effects of Competition and Physical Arousal on Attraction between Game Dyads

Kristen N. Medeiros
Western Connecticut State University

Research shows physical arousal can be misattributed to attraction for a partner, whereas research on the effects of competition is mixed. This study investigated the effects of competition and arousal on attraction. Participants were 78 students from a northeastern public university between the ages of 18 and 50. Students were paired and participated in 1 of 4 games together, creating an overall 2 (high vs. low arousal) X 2 (competitive vs. noncompetitive) between-subjects design. A between-subjects factorial revealed no significant main effects or interaction. Some factors did significantly impact attraction, different types of attraction, and perceived fun and competition. Further research could have implications for relationships in companion exercise programs and partner activities.

Have you ever fallen in love during a game of one-on-one basketball or made a best friend during a game of chess? Is attraction enhanced with arousal of the body, mind, or both? These issues impact interpersonal relationships that people encounter everyday. How can we intensify attraction of different kinds, including intimacy, passion, and commitment with new affiliations, or how can people strengthen their current relationships?

Relationships in America are dwindling in traditionalism, with divorce rates at 50%, 28.8 million people living alone, and the number of people who never marry increasing dramatically since the 1980s (Crooks & Baur, 2005). Many relationships and marriages are ephemeral, and a study in the 1980s showed intact marriages may not be all that sincere. In that study, 40% of husbands and 30% of wives reported having experienced an extramarital affair and 40% males and 25% females reported experiencing sexual intercourse outside of marriage (Crooks & Baur, 2005).

Our relationships appear to be decreasing in strength in addition to varying in type and intensity. Divorce rates have doubled in the last three years (Ohri, 2005). As young adulthood expands, the age and number of dating people are growing; meanwhile, living alone or with roommates is increasingly popular. Not only are our intimate relationships less sturdy, the relationships in many areas of life are becoming more changeable and temporary. With America's intense focus on time, the searching for a partner and keeping him/her in a relationship has become an incredibly competitive endeavor.

This competition has given rise to a wide range of manipulations and strategies to increase a person's own attractiveness. People attend exercise facilities to improve their physical appearance or social life. Medical treatments and procedures have magnified the competition and price for attracting a mate as well. The best jobs are extremely competitive, with the best getting the highest salary and luxuries. Basically, people feel and see competition all around them. Perhaps, in addition to attending to the increasing difficulties with physical health and diets, people should be aware of the adverse effects of competition-based arousal as well.

Americans are currently more overweight and obese than ever before. 106,940,000 adults are considered overweight, and 43,600,000 are considered obese (Ohri, 2005). Obesity research has shown that obesity may be the nation's biggest public health problem, causing $99 billion medical costs in 1995, and in the Journal of American Medical Association estimated that 280,000 to 325,000 adult obesity-related deaths occur each year (Akst, 2003). The prevalence of obesity has steadily increased over the years among all genders, ages, racial and ethnic groups, educational levels, and smoking levels (Weight-control Information Network, 2007).

Some possible causes of this rise in poor health and nutrition have been inactivity, rise in technology, less strenuous work and cheaper food (Akst, 2003). In 1996, about 28 percent of adult Americans reported no leisure-time physical activity in the last 30 days (American Heart Association). One study showed that average daily television watching was associated with reduction in total physical activity levels (Bennett, Wolin, Viswanath, Askew, Puleo, & Emmons, 2006). The number of working women has increased, leading to a decline in home-cooked meals

Correspondence concerning this article should be addressed to Kristen N. Medeiros, Department of Psychology, Western Connecticut State University, 181 White Street, Danbury, CT 06810. Email: Medeiros012@wcsu.edu. This research was conducted under the supervision of Patricia O'Neill, Ph.D.

and an increase in fast-food consumption. The number of fast food restaurants doubled in the United States from 1972-1997, while simultaneously and expectedly, obesity rates inflated (Akst, 2003).

These two factors of competition and arousal are prevalent issues in society today and in relationships in particular. Some couples have started to take action in their lives; instead of just working at a relationship, they workout at one. The number of spouses or partners exercising together appears to be increasing (Reynolds, 2006). Some benefits of couple exercising are reviving physical excitement, excitement over a mate's skills, and the practical usage of time by simultaneously exercising and spending time with a partner. Exercising with a significant other can be a very dynamic endeavor, but with potentially positive or negative consequences. Couples can be very discouraged by a partner's competition, skill disparity (Mirkin, 2006), or impatience. Sometimes the experience can be too competitive or too intense to be enjoyable. On the other hand, partner exercise satisfaction has shown to increase with similar commitment and determination levels across partners (Reynolds, 2006). Some sources suggest avoiding competition with a mate and finding exercise that can be arousing and productive, yet noncompetitive (Mirkin, 2006).

