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Verbal creativity, mate value, and sexual selection

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DISSERTATION

Submitted in Partial Fulfillment of the
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ABSTRACT

The present series of studies examine links between creativity and intelligence with dating and sexual behavior from an evolutionary perspective to better understand the function of human creativity. In three studies, participants (N = 65, 225, 142) completed intelligence tests, male and female mate value surveys, and written creativity tasks. Analysis of the data suggests that creativity does not correlate with sexual partner number but it does correlate with self-assessed dating success and high partner quality, particularly in an older sample.

TABLE OF CONTENTS

TABLE OF FIGURES

CHAPTER 1: Introduction

One-hundred and fifty years after the publication of Charles Darwin's *On the Origin of Species*, explaining the evolution of language remains an alluring and elusive goal. By examining the universal adaptive functions and individual differences in linguistic ability, evolutionary psychology has contributed more to a modern understanding of the evolution of language than almost any other field. Theories about language evolution have investigated its role in navigating complicated social networks (Cosmides & Tooby, 1992; Dunbar 1996), securing ecological dominance and acquiring resources (Flinn, Geary, & Ward, 2005), and general problem solving (Dunbar, & Shultz, 2007). Some researchers argue that language is an emergent phenomenon of sufficiently complex brains (Fitch, Hauser, & Chomsky, 2005) or an exaptation of cognitive abilities originally evolved for some other purpose (Anderson, 2007). While it is possible that language arose fortuitously, it is more likely that it has been directly shaped by both natural and sexual selection.

Human language meets most[1] of the common criteria for being considered an adaptation. It possesses the hallmarks of "*special design* –complexity, economy, efficiency, reliability, precision, and functionality" (Buss et al., 1998, p. 535). Language is a successful solution to a wide range of adaptive problems (both direct and indirect), it is the product of a large number of genes (Plomin & Philip, 2002), it is ubiquitous in the population (although there is still individual variation in linguistic ability), and it is heritable (Stromswold, 2001).

[1] I write "most" because it depends on how you define economy, which will be addressed below. Additionally, sexually selected traits show slightly different paths of evolution.

1.1 Large Brains, Language and Complexity

Complexity. Undoubtedly, language confers survival benefits on those who use it--putting them far ahead of non-language users. Theories of the evolution of language which focus on its usefulness for evolutionary problem-solving do not sufficiently explain human verbal complexity or creativity, however. Selection prefers relatively simple and economical adaptations with a clear, defined purpose. Language, however, is an extremely ornate, complex, altruistic, and costly trait that seems superfluous in design. The average human vocabulary is massive, around 60,000 words acquired at a rate of 10 words a day for a child's first 18 years (Dunbar, 1996). And, as anyone who has tried to learn a second language as an adult can attest, our grammatical structures are often arcane and unnecessarily complex. Pidgin languages, with very small vocabularies and simple, efficient grammatical structures, are sufficient for a large range of trade, work, and survival functions. However, when children are raised with a pidgin, it is instinctually transform into a full-fledged creole language with extravagant vocabularies and highly wrought grammars (Miller, 2000). If language was purely an adaptation for addressing pragmatic environmental problems why does it invariably move toward complexity?

Developmental Costs. Learning our first language comes so easily and naturally we often give little though to just how costly a trait it is. The massive and stunningly complex neocortex, which is necessary for language, comes with high associated costs (Portin, 2008). The neocortex in humans accounts for approximately 80% of our brain by volume

(50% larger than the maximum value for any other primate) and has an unusually high level of energy metabolism (Dunbar, 1993; Sherwood et al., 2006).

The energetic costs of developing and maintaining a brain which is nine times as large as would be predicted for a mammal our size are substantial. During development, children's brains consume 50-70% of their basal metabolic rate and account for 30-50% of their total daily energy expenditure (Skoyles, 2008). The adult human brain continues to use 20% of the body's total energy expenditure as well as 20% of our total oxygen intake (Raichle & Gusnard, 2002). Why invest all of this energy in developing and maintaining such complicated brains when something simpler should suffice?

Child birth and maternal mortality. Developmental and maintenance costs are not the only problems associated with large brains. With larger brains, come larger heads. According to the World Health Organization (2009) in underdeveloped nations, such as Niger, women typically receive little or no prenatal care and deliveries are usually carried out by a few close female relatives. In such situations, which are probably similar to the conditions found in our evolutionary environment, women's lifetime risk of dying from pregnancy-related complications is 1 in 7. The main threats to mothers are related to bleeding, infection, and obstructed labor, complications which are not unique to humans but represent a disproportionate risk (WHO, 2009). According to Rosengerg (1992), "encephalization had placed increasing selection on both the form of the pelvis and the timing of birth" which result in much higher rates of complications during pregnancy and a relatively premature birth for infants, both of which impact mortality rates.

Language and testosterone. Language development may necessitate sub-optimum testosterone levels in humans. High-levels of androgens during pregnancy can disrupt language development, vocabulary, and possibly result in articulation problems in children (Albores-Gallo et al., 2009). The correlation between testosterone levels and verbal ability later in life is not as clear. There appear to be parallel increases and decreases in testosterone production, cognitive ability, and creative, artistic and scientific production during males' life-spans (Miller, 1999; Kanazawa, 2003).

Lower levels of testosterone during fetal development can result in low birth-weight and subfertility (lower quality or quantity of sperm) in adults (Francois et al., 1997). Additionally, testosterone levels correlate with male physical attractiveness and are positively related to various measures of self-reported mating success (Honekopp et al., 2007). Again, there appears to be adaptation which favors the development of linguistic and cognitive abilities despite the high associated costs.

1.1.4 Selection for Intelligence, Language, and Creativity

Linguistic ability is an extremely complex adaptation that is the result of a large number of genes acting together (Plomin & Philip, 2002). Complex polygenic traits, such as language, can be disrupted by recessive mutations distributed throughout the genome clearly reducing phenotypic functioning (Miller, 2000b). If things are functioning well, however, that is a good sign of underlying health.

If individuals are judging potential mates on their intelligence and verbal creativity, there is obviously a great amount of pressure to develop fitness indicators capable of displaying these qualities as well as pressure to develop a reliable means of judging the validity of related cues. The most reliable indicators of high genetic quality are traits that are difficult to fake because they carry a high associated cost for producing and maintaining them (Johnstone & Grafen, 1993; Zahavi, 1975). This "handicap principle" suggests that costly indicators should be the most reliable cues to underlying health because the very fact that they are hard to produce makes them difficult for a less healthy individual to counterfeit.

Linguistic abilities are highly correlated with general cognitive ability. General cognitive or intellectual ability is referred to as the "*g* factor," which is highly heritable (Plomin & Philip, 2002). Studies on monozygotic and dizygotic twins have demonstrated that the heritability of linguistic ability is substantial (Stromswold, 2001). If this *g* factor represents heritable mental fitness, then it would be highly advantageous to be able to judge a potential mate's *g* factor relative to one's own intelligence and that of other potential mates (Miller, 2000). It seems that people actually do select partners based on their linguistic ability. The correlation for language ability between spouses is greater than .50 (Stromswold, 2001).

Although we begin developing language extremely early in life, linguistic fluidity parallels the development of other sexual characteristics-- it blossoms as we approach sexual maturity (Miller, 2000). As we begin searching for mates and establishing the criteria that we will use to judge potential future mates (and simultaneously learning to present ourselves in the best possible light) we begin to recognize and display

characteristics important for sexual relationships and reproduction. This development is both physical and psychological. The depth, complexity, associated costs and effort poured into communication gives other individuals unparalleled access to another's past and their plans for the future (Miller, 2000) and is the most important, comprehensive and incisive tool at our disposal for finding the best possible mate we can. The reintroduction of sexual selection to the investigation of human evolution allows for explanations of such complex, creative, uniquely human behavior as art, music, humor and language.

Mate-selection strategies and criteria differ depending on the goals of a particular individual. When individuals are interested in short-term mating, mating that consists of a few sexual encounters over a relatively short period of time researchers (Buss et al., 1990; Furnham, 2009) suggest that both men and women will put a relatively high value on physical attractiveness. Why, then, would women find intelligence and creativity attractive in a potential short-term mate? Intelligence has been shown to correlate with creativity (Jensen 1998; Kuncel et al. 2004) and intelligence tests with higher *g*-loadings, such as the Raven's Advanced Progressive Matrices, and shows higher correlations with body symmetry, which is itself attractive (Prokosch, Yeo, & Miller, 2005).

Sexual selection pressures should also shape how individuals choose long-term mates. According to Buss and Schmitt (1993), over 90% of all people world-wide enter into a long-term relationship such as marriage. Given that long-term mating is so prevalent cross-culturally, we should expect adaptations that facilitate selecting the best long-term partner available. When one selects a long-term partner, traits such as physical attractiveness, financial resources, and sexual experience become less important than traits such as kindness, intelligence, and generosity (Miller, 2000). One of the best ways

to advertise yourself and to judge a potential mate for these characteristics, as well as the genotypic and phenotypic health that underlie their production, is through verbal communication.

By listening to other people speak we can assess reliable indicators of underlying intelligence and health, their creativity, sense of humor, and imagination. If language can serve as a proxy for advertising traits that are themselves not directly observable, such as intelligence and good genes, then it would benefit speakers to be as interesting and creative as possible. A good storyteller with an active imagination and fluent command of language can keep the attention of a large audience, influencing prospective social-allies and wooing prospective mates. Additionally, linguistic ability can make individuals more persuasive and increase their ability to negotiate the social exchange contracts that will be the basis of fitness. The theory presented in this paper is that linguistic abilities have developed beyond purely pragmatic solutions to environmental problems and that interesting, creative, and eloquent speech functions as an honest signal of underlying health.

1.2 Foundational Research

Previous studies have produced conflicting results when examining female preferences for intelligence and creativity. In a study of 37 different cultures, Buss (1990) found that both men and women listed intelligence, kindness and understanding as the most important characteristics in a long-term partner. Studies of newspaper personal advertisements have found that the best predictor of the number of responses to men's

ads seeking women was education level, which is strongly associated with intelligence[2] (Pawlowski & Koziel, 2002; Kaufman and Wang, 1992). The same relationship was not found for women. Analyses of speed dating events (Fisman, Iyengar, Kamenica, & Simonson, 2006) as well as economic models of mate selection (Li, Bailey, Kenrick, & Linsenmeier, 2002) have found intelligence to be a high-value necessity when selecting a mate.

In a study looking at creative production, Griskevicius, Cialdini, and Kenrick (2006) report that for men, "any cue designed to activate a short-term or a long-term mating goal increased creative displays; women, however, displayed more creativity only when primed to attract a high-quality long-term mate." These creative boosts were "unrelated to increased effort on creative tasks or to changes in mood or arousal" (p. 63). A recent study on language use patterns and vocabulary found that when men were primed by showing them photographs of young, attractive females and asking them to imagine a romantic encounter used a greater number of lower frequency words which the authors suggest is a form of linguistic display (Rosenberg & Tunney, 2008)[3]. The effect was the opposite for women (they produced more common words) and there was no effect when the prime was a significantly older, presumably less attractive, individual.

Nettle and Clegg (2006) surveyed a large sample of self-described artists, poets, and non-artistic men and found a "direct link between creative activity and number of

[2] It is also strongly correlated with earning potential (Rose and Betts, 2002), a possible confound.
[3] Men will often want to hide the fact that they consciously or unconsciously are pursuing only a short term mating opportunity. Thus, they should act as similarly as possible in the short and long term mate seeking contexts.

partners, [which] is consistent with Miller's hypothesis that artistic creativity functions as a mating display" (p. 3, ¶ 6).

Intelligence, particularly when expressed creatively, may be attractive because it is an honest signal heritable fitness and genetic quality. A number of different studies have found correlations between intelligence and fitness factors such as: body symmetry (Prokosch, Yeo, and Miller, 2005; Bates, 2007; Furlow, Armijo-Prewitt, Gangestad, and Thornhill, 1997), three indices of semen quality (Arden, Gottfredson, Miller, & Pierce, 2009); and a small positive correlation with six measures of health (Arden, Gottfredson, & Miller, 2009).

Change in women's preferences over the ovulatory cycle has been show to occur for a number of different traits related to masculinity, social dominance, developmental stability and health. Such preference shifts are thought to highlight good genes traits in males which are sufficiently sexually attractive for women just looking for a short-term sexual partner. Haselton and Miller (2006) found that women who were in the most fertile phase of their ovulatory cycle demonstrated a preference for creativity over wealth in a short-term partner. However, Gangestad, Thornhill, and Garver-Apgar (in preparation) found a preference for facial masculinity but not intelligence during the most fertile phase of women's ovulatory cycle. Prokosch, Coss, Scheib, and Blozis, (2009) found that both creativity and intelligence positively predicted men's appeal as a short- and long-term partner but neither trait was differentially preferred across the ovulatory cycle.

1.3 Present Studies

The first two studies presented here are primarily concerned with how intelligence and creativity may function as cues of developmental stability and heritable fitness and whether they have an impact on success in short-term mating contexts. These studies attempt to validate a new measure of creativity based on consensual ratings of individuals and correlation with verbal and non-verbal intelligence tasks. Additionally, we plan to test the novel hypothesis that men will demonstrate higher variance in creativity scores than women. Finally, we examine the relationship between intelligence, creativity and the number of short-term mating partners in men. These studies seek to expand on previous work by examining self-report measures of sexual beliefs and behavior (instead of preferences) and their correlation with objectively measured creativity (as opposed to self-report levels of creativity).

Study 3 examines the relationship between intelligence, creativity, relationship success, and partner quality. The hypothesis is that males who are more intelligent and more creative will not necessarily have had more sexual partners but that they will report more relationship satisfaction and that they have more physically and psychologically attractive (higher-quality) partners. To this end we incorporated new measures of partner quality as outlined above and recruited participants online to get an older, more diverse sample.

CHAPTER 2: Intelligence, Creativity, and Short-Term Mating Success

2.1 Introduction

This study was designed to test two different hypotheses. First we were interested in seeing if intelligence or creativity would predict short-term mating success. We examined a large, self-report mate value survey and a six-item verbal creativity assessment in hopes of finding demographic and personality trait variables that could shed light on the interaction between mating strategies, linguistic abilities, and intelligence.

Second we were interested in assessing performance on a number of different intelligence tests that were both verbal and nonverbal. The verbal tests were modified versions of the definitions and similarities subtests of the Wechsler Abbreviated Scale of Intelligence and an analogy test derived from previous versions of the Miller Analogies Test and the Analogy section of the Scholastic Aptitude Test. The nonverbal test was the Raven's Progressive Matrices (RPM). It was hypothesized that performance on these tests would produce, via factor analysis, a general intelligence factor, termed *g* and that all tasks would correlate positively and significantly. We were also interested in seeing if language-based intelligence tests would be a better predictor of verbal creativity than the more commonly used RPM assessment.

2.2 Method

2.2.1 Participants

Participants were 86 female and 85 male undergraduate students at the University of New Mexico. Five male participants were excluded. One was excluded from the analysis because he declined to complete the mate value survey. Four males were excluded because they reported a sexual orientation other than "heterosexual" for which we had no prior theoretical predictions. All participants were recruited from classes in introductory psychology (which allow students to fulfill a research requirement through research participation) or other undergraduate psychology classes offering extra credit for research participation. Mean age of women was 20.55 (SD = 4.25; range = 18-41). Mean age of men was 20.11 years (SD = 3.01; range = 18-39).

2.2.2 Materials

Participants reported for a study advertised to be about how people form classes of items and how that connects with their linguistic abilities and their interactions with members of the opposite sex in social and personal settings. Upon arriving, participants, either individually or in same-sex groups, were given a consent form (Appendix A) to read and sign. The work was carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments involving humans, and under UNM Institutional Review Board approval.

Participants were then given a folder containing a scoring sheet for each of the five sections of the study. The order in which the assessments were presented to each

participant was randomized so that practice effects would not influence performance on subsequent tasks. Participants were then seated individually at a computer or a desk in a room adjacent to the lab. Each participant was instructed to complete a section of the experiment and to notify the experimenter when he or she had finished. Participants were allowed to take a break between sections to reduce fatigue[4]. The five sections of the experiment are described in detail below.

Raven's Progressive Matrices. The first assessment consists of the administration of a modified version of the Raven's Progressive Matrices (RPM). As with the previous assessment, participants were seated at a computer and instructed to use the up and down arrow keys to progress through slides of a PowerPoint presentation (see Appendix C). The Raven's Progressive Matrices tests are made up of a series of diagrammatic puzzles that change in two directions simultaneously. Each puzzle has a piece missing, which the participant is required to find. Participants were given the following instructions:

> In the next phase, we will ask you to solve some abstract problems that require observation and the application of rules you must figure out. The problems will get more and more challenging as you go along.
>
> The next slide is an example of a problem. There is a pattern with a bit cut out of it, and your job is to find the missing bit out of the eight pieces below. Look at the pattern, and think what the piece must be like that could complete the pattern correctly. Then find the right piece out of the eight shown below.

[4] Average time to complete the entire study was three hours.

The solution is explained on the subsequent slide.

Participants were then shown an example of an array and given the correct answer followed by this explanation:

> From the top row to the bottom row, you can see more horizontal lines being added: none in the top row, the bottom half filled in with lines in the middle row, and the whole square filled with horizontal lines in the bottom row. So the missing piece must be filled with horizontal lines too – which means either piece 2 or piece 8. If you had to guess, you'd circle one of them.
>
> But we can choose between them by looking at the pattern of columns. From the left column to the right column, you can see the growth of the diamond shape full of vertical lines – from nothing in the left column, to the half-diamond in the middle column, to the full diamond in the right column. The full diamond with vertical lines appears pieces 1, 2, 4, 5, and 7.
>
> Since we already know the right piece must be filled with horizontal lines like piece 2 or piece 8, and the full diamond doesn't appear in piece 8, we know that piece 2 is the right choice.

Participants were then presented with the odd numbered matrices (1-35) from the Raven's Advanced Progressive Matrices Part II. Participants were free to advance the slides once they had made a selection and the slides advanced automatically after 90 seconds. The matrices were presented on a computer so that multiple participants could be run simultaneously.

