Human Mate Preferences: Empirical Validation of Dual Sexual Strategies Using FANOVA

Robert D. Mather and Mike Knight

University of Central Oklahoma

Abstract

Dual sexual strategies in humans were tested according to Sexual Strategies Theory (Buss & Schmitt, 1993). Sixty-nine undergraduates used a computer task to rank twenty-four items of mate desirability. The experimental designs were two WW MANOVAs analyzed by participant sex. The dependent variable was a continuous latency of participant response on each item. The independent variable was the type of relationship situation (short-term versus long-term) presented. The results of the FANOVA were significant for Sex by Long-term, Sex by Short-term, and Female by Long-term. These results were consistent with the hypothesis. Evidence of dual sexual strategies was significant for both short-term and long-term strategies.

Generations of people have unfailingly searched for the meaning of life. While this noble quest has had many different perspectives from which to choose a solution, perhaps the most tenable was that of Richard Dawkins (1976), in which the author proposed that genes act in their own best interest in order to propagate as much of themselves into the future as possible. Since genes are not cognizant, per say, inefficient genetic propagating techniques and features are selected out, thus leaving a variety of efficient mechanisms. Among these efficient mechanisms are the psychological mechanisms which we employ.

The emotions we experience are the whispers of our ancestors. They are evolution's executioners (Wright, 1994). Since the sex act is that most directly associated with genetic propagation, traits and strategies that increase one's mating desirability to the opposite sex should be subject to heavy selection. This is called sexual selection (Darwin, 1871/1901).

Trivers (1972) parental investment model proposed that the least investing sex would seek sexual variety, while the high-investing sex would seek an investing partner. Buss and Schmitt (1993) proposed both that there are dual sexual strategies in humans, and that mate preferences have evolved accordingly.

According to these models, we hypothesized that: (a) males would select traits that indicated genetic fitness and fecundity more rapidly than females, (b) females would select traits that indicated resources more rapidly than males, (c) the presentation of short-term relationship situations would bias responses favoring the selection of genetic fitness indicators, (d) the presentation of long-term relationship situations would bias responses favoring the selection of status indicators, (e) in the short-term relationship situation, females would select traits that indicate genetic fitness more than in the long-term , and (f) in the long-term relationship situation, males would select traits that indicate genetic fitness more than females.

Method

Participants

Participants consisted of 69 college students (mean age = 21.16), ages ranging from 18 to 42. Participants volunteered from an introductory psychology class and received class credit for participating.

Apparatus

Mate Selection Trait Preference, designed by Knight, Milam, Goldman, and Mather (1999), was the computer program used for this empirical data collection procedure. Mate Selection Trait Preference was written in the computer programming language of Visual Basics 5 pro-edition. The program was designed to measure participant reaction times to a sorting task of 24 randomly presented items of desirability in a mate. In accordance with Stephenson (1993/1994), a concourse was built using items of desirability in a mate taken from Buss and Schmitt (1993). Two conditions of instruction (short-term and long-term relationship situation vignettes) were randomly presented to each participant.

Robert Mather, Department of Psychology, University of Central Oklahoma. This research was completed by Robert Mather in partial fulfillment of his master's thesis, which was supervised by Mike Knight. We thank the other members of the master's committee, Bill Frederickson and David Bass, for their valuable feedback. Portions of this project were presented at 16th annual meeting for the International Society for the Scientific Study of Subjectivity in Tulsa, OK. .Address Correspondence to Robert Mather, Department of Psychology, 100 N. University Drive, University of Central Oklahoma, Edmond, 73034: e-mail: rmather@ucok.edu

Design

A multivariate analysis of variance (MANOVA) was conducted on the variables separately for males and females in two within-within groups designs. A Factor Analysis of Variance (FANOVA) was also conducted. In a FANOVA, the factor loading output from a Principal Component Analysis (PCA) of Q-Sort data are used as the dependent measures in a BW ANOVA (Frederickson, Knight, & Goldman, 1999). Four factors were forced, to correspond with a 2 X 2 matrix of sex vs. strategy (short-term vs. long-term). In the FANOVA, a factor analysis was conducted on the data to determine the relationship of the items to the participants on several dimensions (Frederickson et al., 1999). Subsequently, the participants were collapsed across the factors in accordance with Q-Methodology to examine their relationship with the items from this more telling perspective.

The dependent variable was the latency of participant response to each variable. Latency of participant response was measured in seconds, accurate to .01 seconds. This measurement was a much more precise ranking of the variables than previous analyses, which included rating on a 7-point scale (Buss & Schmitt, 1993) and an 11-point scale (La Cerra's study as cited in Buss, 1999). The precision of latency occurs because a ranking is inherently formed as the variables are selected, due to the fact that increasingly greater numbers are associated with the passage of time. Thus, each subsequently selected variable receives a difference measured to the hundredth of a second. The latency allows the experimenter to capture subtle trends that may not have otherwise been available to measurement by a less sensitive method.

The amount of time used to select each item reflected the amount of time used to self-reference the item, as well as to compare it to the other items. Latency of response was not recorded for the preliminary practice task, but was recorded for each of the subsequent tasks. The latency began recording at the start of each task and ran continuously. Time from the presentation of the vignette was recorded for each item as it was selected, resulting in 24 latencies timed from vignette onset for each vignette presentation.