Is partner exercise good or bad for a relationship? The answer of whether we should be encouraging or discouraging couples from exercising together includes two components: physical arousal and competition. Studies have shown a great deal of evidence for the arousal-attraction effect, which is also called the misattribution error. In 1974, Dutton and Aron published what would become a classic study of this tendency, in which environmental cues are used to label ambiguous states of arousal. In their research, males were contacted by either a male or female confederate on either an arousal-inducing bridge or a nonarousal-inducing bridge. Results showed that males were more sexually aroused and attracted to the female interviewer on the arousal-inducing bridge. Dutton and Aron concluded that the males misattributed their physical arousal from being on a scary bridge to an attraction for the female interviewer instead. However, the study only tested the attraction rates of males and did not use random assignment.

A recent laboratory study elaborating on the work of Dutton and Aron showed that romantic and companion attraction between average-looking strangers could be significantly increased through physical arousal. In this study, pairs of opposite-sex strangers participated in a game in one of four conditions: high arousal and high novelty, high arousal and low novelty, low arousal and high novelty, or low arousal and low novelty. Participants filled out attractiveness ratings separate from their partners following the game. This study by Lewandowski and Aron (2004) provided support for the attribution theory by clearly illustrating that physical arousal, and not the factor of novelty (which had not been controlled in the original bridge study), influenced attraction. This was the first study to use real randomly paired strangers.

Studies like these have provided evidence for the arousal-attraction effect. However, these studies used and generalized to stranger pairs only, ignoring pre-existing couples, friends, and non-mating situations. It seems fair to say that attracting a mate and attracting a friend are two different accomplishments that may include different strategies and obstacles. Robert Sternberg's triangular theory of love takes into account these different components of attraction in relationships (Crooks & Baur, 2005). Although, little research has been done on the different types of attraction and different relationships.

Research has shown that exercise can improve mood, sleep, anxiety, and depression. Less research has been dedicated to the effects of games and sports on these same problem areas. Games and sports include a mental stimulation of competition as well as sheer physical arousal. Games incorporate competition by having rules, rewards, and challenges. Therefore, games may be even more exciting and mood improving than typical gym exercise as they are a full-self workout (body and mind).

Research on the effect of competition on mood and performance has been inconsistent. One study that looked at the effects of competition during exercise on mood showed that individuals who exercised under competitive conditions had less favorable affect afterwards, whereas individuals who exercised under noncompetitive conditions experienced greater positive affect (Masters, LaCaille, & Shearer, 2003). However, these results were only applicable to Type A Behavior Pattern individuals. Type A personalities are characterized by competitiveness, impatience, perfectionism, and assertiveness. Another study showed that competition and cooperation together, creating intergroup competition, led to higher levels of intrinsic motivation including increased enjoyment and improved performance (Tauer & Harackiewicz, 2004). The participants in this study were all young males in middle school, performing behavioral tasks of free throw shots in competitive, cooperative, or competitive and cooperative games. This research provides some insight into how competition affects same-sex partner games.

As mentioned earlier, research shows clearly that arousal can increase attraction to a stranger or potential mate. However, research on competition is less clear. It is uncertain if, how, and why people benefit from competition in games. Males are more likely than females to benefit from exercise, are prone to perceive games or exercise as competitive, and have less positive affect from competitive exercise (Masters et al., 2003). Thus, one of the speculations in this paper was that during a game, a male would be less attracted to a competitor, even if said competitor were a potential mate. The emotional contradiction created by feeling physically challenged by, yet sexually attracted, to the same person might lead to a negative attribution. In other words, a male's competitiveness during an arousing game might lead him to have a negative affect. He then might attribute his physical arousal and bad mood to the dislike or non-attraction of a partner. However, with lack of physical stimulation, mental challenge alone may provoke attraction since it engages these similar feelings of impressiveness and productiveness without the potentially confusing physical arousal.

The current research was designed to measure the effects of competition and arousal on attraction between partners. Real paired participants (rather than photos or confederates) played games that varied in levels of physical arousal and competitiveness. Pairs of participants were randomly assigned to

these conditions and their attraction was evaluated with private questionnaires.