Analogy Test. The analogy test consisted of 50 multiple choice items (a through e) compiled from past versions of the Miller Analogies Test (MAT) and the Analogy section of the Scholastic Aptitude Test (SAT). The MAT is a high-level, analytic ability test that requires the solution of problems stated as analogies. The analogy items were written as equations in the form "A : B :: C : D," which can be read as "A is to B as C is to D" or as "A is related to B in the same way that C is related to D." For each analogy item, one half of the equation is missing and has been replaced with five options, only one of which correctly completes the analogy. Participants were given 50 minutes to complete the analogy test using standard pencil and paper test sheets (see Appendix D).

The instructions were as follows:

> Each question below consists of a related pair of words or phrases, followed by five lettered pairs of words or phrases. Select the lettered pair that *best* expresses the relationship similar to that expressed in the original pair.
>
> Example:
>
> YAWN : BOREDOM ::
>
> (A) dream : sleep (B) anger : madness **(C) smile : amusement**
>
> (D) face : expression (E) impatience : rebellion

Participants were given a test booklet which they answered directly on and were allowed as much time as they wanted to complete this phase of the experiment.

Similarities Assessment. The similarities assessment was adapted from the similarities subtest of the Wechsler Abbreviated Scale of Intelligence (WASI). Traditionally, the test is administered to each participant by the investigator. Each item is read for the participant, and scoring takes place during the test. In a standard application the experimenter can ask the participant to expand upon vague or unclear responses by asking "What do you mean?" or "Tell me more about it." Responses are scored as 0, 1, or 2 points depending on the quality of the answer.

If the experimenter asked "In what way are Red and Blue similar?" a 0 point answer would be "Both are pretty" or "Both are bright". A 1 point answer would be "They are both crayons" or "They are both colors of the American flag". A 2 point answer would be "They are both colors" or "They are parts of the visual spectrum".

In order to run multiple participants at once, the test was converted to a pencil and paper test (see Appendix E). Participants were not prompted by the experimenter to provide additional responses as there was no subject-experimenter interaction during this phase of the study. Participants were given the following instructions:

> In the next section you are going to see two words and I want you to tell me how they are alike. For example if I asked how "cookies" and "candy" are alike you could say they are both snacks and they are both sweet.

The items were presented as follows:

How are **GRAPES** and **STRAWBERRIES** similar?

_____

_____

_____

_____

Participants were scored following the same criteria presented in the WASI manual (see attached scoring sheet). Participants were given 0, 1, or 2 points per question. Participants who gave multiple answers received credit for their best response and were not penalized for poor spelling or grammar. Answers that differed from those provided by the scoring manual were only awarded credit if they were very close synonyms for the correct responses. Participants were given a test booklet which they answered directly on and were allowed as much time as they needed to complete this section.

Definitions Assessment. The definitions assessment was also adapted from the WASI. As in the previous phase, the test is traditionally administered to each participant by the investigator. Each item is read for the participant and scoring takes place during the test. The experimenter can ask the participant to expand upon vague or unclear responses by asking "Explain what you mean?" or "Tell me more about it." Responses are scored as 0, 1, or 2 points depending on the quality of the answer.

If the experimenter asked "What is a shoe?" a 0 point answer would be the participant pointing at his or her shoes or saying "Shoe rack". A 1 point answer would be "They are clothing" or "They are something you walk in". A 2 point answer would be "Footwear" or "Something you wear on your feet".

Just as with the previous section, the test was converted to pencil and paper so that multiple participants could be run simultaneously (see Appendix E). Participants were not prompted by the experimenter to provide additional responses as there was no

subject-experimenter interaction during this portion of the study. Participants were given the following instructions:

> Now you will be presented with words to define. You do not have to write in complete sentences and spelling and grammar mistakes will not be held against you. Please just try to explain the word as accurately as possible.
>
> Also, make sure your writing is clear so I can read it.

The items were presented as follows:

What is a:

Bird	**Calendar**
_____	_____
_____	_____
_____	_____
_____	_____

As in the section before, participants were scored following the same criteria presented in the WASI manual (see attached scoring sheet). Participants were given 0, 1, or 2 points per question. Participants who gave multiple answers received credit for their best response and were not penalized for poor spelling or grammar. Answers that differed from those provided by the scoring manual were only awarded credit if they were very close synonyms for the correct responses. Participants were given a test booklet which they answered directly on and were allowed as much time as they needed to complete this section.

Mate Value Survey. The Mate Value Survey consisted of the administration of a Likert scale survey (1: Strongly Agree, 2: Agree, 3: Moderately Agree, 4: Neither Agree nor Disagree, 5: Moderately Disagree, 6: Disagree, 7: Strongly Disagree) designed to assess the participants' self-perceived mate value. The survey contains questions such as, "I receive many compliments from members of the opposite sex." and "Members of the opposite sex are attracted to me." The survey also asked participants for demographic information and for samples of creative writing. This survey was derived from numerous personality and mate value surveys and was modified to suit the objectives of this research project.

The survey was divided into male and female versions (Appendices G and H respectively). The version for males contains statements such as, "Compared to other men, I am:" followed by a list of traits, as well as a facial masculinity self-rating scale (explained below). The version for women is similar but reads, "Compared to other women, I am:" followed by a list of traits. There is no face rating scale for women. Women were presented with an ovulatory cycle questionnaire (detailed below).

The male survey contains a facial masculinity self-rating with a range of faces along a spectrum. First, sixteen random male facial images were morphed to produce a composite average male image. The male photographs were taken of University of New Mexico students in 1992. All subjects were between 18 and 26 years of age. All of the photographs were taken under constant light conditions and showed faces with neutral expression and with no apparent facial hair or adornments. Prior to morphing, all pictures were standardized to the same orientation. Using the "Facial Explorer" program

(Grammer, Fieder, & Fink, 1998) the composite average male images were produced in a single step.

The survey also contains questions about the participant's dating and sexual history including questions about the participants' number of long and short term dating partners, marriage history (*Have you ever been married: yes / no; Are you currently in a long-term relationship (including marriage): yes / no*), and number of sexual partners.

Participants were explicitly instructed to be as creative as possible in order to elicit peak creative performance (Griskevicius, Cialdini, & Kenrick, 2006). Participants always completed the survey in a private room and were reminded that all information was completely confidential and optional. Only one participant declined to complete the mate value survey.

The Ovulatory cycle questionnaire asked female participants about the regularity of their menstrual cycles, about when their last menstrual period began, if participants were currently late for the beginning of their menstrual cycle and their use of hormonal contraception.

The mate value survey was a compilation of ten different personality, demographic, and behavioral questionnaires including: a Basic Information Inventory (demographics, age, ethnicity, handedness, etc) and a religion questionnaire created by Miller; a Assertive Mating Effort Scale for Heterosexual Women (and a version for men) created by Figueredo; a Facial Masculinity Self-Rating (developed by Miller & Jenkins); an Ovulatory cycle questionnaire created by Miller; a Sexual Behaviors and Beliefs Questionnaire adapted from Gangestad and Simpson's Sociosexuality Scale; a Mate

Value Inventory adapted from Figueredo by Miller; a Cognitive Questionnaire and an Academic Questionnaire developed by Miller; and a NEO Five-Factor Inventory - Revised (NEO-FFI-R) Scale developed by Costa & McCrae (1992).

Creativity Assessment. Participants completed 6 verbal creativity tasks (Appendix G). Participants were explicitly instructed to be as creative as possible to elicit peak creative performance from participants (Griskevicius, Cialdini, & Kenrick, 2006, Lizarraga, 2008). The instructions read, in part:

> For each task, imagine that you are single, and are trying to attract people who will be reading your responses on an internet dating site. Therefore, please try to be as creative, imaginative, and interesting as possible. Show off what makes you distinctive and intriguing as a person.

Examples of the verbal creativity tasks include: "Imagine that all clouds had really long strings hanging from them – strings hundreds of feet long. What would be the implications of that fact for nature and society?" and "If you could experience what it's like to be a different kind of animal for a day, what kind of animal would you want to be, and why?" See Appendix G for a list of all creativity tasks and rating instructions.

2.3 Results

Factor Analyses. Principal axis factoring with direct oblimin rotation was performed using SPSS 16.0.1 for Windows. Six of the subscales that compose the self-report

inventory were analyzed independently for males and females. Following Costello & Osborne, 2005, principal components extraction was used prior to maximum likelihood factoring to estimate the number of factors per scale and factorability of the correlation matrices. Eigen values and percent of variance explained for each factor are discussed below.

The Assertive Mating Effort Scale (items 92-101 on the survey for females; 92-102 on the survey for males) had one hypothesized factor. A PCA suggested one factor with an eigen value of 3.325 and explained 32.640% of the variance in men. The second factor had an eigen value of 1.298 and explained 12.979% of the variance. A PCA suggested one factor with an eigen value of 3.384 and explained 33.838% of the variance in women. The second factor had an eigen value of 1.628 and explained 16.277% of the variance.

Studies have suggested that more masculine faces can be differentially preferred by females during the most fertile part of their ovulatory cycle (Little, Jones, & DeBruine, 2008); Gangestad, et al., in press). While this hypothesis was not explicitly considered during the construction of the mate-value survey, we extracted factor one factor, "Masculinity," from the facial masculinity item, muscular, and aggressive survey items. The factor explained 53.691% of the variance and had an eigen value of 1.73.

The Sexual Behavior Scale (items 123-149) had one hypothesized factor. A PCA, however, suggested two factors for men. The first factor, with an eigen value of 6.911, explained 25.598% of the variance. The second, with an eigen value of 3.349, explained and additional 12.403% of the variance, for a cumulative total of 38.001%. The third factor had an eigen value of 2.279 and explained 8.439% of the variance. A PCA

suggested only one factor for women. The first factor, with an eigen value of 8.245 explained 30.536% of the variance. The second, with an eigen value of 3.048, accounted for an additional 11.289% of the variance.

The Mate Value Inventory—Revised (survey questions 150-227) had no specific number of hypothesized factors. Questions 201 and 212 of the inventory both asked participants to rate their creativity on a -3 to 3 Likert scale. The correlation between these two questions was $r(188) = .698$, $p < .01$. Question 201 was removed from the analysis. Questions 170 and 205 both asked participants to rate their imagination on a -3 to 3 Likert scale. The correlation between these two questions was $r(185) = .691$, $p < .01$. Question 170 was removed from the analysis.

The PCA suggested 4 factors for both males and females. The first factor had an eigen value of 14.278 which explained 18.543% of the variance. The second factor had an eigen value of 4.757 which explained 6.178% of the variance. The third factor had an eigen value of 3.555 which explained 4.618% of the variance. The fourth factor had an eigen value of 3.445 which explained 4.474% of the variance resulting in a cumulative total of 33.814% of the variance accounted for. The fifth factor had an eigen value of 2.998 which explained an additional 3.894% of the variance.

Because the PCA did not suggest a definitive cut-off point for the number of factors, Maximum Likelihood Factoring with Varimax rotation was run to extract models with 3, 4 and 5 factors. The four-factor model was the most theoretically coherent. For males, the first factor consisted of self-assessed measures of extraversion, happiness and good partner traits. The second factor dealt mostly with measures of physical

attractiveness. The third factor consisted of measures of controlling and neurotic behavior, and the fourth factor dealt primarily with measures of creativity and intelligence.

For females, the first factor consisted mostly of measures of physical attractiveness and extraversion, the second factor dealt mostly with measures of kindness, interest in children, and long-term mating strategies, the third factor consisted of measures of creativity and intelligence, and the fourth factor dealt primarily with measures of jealousy, neuroticism, and aggression.

To examine the relationship between creativity and social skills in men, we performed a maximum likelihood factor analysis of the survey questions 44 to 74. The "Social Skills" analysis, containing items such as "I am sociable", "I am talkative", and "I am good at leading groups effectively", produced one factor that explained 51.133% of the variance (for item loadings see Table 2.1). A second factor analysis was run to examine self-assessed creativity. A maximum likelihood analysis produced one factor, "Self-Assessed Creativity" containing items such as: I am creative, I have a lot of intellectual curiosity, and I am intrigued by the patterns in art and nature. This factor explained 42.347% of the variance. Factors loadings and patterns were consistent with hypothesized predictions.

The NEO-FFI-R Scale (survey questions 257-316) was hypothesized to factor into 5 traits: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. Five factor inventories of personality traits have been have been validated in a number studies and are found cross culturally and with different age, socioeconomic, and gender

groups (McCrae & Costa, 2003). The PCA suggested 5 factors for both males and females. The first factor for males had an eigen value of 10.924 which explained 18.206% of the variance. The second factor had an eigen value of 6.109 which explained 10.182% of the variance. The third factor had an eigen value of 4.281 which explained 7.135% of the variance. The fourth factor had an eigen value of 3.580 which explained 5.967% of the variance. The fifth factor had an eigen value of 3.096 which explained 5.161% of the variance for a cumulative total of 46.651% of the variance explained. A sixth factor had an eigen value of 2.564 which explained 4.273% but was not included in the analysis.

The PCA for females was similar, but not identical, to that for males. The first factor for females had an eigen value of 7.240 which explained 12.066% of the variance. The second factor had an eigen value of 6.175 which explained 10.292% of the variance. The third factor had an eigen value of 4.521 which explained 7.534% of the variance. The fourth factor had an eigen value of 3.894 which explained 6.490% of the variance. The fifth factor had an eigen value of 3.127 which explained 5.212% of the variance for a cumulative total of 41.954% of the variance explained. A sixth factor had an eigen value of 2.525 which explained 4.209% of the variance but was not included in the analysis.

Each of the intelligence tests (the Analogies test, Raven's Matrices, the Definitions test, and the Similarities test) was scored and summed into four variables. We hypothesized one factor, *g.* A PCA was conducted for males and only one factor with an eigen value over 1 was found. This factor had an eigen value of 3.160 and explained 63.201% of the variance. The second factor had an eigen value of .821 and explained 16.423% of the variance. A PCA for women was conducted and again only one factor

with an eigen value over 1 was found. This factor had an eigen value of 2.975 and explained 59.506% of the variance. The second factor had an eigen value of .681 and explained 13.616% of the variance.

Maximum likelihood factoring with Varimax rotation was performed following the PCAs described above. The criteria used to construct factors were a priori hypotheses, the scree test, and the interpretability of the factor solution. The *g* factor, Assertive Mating Effort, and Big Five Personality factors were constructed for both males and females. The Sexual Behavior scale and the Mate Value scales were run separately for males and females. The Sexual Behavior Scale resulted in two factors for males, a Sexual Behavior factor and a Conservative Sexual Beliefs factor, and one factor for females, Sexual Behavior. Factor loadings can be seen in Table 2.2. The mean, skewness, kurtosis, and standard deviation for the factors can be found in Table 2.3.

The *g* factor, Big Five Personality factors (Extraversion, Neuroticism, Conscientiousness, Agreeableness, and Openness), and the Assertive Mating Effort factor represent data from both sexes and are presented under the headings *Male and Female Combined Factors.* Factors that were constructed separately for each sex are presented under the corresponding subheadings *Male Specific Factors* and *Female Specific Factors*. Both the male and female Sexual Behavior factors were highly leptokurtic and slightly positively skewed.

Each of the six responses on the creativity task was rated by five raters on a 1 to 5 scale. All ratings were done independently, blindly, and without any knowledge of the participant's sex, intelligence, personality, or any other information. For the six verbal

creativity tasks, inter-rater reliabilities (Cronbach's alphas) are: .95 (cloud-strings), .94 (sex changes), .84 (self-descriptions), .92 (animal for a day), .91 (marriage) and .91 (future). The inter-rater reliability across all of the tasks is .97. This scale has an inter-item reliability with a Cronbach's alpha of .76. An Exploratory Factory Analysis (EFA) with Maximum Likelihood Extraction and Promax Rotation with Kaiser Normalization was run to examine the factor structure. One factor explains 35% of the variance in the creativity ratings. While the creativity tasks were collected for females we had no *a priori* hypotheses about how they would relate to any of our other measures. Because the process of transcribing and rating 500 responses is extremely time consuming and the data was not central to the aims of this study it was excluded from this analysis. Female creativity means, variances, and correlates are examined in the two subsequent studies, however.

Correlations. Correlation coefficients were computed among the *g* factor, Creativity, Assertive Mating Effort, Big Five Personality factors, the Sexual Behavior factors (one for females and two for males) and the Mate Value factors (separately for males and females). A *p* value of less than .05 was required for significance. Correlations between the *g* factor, Creativity, Assertive Mating Effort, Big Five Personality factors, the Sexual Behavior factors are presented in Table 2.4. Correlations between the male specific factors and all other factors are presented in Table 2.5.

Items 123 to 149 (The Sexual Behavior Scale) of the Mate Value Survey compose the male specific factors "Sexual Behavior" and "Sexual Beliefs." Mate Value Survey

items 150 to 227 (excepting items 170 and 221) compose the four Mate Value factors: Happy, Attractive, Controlling, and Intelligent. The other factors included in the correlation are: Social Skills, Aggressiveness, and Self-Assessed Creativity.

Correlations between the female specific factors and all other factors are presented in Table 2.6. Items 123 to 149 (The Sexual Behavior Scale) of the Mate Value Survey compose the female specific factor "Sexual Behavior." Mate Value Survey items 150 to 227 (excepting items 170 and 201) compose the four female Mate Value factors: Attractive, Kind, Intelligent, and Neurotic.

A Maximum Likelihood factor analysis extracted one factor, *g*, which explained 64.083% of the variance. As hypothesized, the different intelligence tests correlated positively and significantly and all correlations are moderate to large. Creativity, as measured by standardized scores on the writing assessment, correlated with *g*, (r = .479, p < .000). Performance on the Raven's and the Analogies test correlate (r= .704, p < .000).

Assertive Mating Effort in males did not correlate significantly with *g* (r = -.128, p = .315) or creativity (r = .001, p = .995). When we controlled for age, however, it did significantly correlate with number of sexual partners (r = .427, p < .000). The male factor SOI Behavior did not correlate with either creativity (r = .044, p = .733) or *g* (r = -.037, p = .774) even when controlling for age. The male factor SOI Beliefs did correlate with *g* (r = .251, p = .046). For females, *g* did not correlate with the single SOI factor which was extracted, (r = .007, p = .951).