Table 1. Sex by Long-Term Strategy

Source	SS	*df*	MS	*F*	*p*- value	$_p^2$
Sex	0.37	1	0.37	5.28	0.03	0.08
Error	4.00	57	0.07			
Strategy	0.21	1	0.21	1.21	0.28	0.02
Sex x Strategy	2.20	1	2.20	12.62	0.00	0.18
Error	9.95	57	0.17			

The independent variable was the type of vignette or relationship situation (short-term vs. long-term). The vignettes were structured so that the participant projects their own ideas of short-term and long-term relationship opportunities. This was consistent with the self-reference dilemma overcome by Knight, Frederickson, and Martin (1987). The casual and pair-bonding stimuli were selected with reference to Buss and Schmitt (1993).

Procedure

After a practice task, participants were presented with 24 items and asked to rank them from the most important to the least important as desirable traits of a potential mate in either a short-term or a long-term relationship opportunity. The vignette presented was randomly selected as either a short-term or long-term relationship situation, and each participant received both conditions of instruction. After completing the program, participants were debriefed and assured as to the confidentiality of the research.

Results

Factor Analysis of Variance

The data was analyzed according to the FANOVA model proposed by Frederickson et al. (1999). According to the procedure, the rows and columns were transposed in SPSS 10.0. This transposition transformed the people into the variables that were examined. A factor analysis was conducted using a principal components analysis (PCA). Four factors were forced. The PCA employed a varimax rotation and the factor scores were saved as variables through the use of the Anderson-Rubin method. Each factor was examined for gender trends and appropriately named. After the factor scores were obtained, these scores were pasted from the output into a new data sheet. All four variables were transformed using a Fisher Z transformation according to the following formula: $z = 1/2 \ln[(1 + r)(1 - r)]$ (Martin & Bateson, 1996). An ANOVA was conducted on the four transformed variables. Both Sex by Long-Term and Sex by Short-Term met the $p > .05$ significance level for the assumption of heterogeneity, with Sex by Long-term, $p = .778$, and Sex by Short-term, $p = .108$.

Table 2. Sex by Short-Term Strategy

Source	SS	*df*	MS	*F*	*p*- value	$_p^2$
Sex	0.00	1	0.00	0.00	0.95	0.00
Error	2.79	57	0.05			
Strategy	0.03	1	0.03	0.13	0.72	0.00
Sex x Strategy	1.40	1	1.40	5.45	0.02	0.09
Error	14.60	57	0.26			

Table 1 shows that there were significant Sex differences on the long-term strategy with $F(1, 57) = 5.28$, $p < .05$. Sex by Long-term Strategy was significant at $F(1, 57) = 12.62$, $p < .05$. Table 2 shows

Sex by Short-term Strategy was significant at $F(1, 57) = 5.45$, $p < .05$.

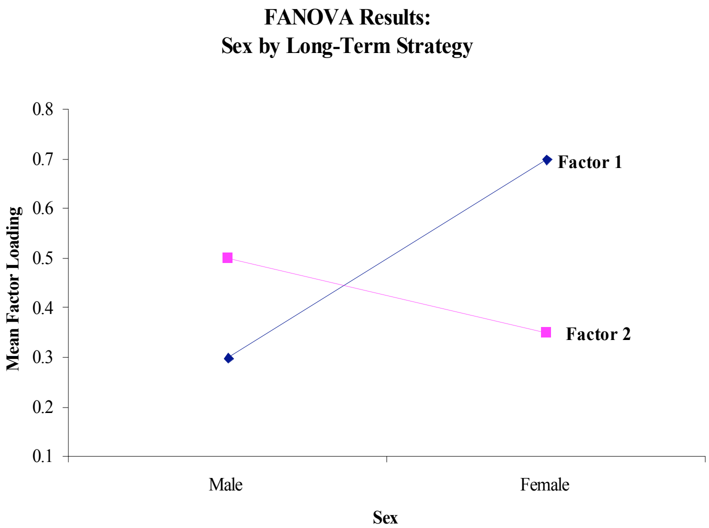

Figure 1. FANOVA results for Sex X Long-Term Strategy.

Table 3. Simple Effects Sex by Long-Term Strategy

Source	SS	*df*	MS	*F*	*p*- value	^2_p
Male x Strategy	0.52	1	0.52	2.96	0.09	0.05
Female x Strategy	1.92	1	1.92	11.00	0.00	0.16
Error	9.95	57	0.17			

Table 4. Simple Effects Sex by Short-Term Strategy

Source	SS	*df*	MS	*F*	*p*- value	^2_p
Male x Strategy	0.49	1	0.49	1.93	0.17	0.03
Female x Strategy	0.94	1	0.94	3.68	0.06	0.06
Error	14.60	57	0.26			

Figure 1 shows the significant interaction of Long-Term Factors 1 and 2. Table 3 shows that the examination of the simple effects yielded a significant difference in Female by Long-term Strategy at $F(1, 57) = 11$, $p < .05$. Table 4 shows that Female by Short-term was not significant at $F(1, 57)$ 3.68. $p < .05$, however, this statistic will warrant closer examination.

Discussion

Results of the FANOVA procedure yielded significant differences between sex in strategies. The FANOVA procedure gave support to the theory that female sexual strategies differ more in the long term and short term than do males. Males appear to be using a strategy more oriented to the short-term relationship (low investment and high sexual accessibility) situation in both the short term and long term. Trends were then viewed across one entity. The FANOVA procedure is worthy of inclusion into theory-driven studies. FANOVA combines the interaction-based reliability of multivariate statistics with the utility of Skinnerian studies. This background makes FANOVA a deserving statistic for future use in a wide variety of studies.

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