The independent variables were competition with two levels, competitive and noncompetitive, and physical arousal with two levels, low physical arousal and high physical arousal. The dependent variable was the total attraction rating. I hypothesized that participants in the high arousal, low competition game would rate their partners as most attractive, whereas participants in the low arousal, low competition game would rate their partners as least attractive.

Method

Participants

Seventy-eight undergraduates, ranging in age from 18 to 50, attending a northeastern public university were recruited by research flyers posted on bulletin boards. Some participants received either extra credit in courses or partial course credit. The average age of participants was 21.59 (*SD* = 5.263), with 29 males and 49 females. Forty-six people identified their partners as strangers, 30 identified their partners as friends, and one pair identified themselves as a dating couple. When asked to report how often they exercised, 27 reported daily, 38 reported weekly, three reported monthly, eight reported rarely, and two reported that they never exercised. Of the 78 participants, 72 described themselves as heterosexual, three as bisexual, and one as homosexual. Twenty-eight of the participants were classified as being in potential-mate game dyads, determined by the compatibility of the sexual orientation and gender information disclosed, whereas 48 were categorized as not matable pairs.

Materials

The game I created consisted of three circle targets of different sizes and two small soccer balls. The targets were made of cardboard surrounded by a layer of placemat for sturdiness and then a layer of contact paper so that all targets were the same color (white marble). A white ribbon was glued into each target to allow it to hang from the ceiling or be taped to the floor depending on which game condition the participants were in. One soccer ball was covered with blue tape so that the participants could easily distinguish between the balls during the game since during a pilot study participants told me using two balls of the same color was slightly confusing.

Participants filled out a questionnaire following their game that included an attraction questionnaire and demographic and manipulation check questions. There were 12 items that measured attraction, four for each type of attraction; passion, intimacy, and commitment. Using Sternberg's Triangular Theory of Love, I included measurements of each form of attraction because I expected to get a population with more friends and strangers than dating couples. I was curious to investigate what factors influenced different types of attraction. To accomplish this, I added questions pertaining to intimacy and commitment to the primarily passionate attraction questionnaire that was used in Lewandowski and Aron's study in 2004. Responses were given on a 9-point scale, so that the total possible attraction points for each type of attraction was 36, and the total attraction points possible was 108.

The demographic section included questions about age, gender, sexual orientation, their relationship to their partner (stranger, friend, or dating), and how often they exercised. Following these questions, I had scales to evaluate the effectiveness of the physical arousal manipulation and the competitiveness manipulation and a question asking how fun the game was, all given on 5-point scales (See Appendix A for the complete questionnaire).

Procedure

Upon arrival at the laboratory, I asked participants to read and sign an informed consent form. I picked a numbered coin from one to four and randomly assigned the participant pairs to one of four groups as part of an overall 2 (high vs. low arousal) X 2 (competitive vs. noncompetitive) between-subjects design. Participants played the game with a partner, the door was closed, and no one else was allowed in the room. I observed the game from a chair on the side.

The game consisted of hitting the circle targets with a small soccer ball. The four game conditions were competitive and physically arousing, competitive and not physically arousing, noncompetitive and physically arousing, and noncompetitive and not physically arousing. Competition was induced by instructions like, "The object of the game is to hit more targets than your partner" and, "Try to get as many points as you can and beat your partner." Targets had different point values, and there were point penalties for small mistakes. I told these participants that I would be keeping score. In the noncompetitive games, targets did not have points, and the instructions stated, "There are no points or scores."

Physical arousal was induced during the games by two aerobic-like movements; squatting and overhead arm activities. Consultation with the Assistant Director of the University Health Service confirmed that this activity would raise heart rate in 2 minutes and that no undergraduate student would have difficulty with the movements or be unable to participate. Participants used the same two soccer balls for all four game conditions. During the games that were not physically arousing, participants sat on the floor on set, taped marks approximately ten feet apart and rolled the balls to the targets directly between them and their partner, playing a similar game with little physical movement. During these nonphysically arousing games, participants tended to lean or lay out to get a ball that rolled astray, which also reduced physical motion. In the games that were physically arousing, participants stood on the same taped marks approximately ten feet apart and threw the balls at the targets directly between them and their partner. These participants tended to scurry quickly around if their balls went awry, which increased movement and arousal.

All games lasted exactly 2 minutes, and all pairs were instructed to refrain from talking to their partner during the game (See Appendix B for complete game rules). Participants were reminded that they could cease participation at any time without

penalty. I observed quietly and kept score when appropriate.