The male factor Masculinity correlated significantly with a number of different factors. It correlated with Creativity (r = -.398, p = .002) and *g* (r = -.340, p = .007). With

the Big Five factors, masculinity correlated with Extraversion (r = .335, p = .007) and Agreeableness (r = -.465, p < .000). Masculinity correlated with the Social Skills factor (r = .672, p < .000). It also correlated with both the SOI Beliefs factor (r = .361, p = .003) and Behavior (r = .285, p = .023). A controlling for age produced a partial correlation between Masculinity and the self-report number of sexual partners (r = .427, p < .000).

The Big Five personality factor Openness correlated, as hypothesized, with both *g* (r = .403, p < .001), and creativity (r = .438, p < .000). Extraversion correlated with SOI Behavior (r = .370, p < .003), and the factor Agreeableness correlated negatively with the SOI Beliefs factor (r = -.391, p < .001).

Of the four Mate Value factors there were three significant correlations. Creativity correlated negatively with Controlling (r = -.373, p < .003). Scores on the RPM correlated negatively with Good partner (r = -.251, p < .045). Finally, Physically Attractive correlated with SOI behavior (r = .422, p < .001). Self-assessed creativity and intelligence did not correlate with the corresponding measured variables (r = .143, and r = .020 respectively).

To distinguish between a "social-navigation" hypothesis and a "creativity-as-display" hypothesis the two factors were examined. The extracted factor for Social Skills (Table 2.7) did not correlate with the self-assessed Creativity factor (r = .271, p = .084) nor did it correlate with measured performance on either the creativity or intelligence tasks. Additionally, the factors correlated in very different ways with the Big Five personality traits and the self-assessed mate value factors (Table 2.8). Female self-

assessed mate value correlations between intelligence, sociosexuality, and the Big Five personality factors are presented in Table 2.9. It did correlate with the Sexual Behavior factor (r = .352, p = .005), when controlling for extraversion, however, the correlation became nonsignificant.

Finally, we examined the correlations between male's creativity and self-report grades in art and math classes in high school and college. Creativity did not correlate significantly with high school math (r = -.132, p = .307) or art grades (r = -.143, p = .268). Further, creativity did not predict college math grades (r = -.198, p = .123) but did correlate significantly with college level art grades (r = .301, p = .018).

Regression. I ran a linear regression to examine which variables predict SOI Behavior (short-term mating success) in males. The predictors in the initial model were Age, SOI Beliefs, Intelligence, Creativity, Social Skills, Assertive Mating Effort, Masculinity, Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. Only Extraversion [$F(2, 61) = 3.17$, p = .002] and the SOI Beliefs factors [$F(2, 61) = 2.59$, p = .012] predicted SOI Behavior. For the final model see Table 2.10.

2.4 Discussion Study 1

The g *Factor and Creativity*

As hypothesized, performance on the different intelligence tests (Raven's, Analogies, Definitions, and Similarities) did produce a general intelligence factor, g. All

of the tests correlate positively and significantly and all correlations are moderate to large. One of the aims of the study was to see if language-based tests of intelligence (Analogies and the Definitions and Similarities subtests of the WASI) correlated with performance on a verbal creativity task more highly than the Raven's Progressive Matrices. Performance on the analogy test was the best predictor of Creativity, however, performance on the Raven's and the Analogies correlate very highly and neither was a significantly better predictor. The Raven's has numerous practical benefits over the language-based tests. It is the predominant test in studies of intelligence and personality traits and it is easier and faster to administer and score. We can feel confident using the Raven's in subsequent studies examining intelligence, personality and behavioral traits.

Creativity, g, and Personality

Correlation coefficients were computed among the *g* factor, Creativity, Assertive Mating Effort, Big Five Personality factors, the Sexual Behavior factors (one for females and two for males) and the Mate Value factors (separately for males and females). A *p* value of less than .05 was required for significance. Correlations between the *g* factor, Creativity, Assertive Mating Effort, Big Five Personality factors, and the Sexual Behavior factors are presented in Table 2.4. Correlations between the male specific factors and all other factors are presented in Table 2.5.

Traditionally, the Sexual Behavior Scale is analyzed as one factor. However, some recent studies (Webster & Bryan, 2006) suggest that it may make more sense to factor the scale into behavioral and attitudinal components. We found that, for males, the

Sexual behavior factor (*With how many partners have you had intercourse in the past year; With how many partners have you had intercourse in your lifetime; With how many partners have you had intercourse on one and only one occasion*) consisted solely of items related to intercourse, and all loaded positively[5]. The Sexual beliefs factor contained numerous hypothetical items which loaded negatively and represented a generally more conservative attitude toward sex. The Sexual Behavior and Sexual Beliefs factors correlated negatively but nonsignificantly for males r(101) = -.349, *ns*.

For females, scores on the Sexual Behavior Scale suggested only one factor--Sexual Behavior (*How many times have you had sexual intercourse with a new partner within the first week of meeting them; With how many partners have you had intercourse on one and only one occasion; With how many partners have you had intercourse in your lifetime*). This factor did not correlate significantly with any other factors after the Bonferroni adjustment. Both the male and female Sexual Behavior factors were positively skewed and leptokurtotic (Table 2.3).

The *g* factor correlated significantly with the Big Five personality measure Openness to Experience (*I am intrigued by the patterns in art and nature; I enjoy playing with theories and abstract ideas*). Previous investigations of intelligence and Big Five personality factors have found similar correlations with *g* (Moutafi, Furnham, & Crump, 2003) and is evidence that out intelligence measures and our personality assessment are functioning consistently with previous research. Female self-assessed mate value

[5] Mate Value Survey item 126 asked "With how many partners are you likely to have intercourse in the next five years? (please give a specific, realistic estimate.) _____" While most participants gave a realistic answer, 3 male participants provided numbers between 1000 and 10,000. Therefore the number of projected sexual partners was truncated at 30.

correlations between intelligence, sociosexuality, and the Big Five personality factors are presented in Table 2.6.

Assertive Mating Effort in males did not correlate significantly with *g* or Creativity. When we controlled for age, however, it did significantly correlate with number of sexual partners. Additionally, Masculinity correlated negatively with both Creativity and *g* and positively with Assertive Mating Effort, Extraversion, Social Skills, SOI Beliefs, and Behavior. As Gangestad, Thornhill, and Garver-Apgar (in preparation) point out, females in the most fertile part of their ovulatory cycle prefer more masculine, socially dominant men. It is not surprising then that the Assertive Mating Effort and Masculinity factors correlated with number of sexual partners (r = .278, p = .026) and that more masculine men reported a significantly younger age of first intercourse.

In males, these three traits, Masculinity, Assertive Mating Effort, and Extraversion, may be the result of higher androgen levels. It is possible that constraints during development force trade-offs between investment in intellectual growth (brains) and mating effort and masculinity (brawn). Gangestad et al. (in preparation) note that there is a "convex-downward curvilinear association between men's testosterone levels and intelligence" (pg 35) and that testosterone itself may negatively impact *g*. If this is the case, we would expect the effect of investment in brains over brawn to be especially strong in a young population such as the one found in this study.

While there was no significant correlation between *g* and age of first intercourse in the present study, previous research has found a relationship. In a study of 12,000 teenagers, Halpern et al. (2000) found that higher intelligence significantly retarded all

sexual behavior, including intercourse. If more intelligent men are beginning to have sex later in life, either as a conscious decision or as a consequence of developmental trade-offs, it is hardly surprising that we did not find a positive correlation between intelligence and sexual partner number in such a young sample.

The Mini K 20 is a measure of an individual's social-network. Individuals in secure, predictable environments invest resources in long-term development, longevity, and reproduce later in life (K selection) whereas individuals in risky, unpredictable environments tend to reproduce earlier and invest in a higher number of offspring (r selection). The Mini K factor was measured by items such as: I often give emotional support and practical help to my blood relatives; I often get emotional support and practical help from my blood relatives; I am often in social contact with my blood relatives; I am often in social contact with my friends. Being relatively highly K-selected correlated with Conscientiousness

Social-Navigation and Creativity. To distinguish between a "social-navigation" hypothesis and a "creativity-as-display" hypothesis the two factors were examined. The extracted factor for Social Skills did not correlate with the Self-Assessed Creativity factor, nor did it correlate with measured performance on either the creativity or intelligence tasks. Additionally, the factors correlated in very different ways with the Big Five personality traits and the self-assessed mate value factors (Table 2.7).

Table 2.7: Social Skills, Creativity and Big Five Personality Traits.

Correlations Between Social Skills, Creativity and Big Five Personality Factors

	Measured Creativity	Self-Assessed Social Skills	Self-Assessed Creativity
Self-Assessed Social Skills	-.179		
	.164		
Self-Assessed Creativity	.127	.217	
	.324	.084	
Conscientious	-.223	.417**	.274*
	.082	.001	.028
Extroverted	-.067	.702**	.169
	.605	.000	.183
Neurotic	.050	-.100	.128
	.699	.431	.314
Open	.438**	.034	.450**
	.000	.791	.000
Agreeable	.087	-.184	-.001
	.502	.147	.992
SOI	.056	.352**	.148
	.664	.004	.243

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Anecdotally, highly creative authors, artists, and musicians often have high social status and are attractive as social (as well as sexual) partners. There is evidence that Creativity is associated with social status. Studies have found that "peer-perceived creativity" correlates with social status and leadership skills in Chinese students (Lau, et al., 2004), that creativity in Slovakian children correlates with a sense of humor, popularity, and prosocial behavior (Kovac, 1998), and that Creativity can be associated with status at work (Perry-Smith, & Shalley, 2003). However, a study investigating "personological determinants of status in social groups (fraternity, sorority, and dormitory) relating the Big Five personality traits and physical attractiveness to peer

ratings of status" found that high levels of extraversion predicted high status for men and women but creativity did not (Anderson et al., 2001, pg. 118).

If creativity is displaying underlying health and good genes it is not surprising that it would be found to be attractive in a social setting or correlate with status. To the extent that social status promotes resource acquisition or reproductive success it is entirely possible that social-navigation helped drive the evolution of creativity. Such a theory is not incompatible with a sexual selection model of the evolution of creative displays as good-genes indicators.

Self-Perceived Mate Value. The female mate value factor Kindness and the male mate value factor Happy both load highly on traits associated with being a good long-term partner. Males who score highly on the trait report being *happier, more ambitious, loyal and faithful, successful, romantic, generous,* and more *interested in having children.* Females who score highly on the trait Kindness report many of the same qualities: *kind, loyal and faithful,* more *interested in having children, romantic,* and *generous*. All of these traits would be important when looking for a potential long-term partner. Not surprisingly both factors, MV Happy and MV Kind, correlate with scores on the Mini K 20 factor suggesting that individuals who are more K-selected would be more interested in pursuing stable, high investment partners for long-term relationships and raising children.

For both males and females a mate value factor Physical Attractiveness was obtained. For males the items such as *attractive body, attractive chest, attractive*

stomach, *attractive bottom*, *healthy*, *attractive legs*, *sexy*, and *athletic*[6] composed the factor. The female factor is similar but includes more behavioral traits in addition to the physical (*attractive face; sexy; attractive body; attractive legs; attractive bottom; healthy; attractive speaking voice; happy; witty; sense of humor; talkative*).

These Attractiveness factors correlated relatively highly with a number of other factors for both males and females. For males, Attractiveness correlated with the Big Five factor Extraversion, Assertive Mating Effort and with the Sexual Behavior factor. For females, Attractiveness also correlated with Extraversion and Assertive Mating Effort. Unlike the male factor, Attractiveness for women did not correlate with Sexual Behavior but did correlate with the Mini K 20. Similar relationships between self-perceived Attractiveness, Sexual Behavior and Assertive Mating Effort have been found by other researchers (Clark, 2003; Simpson, Gangestad, & Lerma, 1990).

While self-perceived intelligence did not correlate significantly with *g*, it did correlate with a number of factors among males, and one factor in women. Males' Mate Value Intelligent factor (*Imaginative; Creative; Open-Minded; Inventive; Witty*) correlates with Extraversion, Openness, Mini K 20, and MV Happy. Self-perceived intelligence seems to correlate with factors that signal good social support or self-esteem but does not correlate with sexual attitudes or behaviors. A partial correlation between MV Intelligence and the Assertive Mating Effort, Sexual Behaviors, and Sexual Beliefs factors, controlling for MV Attractiveness, did not produce any significantly different results.

[6] Complete factor loadings can be found in Table 2.8.

Creativity and Age. It is possible that the benefits of intelligence and creativity only accrue later in life. Miller (1999) writes, "there is a general pattern of much more public display by males than by females, and display rates that increase markedly after puberty, peak in young adulthood, and decline slowly with decreasing fertility" (¶. 42). With such a young sample even the more intelligent and creative individuals may not have had the time necessary to hone their creative skills or reap any sort of direct benefits from them.

While creativity did not correlate with age in our sample[7], I examined the correlations between male's creativity and self-report grades in art and math classes in high school and college. Creativity did not correlate significantly with high school grades in either math or art. It did, however, correlate significantly with college level art grades (but not math grades). While there is undoubtedly self-selection for pursuing art in college, the result is consistent with the idea that creative production needs time to mature. Young adults can be technically proficient in art or music but truly creative or innovative works of art usually do not appear until early adulthood (Vandervert, 2009; Feldman, 1993).

Conclusion. While a coherent *g* and creativity factors were extracted, they offered little in explaining their relationship with reproductive and relationship success. More intelligent and creative individuals were no more likely to have had more sexual experiences, to

[7] It did correlate when data from this study was aggregated with the data in study 2, see below.

consider themselves better potential short- or long-term mates, or to adopt more assertive mating strategies.

In a linear regression, only Extraversion and the SOI Beliefs factors predicted SOI Behavior (which is hardly surprising considering that the two are often analyzed as one factor). Extraversion appears to be the most important personality factor in the young male sample. In addition to prediction number of sexual partners it correlated with almost all of the self-assessed positive mate-value items, it correlated with every measure of self-assessed physical attractiveness, and self-assessed (but not measured) creativity and intelligence. That the correlations between self-assessed intelligence and creativity and their objective measurement are incongruent should not be surprising. Males over-estimating their own abilities is consistent with error management theory, which hypothesizes that decision-making adaptations have evolved through natural or sexual selection to favor committing errors that have a low cost but potential benefits (Haselton & Buss, 2000).

The direction of the correlation is not clear, however. Does extraversion attract more partners and make a man more desirable as a mate, or are attractive, socially-dominant men more likely to be extraverted because of a history of reinforcement of social behavior? Probably both. Genetic modeling of the heritability of extraversion show a significant influence of additive and non-additive genetic factors (Pincombe, et al., 2006; Rettew, 2008). Extraversion in males probably reflects traits like underlying masculinity and health, which are attractive to both potential mates and social allies, whom provide reinforcement for extraverted behavior. It is less likely that extraversion as

a personality trait, which arises independent of any condition-dependent context, could make men more attractive to other people.

While we were not able to predict sexual behavior or self-perceived mate value from measures of intelligence and creativity, the present study suggests future research that may be more informative. The correlational nature of this study limited its explanatory ability in significant ways. Future research should incorporate experimental conditions to investigate the relationship between intelligence, verbal creativity and mate value as assessed by observers and not self-report measures. Additionally, future research may benefit from an increased sample size and particularly from sampling older individuals; intelligence and verbal creativity may predict factors related to relationship and reproductive success in a more mature sample. Many participants in the study had limited sexual and relationship experience, very few had ever been married (six individuals, 3.2 percent), or had children (five individuals, 2.6 percent).

Finally, we should examine the effects of creativity and intelligence on not just partner quantity but partner quality and relationship success. Research suggests that in laboratory settings women viewed intelligence as a necessity in long-term mates. When their "mate-budget" was increased women spent significantly more on creativity (Li et al., 2002). If intelligence and creativity may be functioning to help men procure and hold onto high-quality, long-term mates but not short-term sex partners.

CHAPTER 3: Intelligence Creativity, Sex Differences, and Short-Term Mating

3.1 Introduction

Study 2 had slightly different aims and was run in parallel to study 1 by Ilanit Tal at the University of New Mexico. The hypotheses were, first, that men who are more creative will report more short-term sexual partners, and second there will be significantly more variance in creativity for men than for women since sex differences in trait variance can sometimes be explained by directional sexual selection (Arden & Plomin 2006). Corresponding data in the two studies (intelligence, creativity, and short term-mating success and strategies) were aggregated for analysis.

3.2 Method

3.2.1 Participants

The participants were 225 undergraduate students (163 women, 62 men; mean age 20.0 years, SD 2.7, range 18-33; 54% Caucasian, 41% Hispanic) from the University of New Mexico. Participants completed questionnaires under conditions of complete confidentiality and anonymity, in 2-3 hours, sitting in groups of 9 to 95 students within UNM lecture rooms; to maximize privacy they sat only in alternating rows, and alternating seats within each row.

3.2.2 Materials

The participants completed the same mate value survey as in study 1, as well as the 18-item form of the Raven's Progressive Matrices (but not the other intelligence assessments), and the creativity assessment. The female creativity tasks from study 1 were transcribed and rated and combined with new female data for this analysis.

3.3 Results

Assumptions of normality and variance. All of the variables of interest satisfy the assumptions of normality, except Short-term Mating and Age, which are heavily positively skewed. See Table 3.1 for descriptive statistics. When separately examined by sex, only Creativity and Short-Term Mating have statistically significant sex differences in variances, with greater variance for males than females. While there are no sex differences in mean creativity scores, the male mean for Short-Term Mating is higher than the female mean.

To measure intelligence, we used an 18-item version of Raven's Advanced Progressive Matrices (Raven, Raven, & Court 1998). The intelligence score represents the summed number of items answered correctly on an untimed test. The 18-item version contains the 12-item version (Arthur and Day, 1994), and the two forms are correlated .97 (p = .000). Cronbach's alpha for the 18-item scale is .86 in this sample.

Bivariate correlations. As hypothesized, Creativity is correlated with Intelligence (r = 0.33, p = .00) and Openness (r = .36, p = .00). Creativity is also correlated with Age (r =

.14, p = .02) and Conscientiousness (r = -.14, p = .02)[8]. Intelligence is correlated with Openness (r = .27, p = .00), and negatively correlated with Conscientiousness (r = -.17, p = .00), Attractiveness (r = -.18 , p = .00), and Sex (r = -.20, p = .00), with males scoring higher on the intelligence test. Also noteworthy is that Short-Term Mating is positively correlated with Age (r = .22, p = .00), Extraversion (r = .16, p = .01), and Attractiveness (r = .18, p = .00), and negatively correlated with Agreeableness (r = -.24, p = .00) and Sex (r = -.21, p = .00), with males reporting greater short-Term mating success.