Immediately following the game, the participants filled out the questionnaires in separate divided cubicles. I told them to remain in their cubicles and stick their hands out silently when they had finished. Exactly 1 minute after they both sat down, I walked to the cubicles and verbally told each participant whether they had won or lost the game and to mark this outcome on their sheet. Individuals in the no score game were told to indicate that they had won. When a participant indicated he or she was finished with the hand gesture, I collected their questionnaire personally and gave them a sheet to debrief them. I told them they could leave separately, before their partner, if they felt uncomfortable at all. Only one participant gladly accepted this offer, while all others took their time to leave or lingered for their partners to finish. There was no talking and there were no disturbances (other than quiet gathering of belongings by the partner) to the other participant while he or she finished the questionnaire.

For each participant, the attraction scores were added to create total values for the three attraction categories and added to create a total attraction score for each participant that included all three types of attraction.

Results

There were 42 participants in competitive game conditions and 36 participants in noncompetitive game conditions. A between-subjects factorial revealed that the participants in the competitive game conditions rated their attraction to their partners on average at 52.60 (*SD* = 19.637), whereas those playing noncompetitive games rated their partners on average at 49.33 (*SD* = 15.496). This main effect was not significant, F (1,74) = .854, p = .358. There were 42 participants in arousing game conditions and 36 in non-arousing game conditions. The arousing game conditions rated their attraction to their partners on average of 51.14 (*SD* = 17.685), and participants in the non-arousing games rated their partners an average of 51.03 (*SD* = 18.203). This main effect was not significant, F (1,74) = .030, p =.862. The interaction between competition and arousal on attraction was nonsignificant, F (1,74) = 2.154, p = .146.

Forty-six participants played a game with a partner they identified as a stranger, 30 with someone they considered a friend, and two with their dating, significant other. Due to the fact that there was only one dating couple, many analyses could not be performed to compare this type of relationship to other types of relationships.

Analysis of the effects of the type of relationship on other factors showed that participants rated strangers significantly lower (*M* = 22.3, *SD* = 6.653) on commitment than friends (*M* = 28.33, *SD* = 6.567), F (2,75) = 8.943, p = .001. The type of relationship had no significant effect on how arousing or competitive the game was perceived to be. On average, strangers rated the game as 2.93 (*SD* = 1.298) out of 5-point scale on level of fun, which was significantly lower than friends' average rating of 3.43 (*SD* = 1.278), F (2,75) = 3.473, p = .036.

There were 29 male participants and 49 female participants included in this study. The average total attraction score given by a male for his partner was 49.76 (*SD* = 17.997), and the average total attraction score given by a female for her partner was 51.88 (*SD* = 17.883). A *t*-test for independent groups showed no significant differences between these attraction ratings, t (76) = .505, p =.615. Males and females did not rate their partners significantly different on any of the three realms of attraction either. Gender did not have any significant effect on rating how fun the game was, t (76) = 1.288, p = .202, how arousing the game was, t (76) = .186, p = .853, or how competitive the game was perceived to be, t (76) = 1.183, p = .240.

Participants who played competitive games rated the competitiveness on average at 2.69 (*SD* = 1.297) on a 5-point scale. Participants in the noncompetitive game conditions rated the competitiveness on average at 1.83 (*SD* = 1.108). A *t*-test for independent groups analysis determined that the competition manipulation was effective, t (76) = 3.109, p = .003. Participants who played a competitive game rated it significantly higher on fun (*M* = 3.48, *SD* = 1.311) than participants in a noncompetitive game (*M* = 2.83, *SD* = 1.254), t (76) = 2.203, p = .031. Participants who played a competitive game also rated the arousal level significantly higher than participants who played a noncompetitive game, t (74.476) = 2.021, p = .047. Competition did not significantly affect total attraction, t (76) = .805, p = .424, or any of the three specific types of attraction.

People in the arousing game condition rated the game an average of 2.07 (*SD* = .947) on arousal level on a 5-point scale, and people in the non-arousing game condition rated the arousal level on average as 1.75 (SD = .967). Unfortunately, a *t*-test for independent groups revealed that this manipulation on arousal level was not significant, t (76) = 1.480, p = .143. Arousing games did not prove to be more or less fun than non-arousing games, t (76) = 1.293, p =.200 or seem more or less competitive than non-arousing games, t (76) = 1.293, p = .200. The arousal level of the game did not significantly affect the total attraction, t (76) = .028, p = .978, or any of the three types of attraction.

I conducted an analysis comparing ratings from 28 participants in mate-pair situations and 48 participants in nonmate-pair situations. Participants paired with potential mates rated their partners significantly more attractive overall (*M* = 56.36, *SD* = 20.619) than participants who played a game with people who were not potential mates (*M* = 47.69, *SD* = 15.304), t (75) = 2.101, p = .039. Specifically for passion, participants rated their potential mates as more passionately attractive (*M* = 14.89, *SD* = 8.740) than participants rated their non-potential mates (*M* = 7.00, SD = 3.973), t (33.621) = 4.514, p = .001. However, this difference was not found in the commitment or intimacy attraction ratings. Matability did not significantly affect how fun the game was perceived to be, t (75) = .194, p = .847, how competitive the game was perceived to be, t (75) = 1.353, p = .180, or how arousing the game was perceived to be, t (75) = 1.021, p = .310.

Twenty-seven participants reported that they exercised daily, 38 reported weekly, three reported monthly, eight reported rarely, and two reported that they never exercised. An ANOVA revealed no significant differences between reported exercise habits on attraction scores, F (4,73) = 1.366, p = .245, or on any of the three types of attraction. Exercise habits also showed no significant

influence on how fun the game was perceived to be, F (4,73) = .987, p = .420, how arousing the game was perceived to be, F (4,73) = .609, p = .657, or how competitive the game was perceived to be, F (4,73) = .642, p = .635.

T-test analyses of the won and lost groups showed no significant effects of game result on attraction total, t (40) = .485, p = .631, or on how much fun the participant said the game was, t (40) = .355, p = .724. However, whether a person won or lost did have a significant impact on how competitive the individual felt the game was, t (40) = 2.778, p = .008. Participants who won the game rated the game an average of 3.18 (SD = 1.296) for competitiveness out of a 5-point scale, which was significantly higher than those who lost the game rated it (M = 2.15, SD = 1.098). Winning or losing did not significantly change how arousing individuals felt the game was, t (40) = 1.912, p = .063.

There was a significant interaction between gender and matability on total attraction, F (1,73) = 4.999, p = .028. There was also a significant interaction between gender and matability on commitment, F (1,73) = 5.181, p = .026. Females rated their nonmatable partners higher (M = 26.71, SD = 6.851) on commitment than they did potential mates (M = 23.07, SD = 8.043), whereas males rated potential mates as higher on commitment (M = 25.43, SD = 6.098) than they did nonpotential mates (M = 21.27, SD = 7.126).

There was also a significant interaction between gender and matability for passionate attraction, F (1,72) = 8.622, p = .004. Out of 36 possible points, males rated matable partners an average of 18 (SD = 8.143), but they rated nonmatable partners an average of 5.47 (SD = 2.748). Females rated matable partners at an average of 11.79 (SD = 8.460) and nonmatable partners at an average of 7.70 (SD = 4.276). However, for intimacy there was no significant interaction between gender and matability, F (1,73) = .562, p = .456.

I found a significant interaction between competition and whether or not the partner was a potential mate on commitment, F (1,73) = 4.771, p = .032. Participants who played competitive games with potential mate partners rated their partners an average of 26.28 (SD = 6.461) but rated nonmatable partners at only 24.08 (SD = 7.223). Participants who played noncompetitive games rated potential mates an average of 20.60 (SD = 7.043) and nonpotential mates an average of 25.96 (SD = 7.430) on commitment attraction.

I found a significant interaction between arousal and matability on total attraction, F (1,73) = 4.557, p = .036. Participants who participated in an arousing game rated their potential mates an average of 50.58 (SD = 22.117) and nonmates an average of 50.72 (SD = 15.899), whereas participants who played games that were not arousing rated potential mates an average of 60.69 (SD = 18.969) and nonmates only 43.30 (SD = 13.596).

The average commitment score for participants who played an arousing game with a potential mate was 22.25 (SD = 8.013), an arousing game with a nonpotential mate was 26.45 (SD = 6.653). The average commitment scores for participants who played a nonarousing game with a potential mate was 25.75 (SD = 6.181), and a nonarousing game with a nonpotential mate was 23.0 (SD = 7.907). An ANOVA showed that this interaction was significant, F (1,73) = 4.129, p = .046.