Extraversion and attractiveness correlate significantly for both sexes, but the effect is stronger for men *(*r = .44, p = .00) than women *(*r = .17, p = .04). Also, the associations between Short-Term Mating and Attractiveness *(*r = .35, p = .00) and Agreeableness *(*r = -.35, p = .00) are significant for men but not women. Finally, the association between Intelligence and Neuroticism is significant for females *(*r = .17, p = .03).

Linear Regression: What predicts creativity? Intelligence and Openness reliably predicts verbal creativity across both studies, [F(2, 287) = 34.20, p = .00], for males, [F(2, 124) = 18.23, p = .00] and females, [F(2, 160) = 17.17, p = .00]. Across both studies, the beta-weight for Intelligence is .25,[F(1, 287) = 21.25, p = .00], and the beta-weight for Openness is .30, [F(1, 287) = 28.73, p = .00]. The model explains 19% of the variance (R^2 = .19) in creativity scores.

[8] The correlation between age and creativity was positive in the first study but not significant until the data was combined with the data for Study 2.

*What predicts Short-Term Mating?*The significant main effects were Attractiveness, [F(1, 276)= 6.95, p = .01], Age, [F(1,276)= 25.51, p = .00], Conscientiousness (negatively), [F(1, 276) = 4.95, p = .03)], Extraversion, [F(1, 276) = 9.28, p = .00], Agreeableness (negatively) [F(1, 276) = 15.80, p = .00)], and Sex, [F(1, 276) = 11.71, p = .00]. See Table 3.2 for all F- and p-values, as well as beta-weights, for all variables entered in the model.

3.4 Discussion Study 2

Similar to study 1, the aim of this study was to test the hypothesis that creativity has evolved to function as a display of genetic quality to potential mates. Specifically, we were interested in seeing if creativity was predicted by intelligence, if there was greater variance in male creativity and intelligence than female creativity and intelligence, and finally, if verbal creativity predicted short-term mating.

As in the first study, the creativity writing assessments did show good inter-rater reliability and convergent validity across the tasks. While the instructions to the subjects and the raters did not specifically try to define creativity: how it should be produced, or how to assess it, there was general consensus about what was and was not creative. The task appears to be a coherent and valid way to quickly assess a subject's verbal creativity and to allow for the examination of its correlates with personality and behavioral traits.

Consider the responses to writing task 2: Imagine that every person could change their sex – male or female – whenever they wanted to, just by dreaming about it for one night. The most interesting responses were engaging, humorous, and thought provoking:

> I handed the police officer my license. He glanced at the photograph and flipped it over to see the picture of me as a woman on the other side. It was odd. You could often recognize your friends or celebrities when they changed. Something about the eyes doesn't change. It's like looking at someone's sister or brother. Sure, some skilled actors had pulled it off. Tom Hanks won an Oscar for his starring role as a woman, but the Academy has always liked him. The police officer thanked me and handed me back my license. "Slow down," he said and walked away, clicking his flashlight off…

For a relatively short, extemporaneous response it is surprisingly coherent, interesting, and creative. Highly creative responses were even more impressive when compared to the overwhelming number of average responses, "The Russian Olympic team wouldn't have an advantage any more," and least creative responses, "I think that would be pretty weird." While the high inter-rater reliability helps to validate the task it is possible that a less restricted range of scores available to the raters could have allowed for more predictive power. Scoring those three answers as a 5, 3, and 1 points respectively may be artificially restricting the range. It is possible that creativity or artistic ability may offer marginal returns in the normal range but at more extreme levels, say 3 standard deviations above the mean, could offer much larger returns in resources and reproductive success.

Figure 3.1: Outlier on creativity task.

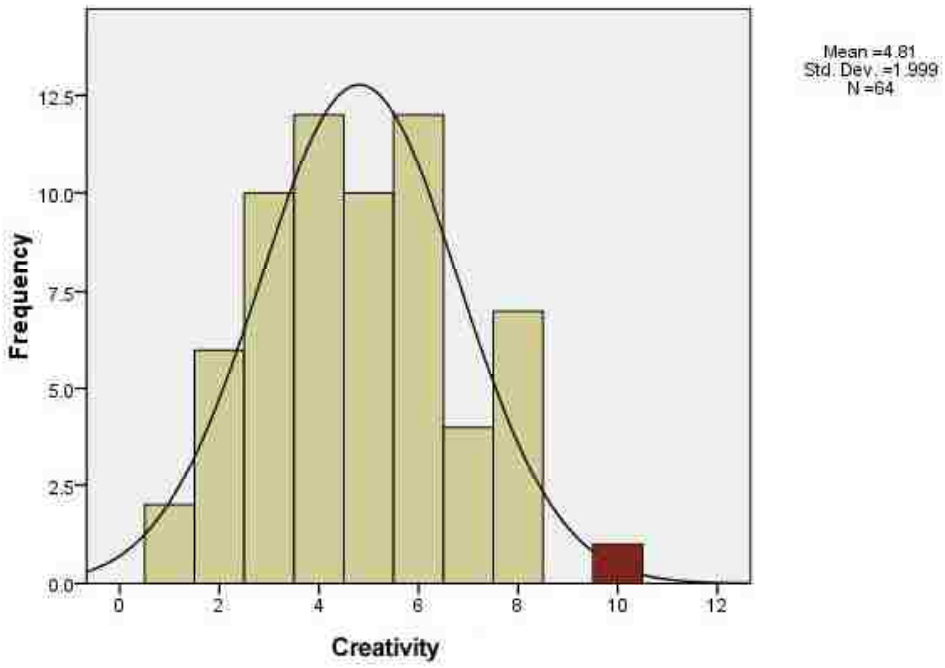
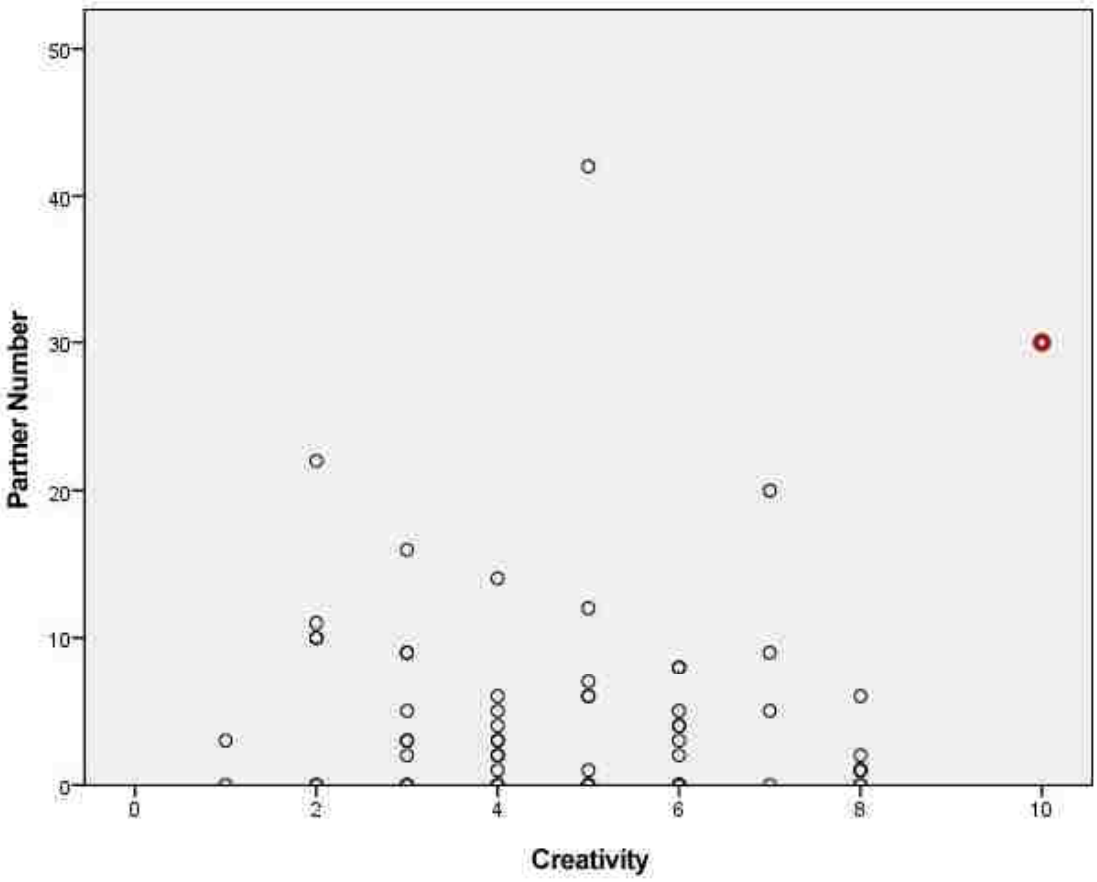


Figure 3.1 shows the summed score for the two best predictor variables of creativity (Sex Changes and Cloud Strings). There was only one male who scored the maximum number of points (10). The mean creativity score is 4.8 with a standard deviation 1.9. The same male is highlighted in Figure 3.2. The mean number of self-report partners is 5.6 with a standard deviation of 9.2, placing the individual 2.7 standard deviations above the mean for both creativity and partner number. A much larger sample may reveal a non-linear relationship between very high levels of creativity and sexual partner number.

Figure 3.2: Creativity and Partner Number



The correlations between creativity and intelligence and creativity and openness were consistent with the proposed hypothesis, the results of the first study, and other research in the field (Carson et al. 2005; Dollinger et al. 2004; Eysenck 1995). It makes theoretical sense that creativity would correlate with intelligence. While we made no explicit statements about its intrinsic value or worth, the concept of creativity is almost inseparably linked to cleverness, originality, resourcefulness, problem-solving, logic,

skill, and artistry. Creativity without underlying intelligence may be perceived not as exciting or interesting but as frightening, dangerous, or "crazy."[9]

We did not find a significant sex differences in mean creativity scores. It is possible that the mating-prime, asking participants to imagine they were writing answers to questions on a dating website in the hopes of attracting a date, was not salient or ecologically valid as it is far removed from a real-world application of creative display. Additionally the sheer length of the study, 4 hours for the first study, and 3 hours for the second, may have caused participants to skip much of the instruction in an attempt to finish more quickly.

We did find that the variance in creativity scores was greater for men than for women. This is consistent with other reports of greater variance in male intelligence (Arden & Plomin 2006) and attractiveness. High variance in a trait can be the result of intense competition and sexual selection and can be seen in species from the common fly, drosophila (McGuigan, Van Homrigh, & Blows, 2008), barn swallows (Kajima, 2009), and humans (Arden & Plomin, 2006). While it is not direct evidence, it is at least consistent with the idea that creativity is under sexual selection by female mate choice. It is important to remember, however, that we also predicted a sex difference in variance on the intelligence test, which we did not find.

We did not find a significant main effect of Verbal Creativity or Intelligence on short-term mating. One interpretation of this is that young student participants may lack the experience (or interest) necessary to discriminate between potential mates. Young college students primarily socialize with and date from a smaller, more homogenous

[9] Creativity has been found to be linked to psychopathology (Murphy 2009, Claridge, 2009).

sample. It seems reasonable to assume that students who attend college together (be it a community college or Ivy League university) are more closely matched in intelligence than they are in physiological traits (facial masculinity) or behavioral traits (extraversion). Li et at. (2002) write "A college woman, for example, may normally interact with men with similar socioeconomic status and career opportunities. When evaluating potential mates, she may not routinely think about social status and earning prospects because most men she encounters are within the range she considers sufficient."

Alternatively, it is possible that male are still developing until early adulthood and therefore younger adult males are not displaying the levels of creativity necessary to be sexually attractive like the older males are. Additionally it's possible that young males haven't had the same successes in life that result from creativity, and that might make the older creative people seem more intriguing to the opposite sex. That is, the allocation of resources towards creative displays may not actually pay off until later in life, when there is proof that the creativity has actually contributed to life success and status (e.g. Nettle & Clegg 2006). The fact that creativity does not correlate with art grades in high school but does with grades in college is consistent with, but obviously not evidence for, this hypothesis.

Finally, it is possible that I did not find the hypothesized effect because creativity and intelligence may not be "good genes" traits that are attractive for short-term mating. Previous studies have shown mixed results. Haselton & Miller (2006) report a positive result of ovulatory preferences for creative males in short-term mating. Gangestad et al., 2007 reported no cycle shift for intelligence. Prokosch et al., 2008, "found that women's

ratings of a man's intelligence predicted their preferences for both long-term and short-term partners. Perceived intelligence predicted only a small amount of the variability in the appeal of a short-term mate. As expected, it accounted for a slightly larger portion of the variability in the appeal of a long-term mate" (p. 18).

It is still not clear whether traits like intelligence and creativity are indicative of good genes, good parenting potential, or both, as many of these results must be interpreted with caution. One weakness of this study is its reliance on short-term mating as the definitive metric of reproductive success, ignoring mate quality. Future research should consider the possibility that the pay-offs for displaying intelligence and creativity may not be realized until later in life and that it may manifest itself as long-term relationship success and high-partner quality.

The other main effects and interactions that predicted short-term mating in this sample are unsurprising. Being extraverted, not conscientious, and attractive predicts short-term mating sexual experience in this college sample. One interesting relationship is the negative correlation between conscientiousness and short-term mating. If we could assess short-term partner quality it may be the case that males who report higher partner number also report that those partners are, on average, lower quality as low-conscientiousness could imply indiscriminant mate choices[10].

[10] Only the very highest quality men should be able to attract numerous high-quality partners.

CHAPTER 4: Creativity, Dating Success, and Partner Quality

4.1 Introduction

Neither study 1 nor 2 found a significant correlation between creativity and short-term mating success. Study 3 sought to expand on the previous research by including more questions about long-term as well as short-term mating success and partner quality (both psychological and physiological traits) and to sample a more diverse subject pool. Criticisms of the previous studies questioned the ability of a relatively young and homogenous samples' ability to assess mate value (particularly long-term). An online survey allowed us to study an older and more diverse sample.

Additionally, the previous studies had concentrated on partner number and sociosexuality as the definitive metrics of sexual success whereas the third study attempted to more accurately measure self-reported partner quality. I hypothesized that men who were more intelligent and more creative would report more dating and relationship success and would report having higher-quality, but not necessarily more, partners.

4.2 Method

4.2.1 Participants

Unlike studies 1 and 2, which used students at the University of New Mexico, study 3 was conducted as an online survey (Appendix H). Links to the survey were posted on social networking sites (Facebook.com, Myspace.com) as well as numerous

non-evolutionary or psychology related science based websites[11] (scientificblogging.com) asking for volunteers to participate in the research. Nearly 300 subjects began the hour-long study but many quit during the RPM phase[12], which, along with the voluntary nature of the research may have had a significant selection effect on the sample and should be considered when interpreting the data. The final analysis consisted of 142 adults from around the United States and Europe[13] (57 women, 85 men; mean age 30.5 years, SD 10.4 years, range 18-72).

4.2.2 Materials

A modified, much shorter version of the mate value survey (adapted from Kirsner, Figueredo, & Jacobs, 2002), the full creativity assessment, and a 12-item version of the Raven's Progressive Matrices (Arthur & Day, 1994) were programmed into a web-based survey (Appendix H). The revised mate value survey included measures of partner quality relative to the subject's peer group and additional measures of sociosexuality. It did not include many of the demographic questions, the Mini-k 20, or the Assertive Mating Effort Scale. It used a shorter version of the Big Five Personality inventory (BFI) (Gosling et al., 2003) that has been demonstrated to perform similarly to the much longer version. A matrix of 32 computer-generated images of women (Frederick et al., 2007) that vary systematically in Breast Size (4 levels) and Body Fat (8 levels) was included in the male version of the survey and a male body shape matrix which consists of 28 images

[11] To increase the likelihood that the participants were blind to the anticipated results or nature of the study.
[12] This was probably due to the relatively demanding and complex nature of the measure that required significantly more time and concentration than the self-report measures.
[13] Location was estimated from Internet Protocol (IP) addresses and is approximate.

that vary systematically in Body Fat (4 levels) and Muscularity (7 levels) was included in the female version of the study (Appendix H) to measure subjects' ideal, best, and average partners. These changes were made to keep the assessment under an hour in hopes of reducing participant attrition as well as to address the theoretical aims of this study.

4.3 Results

Creativity and Intelligence. Each participant's 6 verbal responses were rated on a 1-5 creativity scale by four raters. All ratings were done independently, blindly, and without any knowledge of the participant's sex, intelligence, personality, or any other information. Rater's were asked to read at least 10% of the sample before assigning any scores to become acquainted with the relative frequency and creativity of the responses. For the 6 verbal creativity tasks, inter-rater reliabilities (Cronbach's alphas) were: .90 (cloud-strings), .90 (sex changes), .80 (self-descriptions), .84 (animal for a day), .80 (marriage) and .82 (future). The inter-rater reliability across all of the tasks is .93.

To measure intelligence we used a 12-item version of the Raven's Advanced Progressive Matrices (Raven, Raven, & Court 1998). The intelligence score represents the summed number of items answered correctly. The test was untimed. The 18-item version used in the previous studies contains the 12-item version and the two forms are correlated .97 (p = .000) (Arthur & Day, 1994). Cronbach's alpha for the 18-item scale is .86 in this sample.

Following the procedure in the prior studies, the verbal responses for the creativity task were scored by three raters. The Chronbachs' alpha across all tasks was .88. The ratings for all three studies were not significantly different in their mean, variance, skew, or kurtosis. Unlike the previous studies, the mean intelligence and creativity scores were significantly different for men and women. Men scored higher in both tests of creativity [$F(1, 140) = 20.61$, $p = .000$] and intelligence [$F(1, 140) = 6.627$, $p = .010$]. Additionally the variance in verbal creativity scores, but not intelligence scores, was significantly different between men and women (Table 4.1), which was consistent with hypothesized results and data from other studies (Griskevicius et al., 2006). Participants' scores on the Raven's Progressive Matrices averaged .5 points higher (on a 12 point scale, range 2-12) when compared to a national sample of adults 29-32 (Raven, 2000). A t-test was conducted to compare the subjects with the adult normed group and performance was not found to be significantly different in our sample population $t(149) = -.253$, $p = .216$.

Creativity scores and performance on the Raven's correlated $r(142) = .320$, $p < .000$ (male and female correlations were not significantly different). As in the first two studies, neither Creativity ($r(72) = .015$, $p = .904$) nor Intelligence ($r(72) = -.071$, $p = .562$) correlated with lifetime number of sex partners, even when controlling for age.

Factor analysis. In order to assess males dating and relationship success I extracted six self- and partner-assessment factors and the Big Five personality factors from the mate-value survey data. Although there were no *a priori* assumptions about male and female

differences in the pattern loadings for the self-assessment factors, they were run separately for men and women.

The first factor, "Dating Success" had one hypothesized factor for males. Maximum likelihood factor analysis was used to look at survey items 91 to 102. The first factor had an eigen value 4.600 and explained 38.34% of the variance. A second factor had an eigen value of 1.559 and explained 12.995% of the variance and was not retained for the analysis. The "Dating Success" factor contained items such as "Members of the opposite sex are attracted to me," "Compared to other women of the same age, the women I date are more physically attractive" and "I am able to date the people that I am interested in dating" (for the full factor loadings see Table 4.2).

For females, "Dating Success" had one hypothesized factor. Maximum likelihood factor analysis was used to look at survey items 91 to 102. The first factor had an eigen value 4.036 and explained 33.63% of the variance. A second factor had an eigen value of 1.631 and explained 13.591% of the variance and was not retained for the analysis. The "Dating Success" factor contained items such as "Members of the opposite sex are attracted to me," "Compared to other men of the same age, the men I date are more physically attractive" and "I am able to date the people that I am interested in dating" (for the full factor loadings see Table 4.3).

Participants were asked "Being as honest as possible, please rate your AVERAGE or TYPICAL sexual partner on these characteristics, compared to other people their age, by selecting a number from the scale below" and given a list of 19 traits physical and psychological traits. For males, a maximum likelihood factor analysis was performed to extract a single factor "Average Partner." The first factor had an eigen value of 6.737 and

accounted for 35.460% of the variance, a second factor had an eigen value of 2.188 and accounted for 11.514% of the variance and was excluded from the analysis (see Table 4.4 for full factor loadings).

The same items were assessed for females. A maximum likelihood factor analysis was performed to extract a single female factor "Average Partner." The first factor had an eigen value of 7.008 and accounted for 37.307% of the variance, a second factor had an eigen value of 2.257 and accounted for 11.879% of the variance and was excluded from the analysis (also presented in Table 4.4).

Male participants were then asked to rate their "HIGHEST QUALITY or MOST ATTRACTIVE sexual partner" on the same characteristics. Again, a maximum likelihood factor analysis was performed to extract a single factor "Best Partner." The first factor had an eigen value of 7.602 and accounted for 40.011% of the variance, a second factor had an eigen value of 2.252 and accounted for 11.853% of the variance and was excluded from the analysis (see Table 4.5 for full factor loadings).

For females, a maximum likelihood factor analysis was performed to extract a single factor, "Best Partner." The first factor had an eigen value of 7.791 and accounted for 41.003% of the variance, a second factor had an eigen value of 1.930 and accounted for 10.158% of the variance and was excluded from the analysis.

Participants were also asked "Being as honest as possible, please rate YOURSELF on these characteristics, compared to other people your age, by selecting a number from the scale below" and given a list of 19 traits physical and psychological traits. For males, a single factor, Self-Assessed Mate Value, was extracted (Table 4.6).

In addition to the standard SOI (Simpson & Gangestad, 1991), I included items from Jackson & Kirkpatrick, 2007. These items sought to address the subject's sexual behavior, sociosexual beliefs, desire to have a family and a committed, long-term relationship. Following previously established methods (Jackson & Kirkpatrick, 2007), I performed a Principal Component analysis with Promax rotation and Kaiser Normalization. For males this produced factors consistent with the hypothetical model. The first factor, Long-Term Relationship Interest, had an eigen value of 6.184 and accounted for 22.905% of the variance, a second factor, Sexual Behavior, had an eigen value of 4.545 and accounted for 16.834% of the variance, and a final factor, Conservative Sexual Beliefs, had an eigen value of 2.749 and accounted for 10.183% of the variance.

The same Principal Component analysis also produced three factors for females: Sexual Behavior had an eigen value of 7.494 and accounted for 26.764% of the variance, Long-Term Relationship Interest, had an eigen value of 3.786 and accounted for 13.523% of the variance, and a final factor, Conservative Sexual Beliefs, had an eigen value of 2.489 and accounted for 8.889% of the variance.

Big Five Personality Factors. In order to keep testing time to a minimum I opted to use a short form of the personality inventories used in the first two studies. Instead of the 60-item Big Five personality inventory I selected a 10-item version that "possesses psychometric properties that are comparable in size and structure to those of the full-scale [Big Five Inventory]" (Rammstedt, 2007, p. 193).

Big Five Inventory items were run for males and females separately and together. While they were similar between sexes, when run separately the small female sample size resulted in pattern loadings that were slightly different from those predicted. Separate male and female factors were retained for the analysis and female BFI factors should be considered with caution. Full factor loadings can be seen in Table 4.7.

Body-Shape Matrix. To calculate Female Body-Shape[14] difference scores I entered each selection as a pair of coordinates, one for each axis on the matrix, for Average Partner Quality, Best Partner Quality, Ideal Partner, and Most Popular Ideal (the most commonly selected Ideal Partner: 2, 4; image number 20). I then calculated the Pythagorean distance between each set of coordinates (see Equation 1).

Equation 1: Body-Shape Distance Scoring

$$\text{Distance} = \sqrt{[(\text{Body Fat 1} - \text{Body Fat 2})^2 + (\text{Breast Size 1} - \text{Breast Size 2})^2]}$$

I then weighted each calculated distance by the standard deviation for each variable to account for relative preference for body fat composition versus breast size in female mates. Because of the way in which the relationship between body-shape different scores was calculated, a smaller number meant a higher concordance between desired and actual partner body shape. I switched the signs of the correlations for ease of interpretability (a positive correlation means a variable predicts levels of concordance). For males, creativity correlated with how close their Best Partner was to their Ideal Partner, r =.250, p = .037. Further, higher scores on the SOI Behavior correlated negatively with Ideal-

[14] The Body-Shapes as selected by men as being most representative of their partners or their ideal.

Average similarity, r = -.251, p = .043. Finally, SOI Beliefs (conservative sexual-beliefs) correlated with Ideal-Average partner similarity, r = .297, p = .016.

Self-Description Words. One of the creativity assessments asked participants to list ten words that described themselves. In order to see if there were any significant differences in the frequency with which males and females used categories of self-descriptors when trying to attract a (hypothetical) partner, I broke down the responses into ten general categories and scored each of the responses. A One-Way ANOVA found there was a significant effect of sex on the frequency of Possess Resources [F(1, 140) = 2.65, p = .034] and Creativity [F(1, 140) = 7.968, p = .005] in favor of males. Measured creativity correlated with self-descriptions of creativity for both men and women, r(142) = .228, p =.006 but performance on the Raven's did not correlate with self-descriptions of intelligence (which is consistent with the previous studies).

Means and Variances. Following study 2, I examined the means and variances of a number of different traits for males and females. Both the mean and variance for Creativity were significantly higher for males than for females. Additionally, males scored significantly higher on the Raven's, but the variance in scores was not significantly different between males and females. Men and women also differed significantly in their Sexual Attitudes (with men being more liberal than women) and their interest in long-term relationships (for which women expressed more interest).

Correlations. Bivariate correlations were performed to look at associations between Creativity, Intelligence[15], and Dating Success. For males, Intelligence and Dating Success did not correlate significantly, $r(70) = .474$, $p = .088$. As hypothesized, however, performance on the Creativity writing assessment did correlate significantly with Dating Success $r(70) = .291$, $p = .016$. For females, neither Creativity $r(57) = -.145$, $p = .296$ nor Intelligence $r(57) = -.184$, $p = .183$ correlated significantly with self-report Dating Success.

Creativity in males also correlated with the Best Partner factor $r(80) = .304$ $p = .005$ but not Average Partner quality $r(80) = -.077$, $p = .492$. Neither Creativity scores nor Raven's scores correlated with either measure of partner quality for females. Creativity in males also predicted how close their Best Partner was to their Ideal Partner on the Body-shape Matrix, $r(80) = .250$, $p = .037$ but not how close their Average Partner was to their Ideal Partner, $r(80) = .189$, $p = .117$.

Big Five Inventory. As mentioned previously, the sample size appears to have been too small for the Ten-Item BFI to function comparably to the 60-Item version, care should be taken when attempting to draw conclusions from the analyses. For males, performance on the Raven's correlated negatively with Extraversion $r(80) = -.236$, $p = .049$. Creativity did not significantly correlate with any of the personality factors. For females the only significant correlation between Big Five items and either Intelligence or Creativity was a

[15] In this paper I use "Intelligence" as shorthand for "performance on intelligence tests" and not to reify intelligence as a single, static trait.

correlation of $r(55) = .433$, $p = .001$ between Creativity and Openness to Experience. This is consistent with previous studies.

Other correlations for males between the Big Five personality factors and the SOI factors were Conservative Sexual Attitudes correlated with Neuroticism $r(70) = .265$, $p = .033$ and Openness to Experience $r(70) = -.292$, $p = .018$. Conscientious correlated with Long-Term Relationship Interest $r(80) = .404$, $p = .001$. Finally, Extraversion correlated with Sexual Behavior $r(70) = .293$, $p = .018$. For females, the Sexual Behavior factor correlated with the Big Five personality factors Neurotic $r(55) = -.381$, $p = .005$, and Conscientious $r(55) = -.340$, $p = .013$. The SOI factor Long-Term Relationship Interest correlated with Openness to Experience $r(55) = -.304$, $p = .027$.

The only correlations for males with Creativity or Intelligence and the SOI factors was a negative correlation between Creativity and Long-Term Relationship Interest, $r(70) = -.353$, $p = .004$. Additionally, the Dating Success factor correlated with the Self-Assessed Mate Value factor $r(70) = .455$, $p < .000$. There were no significant correlates between the SOI factors and either Intelligence or Creativity for females. However, Self-Assessed Mate Value correlated with Dating success $r(54) = .577$, $p < .000$.

Regressions: What predicts Sexual Behavior? Multiple Regressions were run for males and females to examine predictors of Sexual Behavior. For males Self-Assessed Extraversion has a beta-weight of .30, $F(3, 67) = 2.49$, $p = .016$[16]. The Weighted Vector

[16] This is extraversion as measured by the self-report mate value inventory. The Big Five factor Extraversion, however, was not significant in this model, probably due to the way in which the factor was created.

Popular and Average (how close an individual's average partner is to the most commonly selected attractive figure on the Body-Shape matrix) has a beta-weight of -.24, $F(3, 64) = -2.09$, $p = .041$. Finally, the Self-Assessed Good Companion has a beta-weight of -.31, $F(3, 64) = -2.59$, $p = .012$. The proportion of variation in Sexual Behavior, adjusted R^2, predicted by these two variables is .154.

As expected, the regression on Sexual Behavior for females is considerably different from that for males. The factor Long-Term Relationship Interest has a standardized beta-weight of -.34, $F(3, 52) = -2.84$, $p = .007$. The Big Five factor Neurotic has a beta-weight of -.29, $F(3, 52) = -2.49$, $p = .016$. Finally, the Big Five factor Conscientious has a beta-weight of -.34, $F(3, 52) = -2.86$, $p = .017$. The model has an adjusted R^2 of .321.

Regressions: What predicts Dating Success? Multiple Regressions were run separately for males and females to examine predictors of self-assessed Dating Success. For males, Self-Assessed Mate-Value has a beta-weight of .30, $F(3, 67) = 2.49$, $p = .000$ and Creativity has a beta-weight of .29, $F(3, 67) = 2.67$, $p = .010$ and an adjusted R^2 of .266. The female regression also had two significant factors, Self-Assessed Mate Value has a beta-weight of .55, $F(2, 46) = 4.65$, $p < .000$, and the factor Conservative Sexual Beliefs has a beta-weight of -.24, $F(3, 67) = -2.05$, $p = .047$. The adjusted R^2 for the model is .359.

4.4 Discussion Study 3

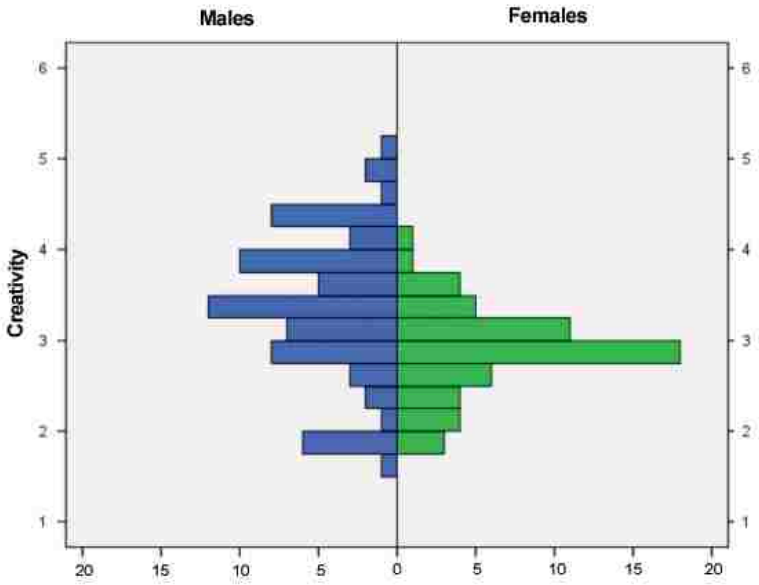
Hypotheses of interest in the current study. In this study, I hypothesized that an older and more diverse sample would replicate the findings from the previous studies: intelligence predicts creativity, there is more variance in creativity for men than for women, and there is no relationship between either creativity or intelligence and partner-number. While we found no significant difference in mean creativity scores between men and women, I hypothesized that we would find a difference in this study due to the shorter length and the inclusion of the body-shape matrix as a potential prime. Further, I hypothesized that creativity would predict self-report dating and relationship success and that more creative individuals would report having partners who were more physically and psychologically attractive.

Once again, the creativity ratings proved to be consistent across raters and appear to be a valid task for measuring creativity. Likewise, the 12-item version of the Raven's Advanced Progressive Matrices (Raven, Raven, & Court 1998) produced the expected results. The mean intelligence and creativity scores were significantly different for men and women, with men scoring higher in both tests.

Additionally the variance in verbal creativity scores, but not intelligence scores, was significantly different between men and women, which was consistent with hypothesized results from other studies. In a series of four studies designed to assess male versus female creative production, Griskevicius et al., 2006, found that men wrote significantly more creative short stories than women in a base line condition, after a short-term mating prime, as well as a long-term mating prime and that the variance was larger for men.

Males scored significantly higher on the Raven's, but the variance in scores was not significantly different between males and females. A 2006 meta-analysis of in the 10 studies of the Advanced Progressive Matrices (which was used in this study) found that there was no significant difference in variability, F (3344, 5660) = 1.00, $p > .05$, *ns*), between the sexes (Irwing & Lynn, 2006). Considering the differential costs of reproduction for men and women (Penn & Smith, 2007) it is not surprising that we found significant differences in Sexual Attitudes (with men being more liberal than women) and interest in Long-Term Relationships (for which women expressed more interest, see).

Figure 4.1: Variance in Creativity for Males and Females.

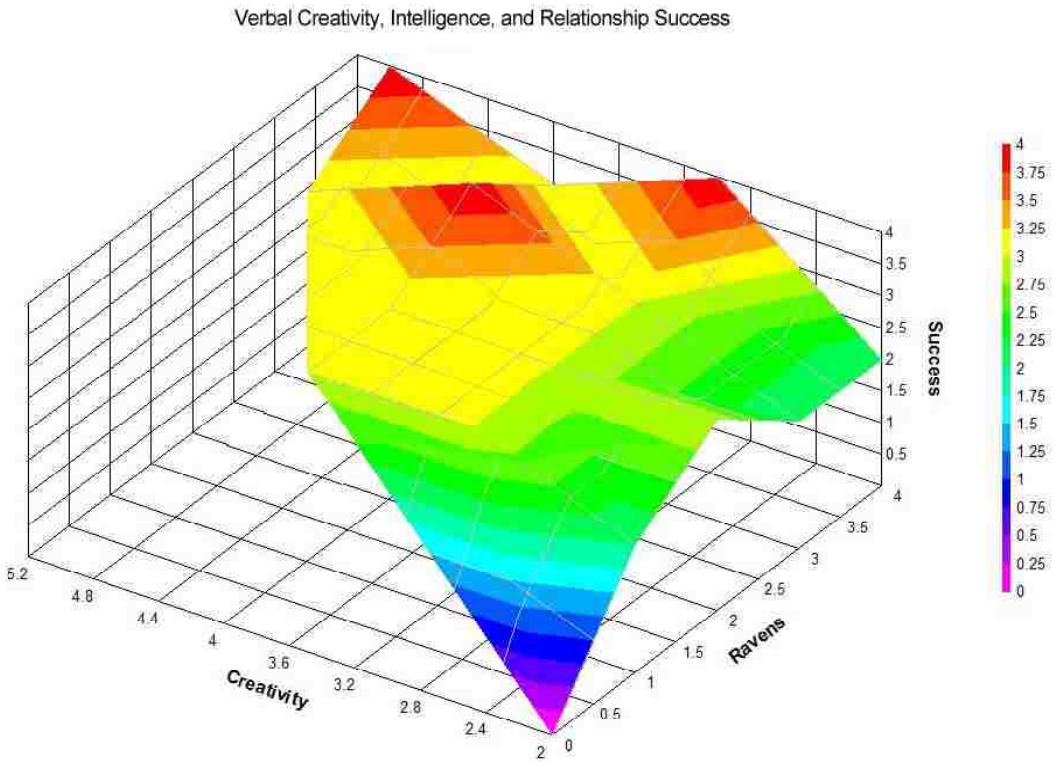


Creativity scores and performance on the Raven's correlated significantly. As in the first two studies, neither Creativity nor Intelligence correlated with lifetime number of sex partners, even when controlling for age, which was consistent with the hypothesis for this study and results from the first two studies.