A similar interaction was found for intimacy, F (1,73) = 4.575, p = .036. I found an interaction between arousal and matability on how fun the game was perceived to be, F (1,73) = 5.721, p = .019.

Discussion

My manipulation of competition was successful. Trying to win made a game feel more competitive, and also more fun and arousing. However, competition did not affect how attractive a partner is on any of the three realms: intimacy, commitment, or passion. A stronger manipulation of competition might have altered the attraction ratings. One way to increase competition would have been to reward the winner with stickers, candy, or money. Unfortunately, this kind of reward was not permitted. Another way to increase competition could have been verbal praise and attention; however, this would not really increase competitive feelings during the game if there were no expectation of it. Competition did make the game seem more arousing and fun, so this is an interesting indication of how teachers, friends, partners, or family can improve games for those involved.

The interaction of competition and arousal did not significantly impact any of my outcome measures. This finding is inconsistent with research by Masters, LaCaille, and Shearer that showed that combined competition and exercise resulted in negative affect (2003).

My manipulation of arousal was unsuccessful; with people feeling no more or less aroused in the arousing game than in the non-arousing game. Playing a physically arousing game did not change how attracted someone was to his or her partner, or how fun or competitive the game seemed to be. This is inconsistent with theory about the misattribution error and research done by Lewandowski and Aron (2004) and Dutton and Aron (1974). Perhaps my manipulation was not strong enough, and those in the arousing condition may not have experienced a greater increase in their heart rate versus those in the non-arousing condition. Future research should include a measure of self-reported arousal or, perhaps, an objective measure of arousal, as a manipulation check.

Another possibility is that the questionnaire was not taken seriously or privately. Participants verbally joked and audibly laughed in their cubicles to one another about some of the questions. I may have collected more accurate data if the participants were separated into different rooms while filling out the questionnaire. Another weakness of the questionnaire could have been the wording of the arousal manipulation check question. Some participants confided to me that they interpreted the question as pertaining to sexual arousal, possibly because the passionate attraction questions that preceded them may have primed participants to interpret the question this way.

I found that people were more willing to commit to friends than to strangers, and people also thought a game was more fun when played with a friend rather than a stranger. This makes logical sense and seems to support classic theory about attraction that mere exposure makes an individual more attractive (Crooks & Baur, 2005). I feel that this impact on fun is extremely interesting and many icebreaker activities at the beginning of programs

would do well to benefit from this finding. If people have more fun playing a game with friends, then maybe camps or orientations should begin with friend-finding, proximity, and similarity tests, rather than any potato-sack races or scavenger hunts. Although my results are not generalizable to all age groups, this area could be investigated further to be used for helping children make friends and enjoy extracurricular activity programs or helping adults have fun in work and group settings.

Males and females did not rate games differently on how arousing, fun, or competitive they were. This is inconsistent with a study that showed that males perceive games as more competitive and therefore less fun (Masters, LaCaille, & Shearer, 2003). Gender also did not influence how attractive a partner was perceived to be. This finding is helpful support for coed sports teams or activities. Young men and women can have fun and play different kinds of games together without feeling attracted or aroused. One possible reason for the lack of differences between sexes could be social pressure on the individuals to answer questions with reserve. This could have been due to relationships outside of the research setting. Unfortunately, I did not gather data on whether individuals were currently in relationships, which could have affected how comfortable they felt revealing an attraction toward a partner.

Whether a partner was a potential mate (based on gender and orientation) had an impact on how attractive a person seemed to be. I did not, however, take into account age or relationships in determining the matability of a pair, and this could definitely change the results. An older, married participant who played a game with a younger student mentioned this to me after the experiment as a potential factor that I had missed. But with the data that I did collect, people rated potential mates as more attractive overall, but also higher on passion and not intimacy and commitment. This indicates to me that mates highlight initial attractive traits that are mainly physical qualities related to passion. But with the data I collected, I found no difference in other areas of fun, arousal, or competitiveness.

Exercise level had no influence on any of the areas I investigated. One possibility that cannot be ruled out is that people were not being honest in their questionnaire responses (either with exercise habits or with its effects). Another conclusion could be that athletic ability or exercise experience did not affect the impression of the other person playing the game.

People who won the game perceived it to be more competitive. This might have been due to an interesting cognitive bias, the self-serving bias. According to the self serving bias, people attribute their failures to external influences, whereas they attribute their successes to internal strength, such as skill. In this case, the individuals who won may have believed that their victory was the result of their skills and abilities in a challenging environmental condition. Those who lost, did not.