Instead of looking for correlations between partner number and creativity, I was more interested in correlations between creativity, partner quality, and self-assessed dating success. The first factor, "Dating Success" had one hypothesized factor for both males and females and contained items such as: *I receive attention from members of the opposite sex, Compared other (wo)men my age, my sexual partners are more attractive, I am able to date people that I am interested in dating*. The item loadings were slightly different for males and females, Figure 4.2 represents the relationships between intelligence, creativity and dating success[17]. Men at higher levels of creativity and intelligence are more satisfied with their dating and relationship success then men who are low on both variables. The Dating Success factor did correlate with creativity for men, but not for women.

[17] The data has been reduced into quartiles for ease of interpretation.

Figure 4.2: Verbal Creativity, Intelligence, and Dating Success.



Additionally, I was interested in looking at peoples' average sexual partner and their most attractive sexual partner. Not surprisingly, I found that partner number correlated with the number of "one-night stands" significantly for both males and females, and for males partner number correlated negatively with the average partner quality factor. As we noted earlier, only the very highest quality males should be able to have a large number of short-term relationships with high-quality partners. Most men should have to make trade-offs between pursuing relatively few, high-quality partners, or more lower-quality partners. Even though the minimum expenditure involved in

reproduction is significantly lower for males than for females, men should still discriminate when selecting sexual partners (Vakirtzis & Roberts, 2009; Gangestad & Simpson, 2000). It appears that men who have more partners must settle for an "Average Partner" who is further from their ideal than men who pursue fewer, but more high-quality mates. Creativity in males correlated with the Best Partner factor but not Average Partner factor. Neither Creativity scores nor Raven's scores correlated with either measure of partner quality for females.

Women consistently list intelligence, creativity, and a sense of humor as being important in long-term partners (Buss, 1990; Li et al., 2002; Miller, 2000; Regan & Joshi, 2003, found a similar relationship in adolescents) so we should expect that males who are more creative will report more dating success with higher-quality partners. We had no specific hypotheses regarding female creativity or intelligence and their correlates with dating success or partner quality as men report a relatively lower preference for those qualities in female mates (Geher & Miller, 2008). Men place relatively more importance on physical attractiveness (Furnham, 2009) so it makes theoretical sense that the female Self-Assessed Mate Value factor, which had the highest loadings for Attractive Face and Attractive Body, predicted Dating Success instead.

In addition to the standard SOI (Simpson & Gangestad, 1991), I included items from Jackson & Kirkpatrick, 2007. These items sought to address the subject's sexual behavior, sociosexual beliefs, desire to have a family and a committed, long-term relationship with items such as: With how many partners have you had intercourse in your lifetime, I hope to have a romantic relationship that lasts the rest of my life, I am interested in having children now.

In order to keep testing time to a minimum I opted to use a short form of the BFI. In retrospect this may have been a mistake as the factors that were produced were not as clear-cut as they should have been, especially for women, and did not correlate with the other measures in a way that was consistent with previous research. A larger sample size and a longer version of the inventory might have produced significantly different results. Correlations between the personality factors and other measures should be interpreted cautiously.

For males, performance on the Raven's correlated negatively with Extraversion and measured creativity did not significantly correlate with any of the personality factors. In a study of people in 46 countries, Schmitt and Shackelford, (2008), found that, "Extraversion was universally associated with interest in short-term mating, unrestricted sociosexuality, having engaged in short-term mate poaching attempts, having succumbed to short-term poaching attempts, and lacking relationship exclusivity" (p. 272). Because of the correlational nature of the present study, it is impossible to tell if extraversion in males is driving mating effort and resulting in a higher number of sexual partners or if extraversion is the result of a number of different characteristics and life-history factors which have instilled a more confident and proactive social attitude.

It is possible that more extraverted individuals pursue a sexual strategy verging on coercion. Studies examining personality traits, such as extraversion, and sexually coercive behavior have been conducted. The majority of studies, however, are not grounded in an evolutionary perspective and offer conflicting results (Enosh, 2007; Lalumiere & Quinsey, 1996). While there is a strong case to be made for the evolutionary origins of sexually-coercive behavior (Thornhill, 2001; Goetz1& Shackelford, 2009) the

relationship between extraversion and such behavior is unclear and outside the scope of this paper.

For females the only significant correlation between Big Five items and either Intelligence or Creativity was a correlation between Creativity and Openness to Experience, which is consistent with previous studies. Additionally, the Sexual Behavior factor correlated negatively with the Big Five personality factors Neurotic and Conscientious. The SOI factor Long-Term Relationship Interest correlated negatively with Openness to Experience. These correlations are in the opposite direction of those found by Schmitt and Shackelford, (2008), but consistent with results reported by Gute, and Eshbaugh, (2008).

While the study was not constructed with the intent of examining the differences between self-descriptions of men and women, I decided to examine the data for interesting patterns and correlations. The third creativity assessment asked participants to list ten words that described themselves. In order to see if there were any significant differences in the frequency with which males and females used categories of self-descriptors when trying to attract a (hypothetical) partner, I broke down the responses into ten general categories (Enthusiastic about Sex, Intelligent, Physically Attractive, Possess Resources, Creative, Agreeable, Loving, Exciting, Fun or Funny, and Healthy; all other responses were categorized as Other and excluded from the analysis) and scored each of the responses.

A small sample of self-description words (swarthy, unconventional, intellectual, extraverted, understanding, radioactive, dinosaur, creative, musician, good looking, hot, expert, hilarious, literate, brilliant) is fairly representative of the sample as a whole. Most

words were easy to classify into one of the categories[18]. Close synonyms or thematically similar words were grouped together. Words that were ambiguous or did not fit into one of the categories were classified as "other" and excluded from the analysis.

More difficult, however, was classifying the responses of some individuals who took the task less literally. For example, one male subject's ten self-description words were "Far Too Clever For His Own Good Don't You Think?" which made it almost impossible to classify according to my scoring methodology. Many of the more unconventional responders, like the participant above, scored highly on Creativity and Intelligence but are underrepresented in the analysis. Therefore, conclusions about the use of the self-description words should be approached cautiously.

A One-Way ANOVA found a significant effect of sex on the frequency of Possess Resources and Creativity in favor of males. These findings are consistent with the analysis of singles advertisements (Gil-Burmann, Pelaez, & Sanchez, 2002). We would expect a significant difference in the relative frequency of females describing themselves as physically attractive, however, which we did not find. The difference was in the predicted direction, however, and a larger sample may have produced a significant result, $F(1, 140) = 2.935$, $p = .089$, *ns*.

Additionally, a bivariate correlation found that measured creativity correlated with self-descriptions of creativity but performance on the Raven's correlated negatively, but non-significantly, with self-descriptions of intelligence. Self-professed intelligence may have been used as a descriptor because it is generally believed to be a positive,

[18] As I was the only rater, there are no measures of reliability and the analyses should be interpreted cautiously. Categories were constructed after reading through all of the data. Descriptors were categorized with no knowledge of the individual participant.

attractive trait and its validity would be difficult for a potential mate to judged base on a small, self-report task. Conversely, it's possible that self-professed creativity's correlation with measured creativity is a demand characteristic artifact arising from the instructions that explicitly asked the participants to be as creative and interesting as possible. If participants thought that the task was designed to elicit and measure creativity they may have been more honest about their own creative abilities.

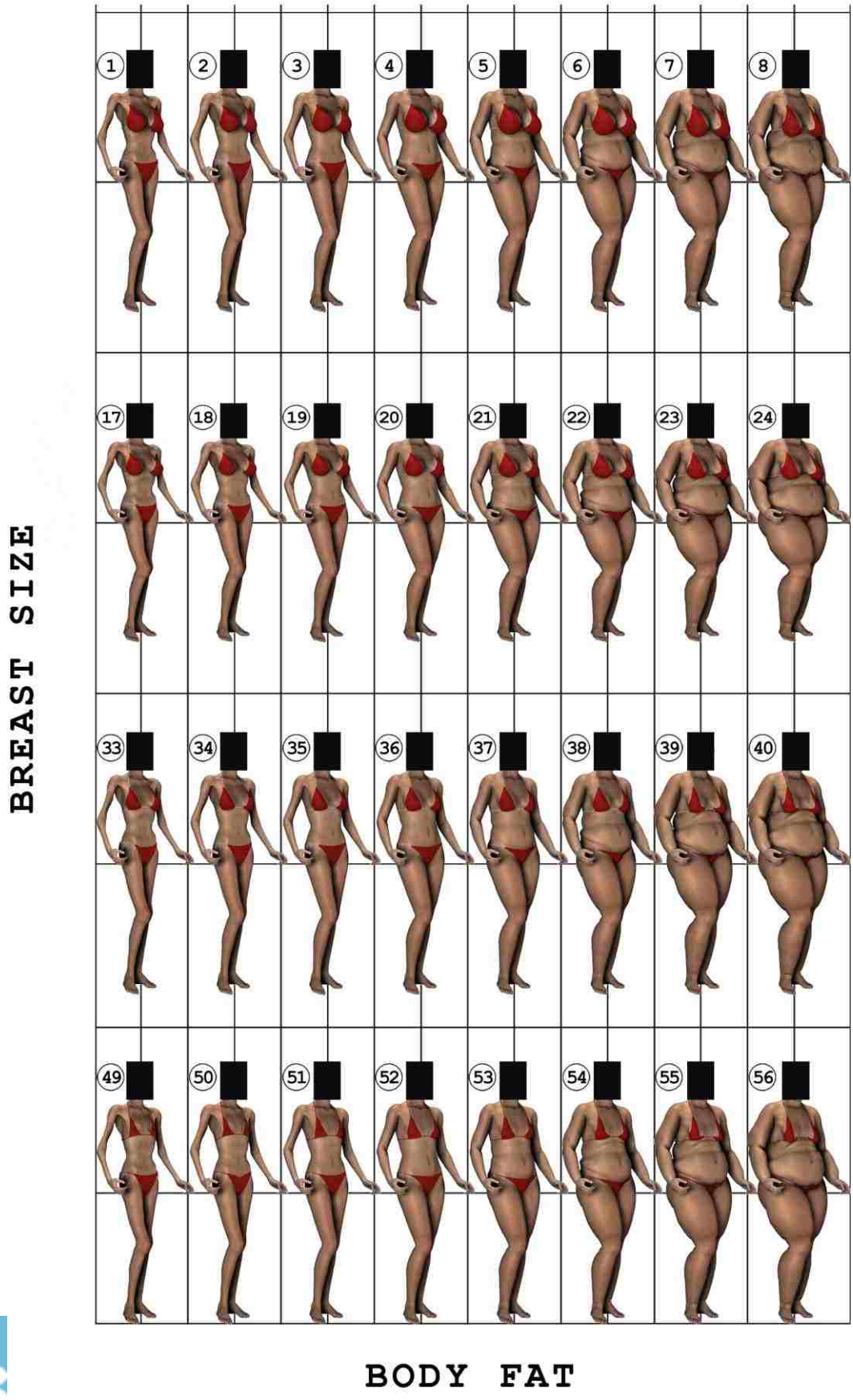
The only correlations for males with Creativity or Intelligence and the SOI factors was a negative correlation between Creativity and Long-Term Relationship Interest which is interesting. I have argued that more creative men may be pursuing high-quality females in lieu of a high number of partners. It could be assumed that more creative men are primarily interested in long-term partners. This does not seem to be the case. It may be useful to discriminate, theoretically, between wanting a long-term partner and interest in engaging in serial monogamy (a series of long- or short-term, exclusive sexual relationships). The factor Long-Term Relationship Interest contained items such as: *I would like to have a romantic relationship that lasts forever and I hope to have a romantic relationship that lasts the rest of my life*. Life-long monogamy is very different from a series of relationships that last from a few months to a few years. As Buss (1995) writes, "Humans, in short, are neither solely monogamous, nor solely promiscuous…. Which strategies from the menu a particular person chooses is heavily dependent on circumstances" (p. 505). It's possible that intelligent, creative men may be most successful by adopting a serial mating strategy with relatively high quality women.

The body-shape matrices were adapted from Frederick and Peplau (2007). The original intent of the matrices was to assess body satisfaction and body type preferences

of men and women. The female matrix consists of 32 computer-generated images that vary systematically in Breast Size (4 levels) and Body Fat (8 levels). This measure was selected for this study because breast size, waist-to-hip ratio, and body mass have been shown to be strong determinants of sexual attractiveness and are linked to health and reproductive potential (Swami et al., 2009; Tovee, 1999).

As with the previously presented mate-preferences, I asked participants to rate their ideal, best, and average partners. I then calculated the difference between each individual's selections as well as the differences between their selections and the consensus ideal partner. The consensus ideal partner, body-shape number 20 (Figure 4.3), has a waist-to-hip ratio of .7 and large breasts, both of which correlate with the probability of conception (Jasienska et al., 2004). The rational behind including this measure was that there would be systematic differences in how close an individual's highest quality and average quality partner differed from their ideal partner and the consensus ideal. One benefit of this sort of analysis is that it allows for individual differences in preference, assessment of participants' best and typical partner (which is important when examining differential success and mating strategies), and how an individual's partners differ from the consensus ideal.

Figure 4.3: Female Body-Shape Matrix



Creativity in males did predicted how close their Best Partner was to their Ideal Partner (but not how close their Average Partner was to their Ideal Partner) on the body-shape matrix. Put another way, more creative individuals reported that their most attractive sexual partner was closer to their ideal partner in terms of body-fat and breast size. This is consistent with the hypothesis that creativity helps males to obtain a high-quality partner, not necessarily a high number of sexual partners. Men who scored higher on the SOI Behavior reported that their average partner was significantly farther from the consensus ideal. If we assume that the variance in partner quality would increase but that the mean (or Average Partner) would stay the same, then it's possible that men who pursue a higher number of sexual partners are forced to lower their standards with regards to quality. Men with more conservative sexual attitudes, however, report that their Average Partner is closer to their Ideal Partner than more unrestricted men. This is consistent with the correlation between SOI Behavior and the Best Partner factor discussed below.

Multiple Regressions examining Sexual Behavior produced similar results to study 2. Self-Assessed Extraversion predicts an unrestricted, short-term mating strategy in males. The Weighted Vector Popular and Weighted Vector Average body shape difference scores have a beta-weight of -.24 which implies that men who pursue a short-term strategy typically have sex with women who are significantly farther from the Consensus Ideal partner on the body-shape matrix. Again, this is consistent with the idea that men are forced to make a trade-off between partner quality and partner quality. The Self-Assessed Mate Value factor also had a negative has a beta-weight (-.31, $F(3, 64) = -2.59$, $p = .012$).

A Multiple Regression was run to examine predictors of self-assessed Dating Success. Only two factors predicted dating success in males: Self-Assessed Mate-Value (beta-weight of .30, $F(3, 67) = 2.49$, $p = .000$) and Creativity (beta-weight of .29, $F(3, 67) = 2.67$, $p = .010$). The hypothesis of this study was that more creative males would report more Dating Success than less creative men, which has been supported by the data. Additionally it was hypothesized that men who were more creative would pursue higher quality partners, which was also supported.

CHAPTER 5: General Discussion

5.1 Sexual Behavior, Intelligence and Creativity

All three studies produced positive correlations between creativity and intelligence which is consistent with previous research (Carson et al. 2005; Dollinger et al. 2004; Eysenck 1995). This evidence, along with the high inter-rater reliability of our creativity measure validates its use as a psychometric tool and sets a precedent for its continued use in future studies. However, it should be augmented with the inclusion of other, well-established measures of creativity, such as the Torrance Tests of Creative Thinking (Torrance 1990a, 1990b) in which participants produce verbal and pictorial creative displays, to add construct validity.

5.1.1 Sex differences in Intelligence and Creativity

All three studies presented here found, as predicted, that the variance in creativity scores was significantly larger for men than for women. However, there were no significant differences in variances for intelligence score in any study. This is somewhat surprising considering the correlations between the two measures. Arden and Plomin, (2006) write, "If sexual selection contributed to the evolution of general intelligence then, even in a species like ours where mutual mate choice and a reasonable degree of monogamy prevail, one would predict that males of reproductive age would be more variable than females." While we did not find a difference in variance in intelligence

scores, the larger variance in scores for male creativity is at least consistent with the theory that it has been under selection pressure.

The third study differed from the previous two in that it also produced significantly different mean scores for both intelligence and creativity (Figure 5.1), with men scoring higher on both. It is possible that the shorter length of the third study (less than 1 hour compared to 3 hours) as well as the inclusion of the body shape-matrix may have made the prime more salient and elicited greater attention for males, which would be consistent with Griskevicius, Cialdini, and Kenrick (2006). Additionally the older sample, the self-selection aspect of the study, and the high attrition rate could have skewed results on the intelligence test. In order to find participants who were willing to complete a relatively long study for no compensation, I posted links to my survey on social-networking and science-related websites. People who completed the survey did so out of their own interest and the majority of the subjects who failed to complete the study quit during the Raven's phase.