The significant interaction between potential matability and gender on attraction shows that males tend to be more attracted toward potential mates and females can show more attraction towards nonmates. Interestingly, both males and females rated their matable and nonmatable partners similarly on intimate attraction. This is consistent with theory that females are more social and accepting compared to males due to the highly structured gender roles for males as compared to females. There are expectations for males to be highly demanding and stubborn, while females are stereotyped to be more nurturing and compromising (Crooks & Baur, 2005).

There was no significant interaction between gender and competition on fun. This is inconsistent with evidence from the Tauer and Harackiewicz study which showed that males had more fun during competitive games than noncompetitive games, although this study did not compare males to females (2004).

The interaction between competition and potential matability impacted commitment attraction significantly. Curiously, people felt more committed to potential mates after competitive games than after noncompetitive games, and people felt more committed to nonmates after noncompetitive games than after competitive games. This contradicts suggestions to stay away from competition when participating in activities with mates (Mirkin, 2006). These results also seem to be accentuating social competition problems among same-sex, nonmatable people and ideas of building stronger relationships through challenges and motivations. It may be easier to commit to a friend if you do not feel in competition with him or her; whereas you might feel more committed to a lover if you have just gone through a tough endeavor together. Some research does support this, finding that relationships last longer when they undergo and solve conflicts at the beginning of relationships (Crooks & Baur, 2005).

The interaction between matability and arousal was significant for total attraction. However, my results showed that participants felt more attracted to a potential mate after a game that was not arousing than after a game that was arousing, but less attracted to a nonmate after a non-arousing game than after an arousing game. This does not support my hypothesis. A similar interaction was found specifically for commitment and intimacy. This contradicts the arousal-attribution theory that says that in certain conditions higher arousal will increase attraction for a partner (Dutton & Aron, 1974; Lewandowski & Aron, 2004). Perhaps my poor manipulation of arousal is to blame for this interesting interaction.

Participants who played arousing games reported that the game was less fun when played with a potential mate than when played with a non-potential mate. However, when participants played a boring game, they said the game was more fun when played with a potential mate than with a nonpotential mate. I can conclude from this that arousal and mates are two different factors that affect the perception of fun. Therefore, people can have fun playing games that are physically arousing even if they are not playing against or with someone they could date. This finding can have implications for any activities where entertainment and happiness are goals, such as with activity programs for orientation programs, vacations, or after-school centers.

This last finding shows the strength of my research, in that even without collecting data on realistic matability (age differences, relationship status), participants reported significantly different levels of many factors, depending on their generic matability. From all the different interactions, I feel that whether a participant played a game with someone who was a potential mate was the most substantial factor, even though not as I might have predicted in some instances.

References

Akst, D. (2003, March 3). On the contrary; Belt-loosening in the work force. *The New York Times.*

Bennett, G. G., Wolin, K. Y., Viswanath, K., Askew, S., Puleo, E., Emmons, K. M. (2006). Television viewing and pedometer-determined physical activity among multiethnic residents of low-income housing. *American Journal of Public Health, 96,* 1681-1685.

Crooks, R., & Baur, K. (2005). *Our sexuality, Ninth Ed.* Wadsworth.

Dutton, D., & Aron, A. (1974). Some evidence for heightened sexual attraction under conditions of high anxiety. *Journal of Personality and Social Psychology, 30,* 510-517.

Lewandowski, G., & Aron, A. (2004). Distinguishing arousal from novelty and challenge in initial romantic attraction between strangers. *Social Behavior and Personality, 32*, 361-372.

Masters, K., LaCaille, R., & Shearer, D. (2003). The acute affective response of Type A behaviour pattern individuals to competitive and noncompetitive exercise. *Canadian Journal of Behavioural Science, 35*, 25-34.

Mirkin, G. (2006). *Couples stay together on a tandem bicycle*. Retrieved September 30, 2007, from Ezine articles.com: *www.drmirkin.com/fitness/tandem_bicycle.html*

Ohri, R. (2005, November 4). Matrimonial malaise: Till divorce do us part. *Chandigarh Newsline*. Retrieved September 27, 2007, from *http://cities.expressindia.com/fullstory.php?newsid=155513*

Physical inactivity, overweight and obesity. (2007, October 1). Retrieved September 27, 2007, from *www.americanheart.org/presenter.jhtml?identifier=742*

Reynolds, G. (2006, March 23). How to exercise in harmony. *The New York Times.*

Tauer J. M., & Harackiewicz, J. M. (2004). The effects of cooperation and competition on intrinsic motivation and performance. *Journal of Personality and Social Psychology, 86,* 849-861.