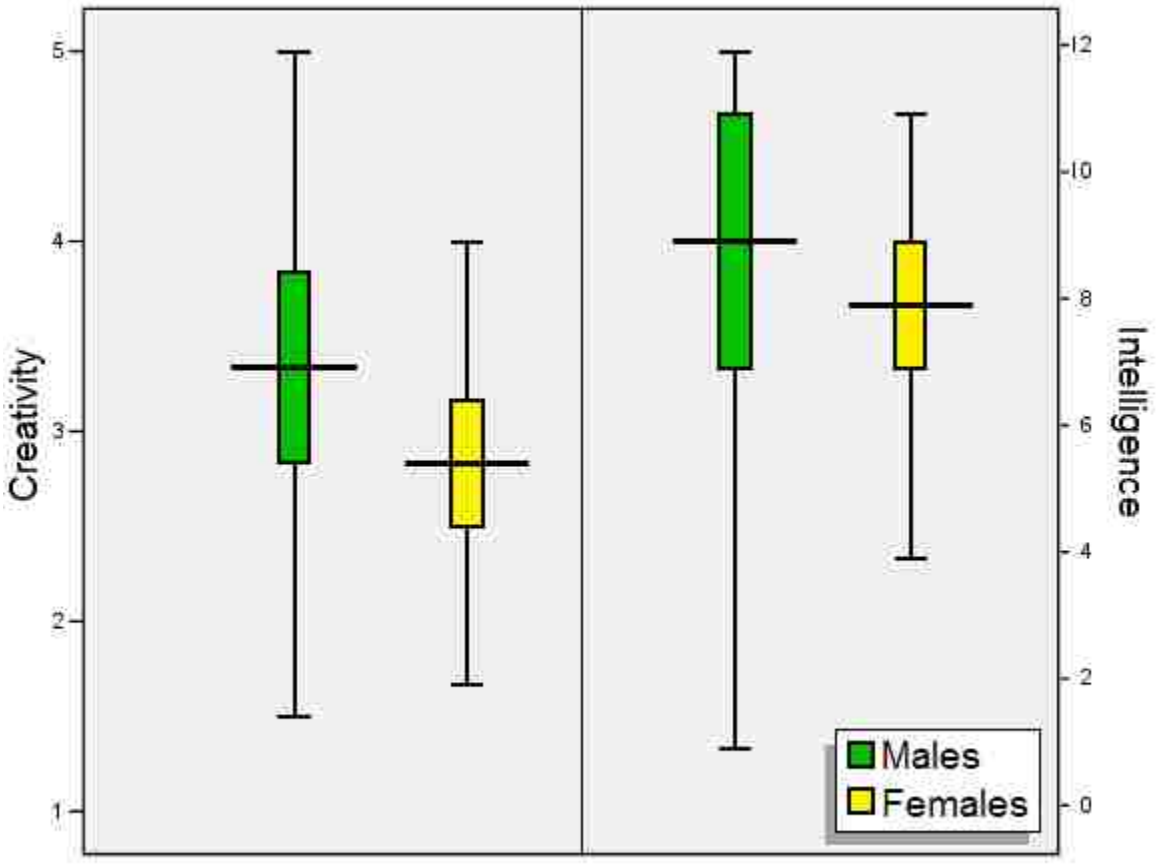
5.1.2 Short-Term Sexual Behavior

The first two studies fail to find the hypothesized correlation between creativity or intelligence and short-term mating success[19]. There are three possible explanations for this result. First, it is possible that neither intelligence nor creativity are "good genes" traits. This seems counterintuitive as we have established that intelligence is heritable, it

[19] While not a hypothesis in the third study, the results were the same.

covaries with traits that demonstrate developmental stability, and it is functionally beneficial in many areas of modern life. However, it is possible that intelligence was not predictive of heritable fitness in males in the environment of evolutionary adaptedness (EEA) or that males may have to make trade-offs during development between investing in intelligence and masculine, sexually dimorphic traits (Gangestad, Thornhill, & Garver-Apgar, in preparation). Indeed, it was these traits which were predictive of short-term

Figure 5.1: Mean Intelligence & Creativity, Males and Females.



mating success (masculinity, mating effort, and extraversion). These traits may require higher levels of androgens which some evidence suggests has a negative impact on intelligence and linguistic ability (Albores-Gallo et al., 2009). Extraversion, especially in the young sample, appears to be the most important personality factor in predicting the number of sexual partners and self-assessed mate value. Extraverted young men rated themselves more highly on every measure of physical attractiveness, the majority of the socially-valued psychological traits, and self-assessed (but not measured) creativity and intelligence.

Second, intelligence and creativity may instead function as "good dad" traits. While Miller and Haselton (2006) found that fertile women chose more creative men over more wealthy men, other studies have produce results in which intelligence is always attractive (Griskevicius, Cialdini, & Kenrick, 2006) or appears to function as a "good dad" indicator (Gangestad, Thornhill, & Garver-Apgar, in preparation). The function of intelligence could vary in different environments or female preferences could be moderated by environmental factors to favor "good genes" under some conditions and "good dads" under other conditions.

Third, it is possible that in such a young sample, with limited dating and sexual experience, women either are not able to discriminate or simply are not interested in creativity or intelligence in a mate. Additionally, it has been shown that intelligence correlates with delayed sexual activity (Halpern, Joyner, & Udry, 2000). Perhaps young, intelligent males and females are entering relationships together but not having sex. If the patterns of assortative mating we see in adults holds for a young sample, that might be the case. In his review of *IQ and Human Intelligence* (Mackintosh, 1998) Robert Plomin,

a behavioral geneticist, writes that "that there is greater assortative mating for *g* than for any other behavioral trait; that is, spouse correlations are only ~.1 for personality and only ~.2 for height or weight, but the correlation for assortative mating for *g* is ~.4" (1999, p. 1477).

Another interpretation of the data is that young males may still be experiencing neurological development which limits the display of intelligence and creativity or that they have yet to realize the economic or social success associated with such traits. Nettle and Clegg (2006) found that more creative men in a sample of British artists and poets did report having a higher number of sexual partners than less-creative men. The sample population in their study had a mean age of 40.5 years (standard deviation 14.5 years) which is twice the age of the males in our first two studies (20.0 years, SD 2.7). It is not until the age of 20 when male creative production begins to rise steeply, peaking at 30, and then falling off just as rapidly until age 50 (Miller, 1999). This path, along with a ten-fold higher level of creative production (as measured by jazz albums (1,892); modern paintings from The Tate Gallery Collections (3,374); a random sample of English-language books published in the 20th century (2,837); rock albums (2500); classical music (3800); as well as artistic and cultural productions on numerous other media) is consistent with the hypothesis that human creativity, as measured by the production of artistic works, functions largely as a courtship display (Miller, 1999; Miller 2000a).

5.1.3 Sexual Strategies and Trade-Offs

The data from the third study suggests that males are selecting to pursue one of two mating strategies. One group of men[20] are investing more in masculinization, social-dominance, earlier sexual behavior, and a more aggressive mating strategy, in an attempt to secure a higher number of partners. Additionally, men who pursue short-term mates, "appear to do so motivated by adaptive desires for sexual variety— desires that lead short-term seeking men to functionally pursue numerous mating partners and to consent to sex relatively quickly" (Schmitt, 2003, p. 85). If men are willing to engage in short-term or even "one-night stand" relationships it makes sense that their minimum criteria for selecting a partner may be relatively low. Inversely, when women engage in short-term sexual relationships, their objective seems to be to acquire the highest quality genes possible (Gangestad & Thornhill, 1997; Schmitt, 2003).

Men who are successful at a short-term mating strategy are extraverted, low in conscientiousness, and physically attractive. This is consistent with previous studies which have found correlations between men's number of sexual and positive sexual affect (SOI), antisocial tendencies, physical attractiveness, sensation seeking, and testosterone levels (Bogaert & Fisher, 1995). Some epidemiological research on HIV rates has found that low-conscientiousness correlates with indiscriminant mate choices and higher risk taking. Study three found that males who report higher partner number also report that those partners are, on average, lower quality.

[20] I am using "group" as short-hand for statistical behavioral trends, not distinct categories.

The second group of men appears to be composed individuals who have invested in intelligence and creativity, selected a more restrained sexual behavior, and who report fewer, but higher quality, sexual partners. For men, the "Dating Success" factor (which measures partner quality and relationship and sexual satisfaction) correlates with higher levels of creativity and intelligence. Creativity in males correlated with the Best Partner factor but not Average Partner factor. A Multiple Regression found that two factors predicted dating success in males: Self-Assessed Mate-Value and Creativity

The only correlations for males with Creativity or Intelligence and the SOI factors was a negative correlation between Creativity and Long-Term Relationship Interest. The first study also found a correlation between intelligence and the SOI Beliefs factor. There are a few reasons why this is possible. The Long-Term Relationship Interest factor correlates with the conservative SOI Beliefs factor (r = .283, p = .022). Creativity correlates with intelligence and openness to experience, both of which have been shown to correlate with more liberal social attitudes (Deary, Batty, & Gale, 2009). It's possible that men who are more intelligent and creative have generally more permissive or liberal attitudes on a range of factors which is reflected in how they responded to those items but may not translate into actual behavior. A large study of adolescents found that attitudes about sex often do not correlate with sexual behavior (Zabin, Hirsch, Smith, & Hardy, 1984; Plotnick, R. D. (2007)).

I have proposed that creative men are pursuing high-quality females in lieu of a high number of partners. Men using this sexual strategy may produce behavioral patterns which are similar to those produced by men who are seeking long-term parings or marriage but share few of the underlying social attitudes. Less aggressive mating

strategies and concentrating effort on higher-quality partners is not necessarily the same as seeking "*a romantic relationship that lasts forever*." It may be useful to discriminate, theoretically, between wanting a long-term partner and interest in engaging in serial monogamy. Buss and Greiling (1999), contend that serial monogamy has been the prevailing mating model throughout our evolutionary history. Marlowe (2004) reports that, unlike the majority of the literature on human mate preferences which come from studies of college students, data on the mate preferences in hunter-gatherer societies (such as the Hadza of Tanzania) suggests that serial monogamy is the norm[21].

5.2 Selection on Linguistic Ability

Linguistic ability among individuals is normally distributed, and twin studies have demonstrated that there is substantial heritability at all levels of ability (Stromswold, 2001). This genetic and phenotypic variation seems to be maintained in a number of ways. Complex multifactorial traits, such as language provide a large target for mutations, which randomly introduce subtly maladaptive variation (Kokko & Heubel, 2008; Miller, 2009). Selection may be continually refining our linguistic ability and reducing the deleterious effects of mutation, but a suite of genetic and environmental limitations could keep most of us from realizing our full linguistic potential. If language is as multifactorial as it appears to be, and is constrained by pleiotropic mutations, it could function as a good proxy for underlying genetic health and act as a target for sexual selection. Penke et al. (2007) write, "Indeed, virtually all modern evolutionary theories of mate choice argue that any phenotypic trait that reliably signals that a potential mate has

[21] Additionally, he reports a significant preference for intelligence in male mates.

a low mutation load will be sexually attractive" (p. 562). It is also necessary to consider phylogenetic and ontogenetic gene-environment interactions and how they influence the allocation of resources to different fitness features (Gangestad & Simpson, 2000).

5.3 Limitations of the Studies

The limitations of the presented studies fall into three main categories. First is the reliance on self-report measures. While self-report has been used in a number of studies of sexual behavior it is possible that there are systematic errors in the reporting of actual behavior as well as self-assessment of personality and physical variables. (Andrews, Gangestad, Miller, Haselton, Thornhill, & Neale, 2008).

The second limitation resides in the sample being studied. University undergraduates may not accurately represent the population of interest, especially for studies investigating dating, relationship, and sexual behavior. Many psychologists have expressed concern about the use of undergraduate college students as research participants. Still, in most areas of psychology they continue to be the focus of the majority of published studies (Wintre, North, & Sugar, 2001). Specifically, the behaviors of interest for these studies may vary dramatically across adolescence and adulthood. The older sample studied in the third study presents its own problems, however. There is most likely a strong self-selection bias as well as problems associated with sampling and sample representativeness, and potential limitations of age, literacy, and disability (Rhodes, Bowie, & Hergenrather, 2003).

Finally, the lack of an experimental condition limits the interpretation of the data. Potential experimentation is examined in the following section.

5.4 Future Research

Future research should investigate the relationship between intelligence, verbal creativity and observed, as opposed to self-report mate value. Similarly, it would be helpful to have more objective measures of individual's actual short- and long-term sexual partners so they could be more accurately assessed for quality. The addition of experimental conditions could also produce more powerful results.

Building on the success of the online data collection in study three, it may be interesting to use social networking websites such as Facebook.com and dating websites, to recruit participants and to gather data on actual relationship status and partner quality. Social networking sites are enormously popular (Facebook alone has over 300 million subscribers) and are showing the fastest growth in the 35-60 year old demographic (http://www.google.com/analytics/, 2009). It would be possible to collect behavioral and photographic data on people, their relationship partners, and their social networks which could be analyzed more objectively.

It may also be possible to build on people's comfort with using social networking websites to study relative preferences for social, introversion-extraversion, body shape, facial attractiveness, mating strategies, creativity, and effects across the ovulatory cycle. Following Haselton and Miller's 2006 study of the effect of creativity on short- and long-term partner attractiveness, I have constructed a pilot study which counterbalances

physical and behavioral. In a series of 32 total "online profiles," which mimic those found on a dating website, I have systematically varied a number of different physical, social, behavioral, creativity, and economic traits, in order to assess their relative importance in short and long-term mate selection. A preliminary version of the study can be found in Appendix J.

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Tables

Study 1

Table 2.1

Factor Matrix: Social Skills

	Factor 1
Sociable	0.85
Talkative	0.772
Leading Groups	0.641
Successful	0.638
Witty	0.557
Guys Respect	0.499
Friends Respect	0.405
Resolving Arguments	0.332
People's Feelings	0.308
Manipulative	--

Extraction Method: Maximum Likelihood.

a. 1 factors extracted. 4 iterations required.

Factor Matrix: Creative

	Factor 1
Imaginative	0.862
Creative	0.785
Imaginative	0.752
Having Creative Ideas	0.697
Inventive	0.649
Interesting	0.43
Patterns In Art	0.393
Amusing	0.331
Scientific Ideas	

Extraction Method: Maximum Likelihood.

a. 1 factors extracted. 5 iterations required.

Factor Matrix: *g* Factor

	Factor 1
Analogy	0.862
Definitions	0.797
Similarities	0.678
Raven's	0.678

Extraction Method: Principal Axis Factoring
1 Factor Extracted. 7 Iterations Required

Factor Matrix: Mating Effort

	Factor 1
Get The Attention Of A Girl	0.719
I Like Girls For Their Looks	0.614
Rather Date Several Girls	0.607
Guys Stay Away From Girlfriend	0.498
Friends Respect Me	0.497
Start A Relationship Before Ending	0.496
Get Back At Someone	0.424
Guys Respect Me	0.415
I Am Self-Confident	0.393
I Am Naturally Attractive	0.357

Extraction Method: Principal Axis Factoring
1 Factor Extracted. 6 Iterations Required

Table 2.2: Males SOI Behavior And Beliefs

	Factor 1	2
Partners In Past Year	0.828	--
How Many Partners Total	0.823	--
On Only One Occasion	0.785	--
24-Hour Period	0.754	--
Sex Within First Week	0.753	--
7-Day Period	0.701	--
With An Ex	0.635	--
Ever Had Sex	0.436	--
In The Past Month	0.407	--
Age First Intercourse	0.353	--
All 1 Father	--	--
Woman Raise A Child	--	--
Casual Sex	--	-0.780
How Often Fantasy	--	-0.720
Sex Is Fun	--	-0.640
Slight Attraction	--	-0.620
Sex Without Love	--	-0.579
How Often Intimacy	--	-0.558
Premarital Sex Is Wrong	--	0.557
Emotional Intimacy	--	0.554
Emotionally Close	--	0.539
Sexual Attracted Someone New	--	-0.508
Sex With Someone New	--	-0.463
Religion/Sex	--	0.388
In The Next Five Years	--	--
Single People	--	--
How Often Baby	--	--

Extraction Method: Principal Axis Factoring. Rotation Method: Oblimin With Kaiser Normalization
Rotation Converged In 7 Iterations
Factor Loadings Less Than 0.3 Were Replaced With --

Factor Matrix Females Sexual Behavior And Beliefs

	Factor 1
Sex Within First Week	0.764
On Only One Occasion	0.741
How Many Partners	0.736
24-Hour Period	0.732
Enjoy Casual Sex	0.729
In The Next Five Years	0.711
7-Day Period	0.705
How Often Fantasy	0.636
Sex Without Love	0.608
Slight Attraction	0.513
How Often Intimacy	0.512
Religion/Sex	-0.511
Emotionally Close Before Sex	-0.492

Table 2.3: Male Specific Factors

N = 103	Sex Behavior	Sex Beliefs	MV Happy	MV Unattract	MV Control	MV Low IQ
Std. Deviation	0.963	0.942	0.957	1.005	0.927	0.966
Skewness	2.384	0.122	-0.876	0.17	-0.215	0.269
Std. Error of Skewness	0.238	0.238	0.238	0.238	0.238	0.238
Kurtosis	7.783	-0.833	0.679	-0.225	-0.206	-0.373
Std. Error of Kurtosis	0.472	0.472	0.472	0.472	0.472	0.472

Female Specific Factors

N = 84	Sexual Behavior	MV Attract	MV Kind	MV Low IQ	MV Neurotic
Std. Deviation	0.964	1.016	0.983	0.969	0.953
Skewness	2.527	-0.404	-0.247	0.16	-0.773
Std. Error of Skewness	0.263	0.263	0.263	0.263	0.263
Kurtosis	9.938	1.325	-0.426	0.544	0.989
Std. Error of Kurtosis	0.52	0.52	0.52	0.52	0.52

Table 2.4

Correlations for Male and Female Combined Factors

	G	Religious	Big 5 E	Big 5 N	Big 5 C	Big 5 A	Big 5 O	Mini K
Religious	-0.302**							
Big 5 E	-0.255*	0.210						
Big 5 N	-0.045	0.069	-0.145					
Big 5 C	-0.221	0.160	0.290**	-0.057				
Big 5 A	-0.045	-0.066	-0.108	-0.008	0.009			
Big 5 O	0.321**	-0.103	0.014	0.196	-0.021	0.115		
Mini K	-0.167	0.241*	0.587**	-0.073	0.395**	-0.090	0.103	
Mate Effort	-0.008	0.002	0.293**	-0.137	-0.006	-0.430**	-0.122	0.128

** Correlation is significant at the 0.01 level (2-tailed). Bonferroni Adjusted

* Correlation is significant at the 0.05 level (2-tailed). Bonferroni Adjusted

Table 2.5: Correlations for Male Specific Factors

Correlations for Male Specific Factors

	G	Religious	Big 5 E	Big 5 N	Big 5 C	Big 5 A	Big 5 O	Mini K	Mate Effort	Sex Behavior	Sex Beliefs	MV Happy	MV Attract	MV Control
Sex Behavior	-0.076	-0.155	0.234	-0.067	-0.025	-0.228	-0.055	0.01	0.283					
Sex Beliefs	-0.157	0.500**	-0.109	0.106	0.069	0.282	0.093	0.057	-0.447**	-0.349				
MV Happy	-0.365*	0.352*	0.715**	-0.209	0.689**	-0.033	0.020	0.680**	0.091	0.000	0.178			
MV Attract	-0.146	0.130	0.421**	-0.289	0.279	-0.365	-0.108	0.268	0.511**	0.382**	-0.263	0.247		
MV Control	-0.092	0.124	-0.059	0.364	0.176	-0.569**	-0.081	0.03	0.159	0.050	0.001	0.001	0.050	
MV Intelligent	0.077	0.051	0.454**	0.126	0.311	-0.149	0.549**	0.435**	0.142	0.106	-0.104	0.362*	-0.212	0.022

** Correlation is significant at the 0.01 level (2-tailed). Bonferroni Adjusted

* Correlation is significant at the 0.05 level (2-tailed). Bonferroni Adjusted

Table 2.6: Correlations for Female Specific Factors.