WIN: Statistics related to overweight and obesity. (n.d.). Retrieved September 29, 2007, from Weight-control Information Network: *http://win.niddk.nih.gov/statistics/inde-x.htm#preval*

Appendix A

Please clearly circle one answer.

Answer the following questions on a scale with 1 = not at all, 5 = moderately, and 9 = very much.

1. How much would you like to see your partner again?

1 2 3 4 5 6 7 8 9

2. How much would you like to work with your partner?

1 2 3 4 5 6 7 8 9

3. How well do you think you could get along with your partner?

1 2 3 4 5 6 7 8 9

4. Do you feel you and your partner could work through an argument or a fight?

1 2 3 4 5 6 7 8 9

5. How sexy do you perceive your partner to be?

1 2 3 4 5 6 7 8 9

6. How much would you like to date your partner?

1 2 3 4 5 6 7 8 9

7. How much do you want to kiss your partner?

1 2 3 4 5 6 7 8 9

8. How sexually warm do you perceive your partner to be?

1 2 3 4 5 6 7 8 9

9. How emotionally close are you and your partner?

1 2 3 4 5 6 7 8 9

10. Do you feel you could trust your partner?

1 2 3 4 5 6 7 8 9

11. How emotionally warm do you perceive your partner to be?

1 2 3 4 5 6 7 8 9

12. How willing are you to share with your partner?

1 2 3 4 5 6 7 8 9

Please choose one answer clearly.

13. Did you know your partner prior to playing this game?

Yes No

14. If so, for about how long? _____years _____months

15. What is your relationship to your partner?

Strangers Dating Friends

16. How old are you? _____

17. Are you male or female? _____

18. Was your partner male or female? _____

19. What is your sexual orientation?

Homosexual Bisexual Heterosexual

20. Did you win or lose the game?

I won. I lost.

21. How often do you exercise?

Daily Weekly Monthly Rarely Never

Answer the following questions on a scale from 1 to 5, 1 = not at all, 3 = moderately, and 5 = very much.

22. How competitive was the game?

1 2 3 4 5

23. How physically arousing was the game?

1 2 3 4 5

24. How much fun was the game?

1 2 3 4 5

Appendix B

Group 1: Competitive & Physically Arousing

Stand on one of the marked spots on the floor facing each other.

The object of this game is to hit more targets than your partner.

Above you, you will see three targets of different sizes hanging from the ceiling.

The targets are worth different points (largest = 1, middle = 5, smallest = 10).

There are two balls; one is for rolling and one is for throwing.

You must squat down and roll the rolling ball to your partner before you can stand and throw the throwing ball to the targets.

You will lose 2 points if your rolled ball does not reach your partner.

You will play for 2 minutes while I keep score.

Try to get as many points as you can and beat your partner.

Please do not talk to your partner.

Group 2: Competitive & Not Physically Arousing

Sit on one of the marked spots on the floor facing each other.

The object of this game is to hit more targets than your partner.

On the floor between you, you will see three targets of different sizes taped down.

The targets are worth different points (largest = 1, middle = 5, smallest = 10).

There are two balls; both are for rolling.

You must roll one ball to your partner before you can roll the other ball to the targets.

You will lose 2 points if your rolled ball does not reach your partner.

You will play for 2 minutes while I keep score.

Try to get as many points as you can and beat your partner.

Please do not talk to your partner.

Group 3: Noncompetitive & Physically Arousing

Stand on one of the marked spots on the floor facing each other.

The object of this game is to hit the targets.

Above you, you will see three targets of different sizes hanging from the ceiling.

There are two balls; one is for rolling and one is for throwing.

You must squat down and roll the rolling ball to your partner before you can stand and throw the throwing ball to the targets.

There are no points or scores.

You will play for 2 minutes.

Try to hit the targets.

Please do not talk to your partner.

Group 4: Noncompetitive & Not Physically Arousing

Sit on one of the marked spots on the floor facing each other.

The object of this game is to hit the targets.

On the floor between you, you will see three targets of different sizes taped down.

There are two balls; both are for rolling.

You must roll one ball to your partner before you can roll the other ball to the targets.

There are no points or scores.

You will play for 2 minutes.

Try to hit the targets.

Please do not talk to your partner.