Correlations for Female Specific Factors

	G	Religious	Big 5 E	Big 5 N	Big 5 C	Big 5 A	Big 5 O	Mini K	Mate Effort	Sex Behavior	MV Attractive	MV Kind	MV Intelligent
Sex Behavior	0.130	-0.330	-0.006	0.052	-0.347	-0.318	0.074	-0.153	0.267				
MV Attractive	-0.293	0.124	0.580**	-0.271	0.093	-0.440	-0.287	0.358*	0.423**	0.056			
MV Kind	-0.450**	0.276	0.466**	0.125	0.199	0.288	-0.040	0.370**	-0.203	-0.278	0.144		
MV Intelligent	-0.007	-0.071	-0.023	-0.174	0.407**	-0.095	0.130	0.212	0.052	-0.199	0.232	0.151	
MV Neurotic	-0.197	-0.023	-0.054	0.305	-0.315	-0.271	0.031	0.021	0.113	0.214	0.041	0.031	0.094

** Correlation is significant at the 0.01 level (2-tailed). Bonferroni Adjusted

* Correlation is significant at the 0.05 level (2-tailed). Bonferroni Adjusted

Table 2.8: Factor Loadings Big 5 and Mate Value.

Pattern Matrix Big 5 Personality Traits

	Factor 1	2	3	4	5
Really Talking	0.724	--	--	--	--
Cheerful	0.662	--	--	--	--
Like Action	0.646	--	--	--	--
Like People Around Me	0.635	--	--	--	--
Enjoy Chatting	0.566	--	--	--	--
Not Shy	0.565	--	--	--	--
Laugh Easily	0.56	--	--	--	--
Assume Best	0.552	--	--	--	--
Bursting With Energy	0.547	--	--	--	--
Cold And Distant	-0.487	--	--	--	--
Active	0.468	--	--	--	--
New Hobbies	0.433	--	--	--	--
Fast-Paced	0.413	--	--	--	--
Go My Own Way	-0.395	--	--	--	--
Work Alone	-0.37	--	--	--	--
Courteous	0.34	--	--	--	--
Considerate	0.321	--	--	--	--
Anxious	--	0.682	--	--	--
Jittery	--	0.604	--	--	--
Ashamed	--	0.592	--	--	--
Get Angry	--	0.552	--	--	--
Worthless	--	0.547	--	--	--
Stress	--	0.525	--	--	--
Range Of Emotions	--	0.51	--	--	--
Lonely	--	0.507	--	--	--
Things Go Wrong	--	0.505	--	--	--
Bitter And Resentful	--	0.422	--	--	--
Sad	--	0.324	--	--	--
Not A Worrier	--	--	--	--	--
Productive	--	--	0.781	--	--
Excellence	--	--	0.763	--	--
Work Hard	--	--	0.725	--	--
Set Of Goals	--	--	0.72	--	--
Pacing Myself	--	--	0.65	--	--
Commitment	--	--	0.6	--	--
Tasks Assigned	--	--	0.597	--	--
Waste Time	--	--	-0.568	--	--
Never Organized	--	--	-0.566	--	--
Not Dependable	--	--	-0.513	--	--
Neat And Clean	--	--	0.475	--	--
Not Prepared	--	--	-0.473	--	--
Helpless	--	--	-0.391	--	--
Manipulate	--	--	--	-0.718	--

Bully Or Flatter	--	--	--	-0.615	--
Selfish	--	--	--	-0.589	--
Better Than People	--	--	--	-0.519	--
Stubborn	--	--	--	-0.484	--
Fight Back	--	--	--	-0.48	--
Let People Know	--	--	--	-0.437	--
Patterns In Art	--	--	--	--	0.719
Abstract Ideas	--	--	--	--	0.665
Reading Poetry	--	--	--	--	0.623
Intellectual Curiosity	--	--	--	--	0.495
Speculating	--	--	--	--	0.451
Express Controversial Ideas	--	--	--	--	0.385
Poetry	--	--	--	--	0.384
Mind Wander	--	--	--	--	0.362
Daydream	--	--	--	--	0.335
Notice Mood	--	--	--	--	--
Forgive And Forget	--	--	--	--	--

Extraction Method: Principal Axis Factoring. Rotation Method: Oblimin With Kaiser Normalization.

Rotation Converged In 11 Iterations

Factor Loadings Less Than 0.3 Were Replaced With --

Pattern Matrix: Males Mate Value

	Factor			
	1	2	3	4
Happy	0.635	--	--	--
Talkative	0.612	--	--	--
Ambitious	0.578	--	--	--
Loyal	0.568	--	--	--
Successful	0.555	--	--	--
Understand My Feelings	0.544	--	--	--
Romantic	0.526	--	--	--
Exciting	0.521	--	--	--
Generous	0.517	--	--	--
Sociable	0.499	--	--	--
Wealthy	0.493	--	--	--
Sports Or Dances	0.471	--	--	--
Faithful To Partners	0.46	--	--	--
Kind	0.44	--	--	--
Managing Time	0.43	--	--	--
Emotionally Stable	0.43	--	--	--
Responsible	0.4	--	--	--
People's Feelings	0.391	--	--	--
Plays With Children	0.359	--	--	--
Leading Groups	0.356	--	--	--
Desires Children	0.322	--	--	--
Financially Secure	--	--	--	--
Maps	--	--	--	--
Attractive Hair	--	--	--	--
Attractive Body	--	0.849	--	--

Attractive Chest	--	0.802	--	--
Attractive Stomach	--	0.76	--	--
Attractive Bottom	--	0.744	--	--
Healthy	--	0.701	--	--
Attractive Legs	--	0.699	--	--
Sexy	--	0.62	--	--
Attractive Hands	--	0.581	--	--
Athletic	--	0.515	--	--
Attractive Mouth	--	0.51	--	--
Attractive Face	--	0.502	--	--
Muscular	--	0.471	--	--
Overweight	--	0.403	--	--
Attractive Skin	--	0.375	--	--
Attractive Nose	--	0.37	--	--
Enthusiastic about Sex	--	0.324	--	--
Independent	--	--	--	--
Attractive Body Odor	--	--	--	--
Tall	--	--	--	--
Controlling	--	--	0.654	--
Aggressive	--	--	0.643	--
Irritable	--	--	0.553	--
Possessive	--	--	0.537	--
Jealous	--	--	0.504	--
Manipulative	--	--	0.433	--
Moody	--	--	0.397	--
Dependent	--	--	0.355	--
Conservative	--	--	0.31	--
Mathematical	--	--	--	--
Having Creative Ideas	--	--	--	0.771
Imaginative	--	--	--	0.704
Creative	--	--	--	0.702
Open-Minded	--	--	--	0.65
Inventive	--	--	--	0.591
Witty	--	--	--	0.568
Adaptable	--	--	--	0.565
Singing	--	--	--	0.53
Imaginative	--	--	--	0.529
Speaking Articulately	--	--	--	0.517
Amusing	--	--	--	0.509
Writing Well	--	--	--	0.46
Sense Of Humor	--	--	--	0.459
Interesting	--	--	--	0.457
Entertaining	--	--	--	0.442
Intelligence	--	--	--	0.43
Attractive Singing	--	--	--	0.41
Resolving Arguments	--	--	--	0.405
Animals And Plants	--	--	--	0.39
Strategic Games	--	--	--	0.377
Historical Names	--	--	--	0.358
Free-Spirited	--	--	--	0.339
Scientific Ideas	--	--	--	--
Attractive Eyes	--	--	--	--

Attractive Speaking	--	--	--	--

Extraction: Principal Axis Factoring. Rotation: Oblimin With Kaiser Normalization

Rotation Converged In 22 Iterations

Factor Loadings Less Than 0.3 Were Replaced With --

Pattern Matrix: Females Mate Value

	Factor			
	1	2	3	4
Attractive Face	0.809	--	--	--
Sexy	0.777	--	--	--
Attractive Body	0.709	--	--	--
Attractive Legs	0.646	--	--	--
Attractive Bottom	0.601	--	--	--
Attractive Stomach	0.566	--	--	--
Attractive Skin	0.565	--	--	--
Healthy	0.546	--	--	--
Attractive Speaking	0.545	--	--	--
Happy	0.544	--	--	--
Witty	0.541	--	--	--
Sense Of Humor	0.534	--	--	--
Exciting	0.518	--	--	--
Talkative	0.517	--	--	--
Free-Spirited	0.516	--	--	--
Attractive Hands	0.512	--	--	--
Sociable	0.511	--	--	--
Attractive Chest	0.488	--	--	--
Leading Groups	0.483	--	--	--
Enthusiastic about Sex	0.458	--	--	--
Attractive Mouth	0.453	--	--	--
Controlling	0.452	--	--	--
Aggressive	0.436	--	--	--
Attractive Hair	0.436	--	--	--
Sports Or Dances	0.43	--	--	--
Muscular	0.422	--	--	--
Independent	0.352	--	--	--
Attractive Eyes	0.332	--	--	--
Interesting	0.331	--	--	--
Tall	0.33	--	--	--
Attractive Nose	0.315	--	--	--
Maps	0.178	--	--	--
Kind	--	0.721	--	--
Faithful To Partners	--	0.644	--	--
People's Feelings	--	0.577	--	--
Loyal	--	0.52	--	--
Resolving Arguments	--	0.488	--	--
Plays With Children	--	0.454	--	--

Romantic	--	0.448	--	--
Generous	--	0.442	--	--
Desires Children	--	0.412	--	--
Conservative	--	0.349	--	--
Singing	--	0.335	--	--
Understand My Feelings	--	--	--	--
Responsible	--	--	--	--
Attractive Singing	--	--	--	--
Open-Minded	--	--	--	--
Scientific Ideas	--	--	0.727	--
Intelligence	--	--	0.627	--
Imaginative	--	--	0.598	--
Having Creative Ideas	--	--	0.596	--
Inventive	--	--	0.585	--
Speaking Articulately	--	--	0.532	--
Writing Well	--	--	0.531	--
Successful	--	--	0.467	--
Ambitious	--	--	0.461	--
Animals And Plants	--	--	0.44	--
Mathematical	--	--	0.42	--
Attractive Body Odor	--	--	0.349	--
Financially Secure	--	--	0.346	--
Wealthy	--	--	0.337	--
Strategic Games	--	--	0.304	--
Adaptable	--	--	--	--
Historical Names	--	--	--	--
Jealous	--	--	--	0.605
Moody	--	--	--	0.535
Athletic	--	--	--	-0.47
Irritable	--	--	--	0.468
Amusing	--	--	--	0.455
Possessive	--	--	--	0.404
Dependent	--	--	--	0.402
Manipulative	--	--	--	0.402
Emotionally Stable	--	--	--	-0.357
Entertaining	--	--	--	0.332
Overweight	--	--	--	--
Managing Time	--	--	--	--

Extraction: Principal Axis Factoring. Rotation: Oblimin With Kaiser Normalization

Rotation Converged In 18 Iterations

Factor Loadings Less Than 0.3 Were Replaced With --

Univariate Statistics for Intelligence Test Variables and Factors
Male and Female Factors

N = 187	*g*	Big 5 E	Big 5 N	Big 5 C	Big 5 M	Big 5 O	Mini K	Mate Effort
Std. Error of Mean	0.068	0.07	0.068	0.07	0.067	0.067	0.067	0.065
Std. Deviation	0.934	0.951	0.928	0.96	0.919	0.902	0.921	0.894
Skewness	0.417	-0.257	0.19	0.388	0.083	0.065	-0.523	0.444
Std. Error of Skewness	0.178	0.178	0.178	0.178	0.178	0.178	0.178	0.178
Kurtosis	0.053	-0.427	-0.216	-0.119	-0.255	-0.164	-0.026	-0.087
Std. Error of Kurtosis	0.354	0.354	0.354	0.354	0.354	0.354	0.354	0.354

Study 2

Table 3.1: Studies 1 and 2 Means and Variances by Sex (127 males, 163 females)

Variable	Male Mean	Female Mean	Sig.	Male Variance	Female Variance	Sig.
Verbal creativity	2.58	2.57	0.98	0.40	0.16	0.00
Intelligence[1]	10.66	9.26	0.00	12.57	11.28	0.34
Short-term mating	0.24	-0.19	0.00	1.53	0.52	0.00

1. 18 Item RPM

Exploratory Factor Analysis Matrix: Creativity Measure	
Change your sex by dreaming it	0.720
Strings hanging from the clouds	0.650
10 Self description words	0.600
World be like in 100 years	0.590
Animal would you be for a day	0.540
Keep a marriage exciting	0.450

Extraction Method: Principal Axis Factoring

1 Factor Extracted. 5 Iterations Required

Factor Matrix: Self-rated Attractiveness	
attractive	0.800
body overall	0.730
face overall	0.700
hands & arms	0.670
chest	0.610
legs	0.590
mouth	0.580
bottom	0.550
stomach	0.520
nose	0.490
skin/complexion	0.440
hair	0.410
eyes	--

Extraction Method: Principal Axis Factoring

1 Factor Extracted. 6 Iterations Required

Factor Matrix: Short-Term Mating	
How many times had two partners within 7 days?	0.810
With how many partners had intercourse only once?	0.810
How many times had sex within first week of meeting?	0.810
How many sexual partners in last year?	0.800
How many times had two partners within 24 hours?	0.720
How many partners expected in next 5 years?	0.710

Extraction Method: Maximum Likelihood.

4 iterations required. Loadings less than .30 marked as --.

Descriptive statistics (across both sexes, total N = 290)

Variable	Scale	Minimum	Maximum	Mean	Standard Deviation	Skewness	Kurtosis
Verbal creativity (6 tasks)	1 to 5	1.00	4.46	2.57	0.51	0.38	1.30
Intelligence (18 items)	0 to18	1.00	18.00	9.87	3.51	-0.01	-0.43
Openness to Experience (12 items)	-3 to 3	-1.33	3.00	1.13	0.89	0.03	-0.59
Conscientiousness (12 items)	-3 to 3	-2.00	3.00	0.88	0.92	-0.32	0.02
Extraversion (12 items)	-3 to 3	-1.83	3.00	1.04	0.90	-0.48	0.03
Agreeableness (12 items)	-3 to 3	-1.75	3.00	0.35	0.88	0.11	-0.26
Neuroticism (12 items)	-3 to 3	-2.75	3.00	-0.04	1.01	-0.04	-0.05
Short-term mating (sum of Z scores)	N/A	-0.81	4.42	0.00	1.00	2.18	5.31
Attractiveness (16 self-rated traits)	-3 to 3	-1.42	3.00	0.96	0.88	-0.15	-0.39
Age	18+	18.00	39.00	20.05	2.86	2.90	11.00

Means and Variances by Sex (127 males, 163 females)

Variable	Male Mean	Female Mean	t-test	Sig.	Male Variance	Female Variance	Levene's Statistic	Sig.
Verbal creativity	2.58	2.57	-0.02	0.98	0.40	0.16	23.57	0.00
Intelligence	10.66	9.26	-3.44	0.00	12.57	11.28	0.91	0.34
Openness	1.12	1.15	0.30	0.76	0.92	1.07	0.26	0.61
Conscientiousness	0.73	1.00	2.51	0.01	1.05	0.93	0.19	0.66
Extraversion	1.01	1.06	0.50	0.62	1.07	0.95	1.21	0.27
Agreeableness	0.26	0.42	1.55	0.12	0.90	1.07	1.32	0.25
Neuroticism	-0.15	0.32	4.10	0.00	0.95	0.95	0.15	0.70
Short-term mating	0.24	-0.19	-3.43	0.00	1.53	0.52	25.56	0.00
Attractiveness	0.79	1.10	2.94	0.00	1.13	0.87	1.98	0.16
Age	20.28	19.87	-1.16	0.25	10.71	6.16	2.56	0.11

Bivariate Correlations (across both sexes, total N = 290)

	Creativity	*g*	O	C	E	A	N	Attract.	S-T Mating	Age
Intelligence	.33**									
Openness	.36**	.27**								
Conscientious	-.14*	-.18**	-.13*							
Extraversion	.02	-.04	-.01	.27**						
Agreeable	-.02	-.08	.03	.16**	.12*					
Neurotic	.08	.04	.11	-.29**	-.30**	-.27**				
Attractivness	-.04	-.17**	.00	.23**	.29**	-.14*	-.23**			
Short-Term Mating	.09	.04	-.04	-.11	.16**	-.24**	-.03	.18**		
Age	.14*	.07	.06	.05	-.11	.03	-.02	.01	.22**	
Sex	-.01	-.20**	.02	.14*	.03	.09	.23**	.18**	-.21**	-.07

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Bivariate Correlations by sex (female data, *N* =163, above diagonal; male data, *N* =127, below)

	Creativity	*g*	O	C	E	A	N	Attract.	S-T Mating	Age
Intelligence	.36**	--	.23**	-.18*	-.03	-.09	.17*	-.21**	.03	-.06
Openness	.42**	.35**	--	-.15	-.06	-.01	.14	.01	.02	.09
Conscientious	-.16	-.11	-.11	--	.18*	.11	-.28**	.16*	-.08	.07
Extraversion	-.03	-.05	.05	.37**	--	.21**	-.30**	.17*	.13	-.12
Agreeable	.05	-.03	.10	.20*	-.01	--	-.37**	-.13	-.09	-.08
Neurotic	.12	-.01	.07	-.40**	-.34**	-.20*	--	-.22**	.03	.02
Attractivness	-.10	-.05	-.01	.27**	.44**	-.18*	-.35**	--	.05	.06
Short-Term Mating	.10	-.02	-.08	-.09	.20*	-.35**	-.01	.35**	--	.26**
Age	.18*	.16	.03	.06	-.10	.17	-.02	-.01	.19*	--

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 3.2: Regression Model

Regression of Short-term Mating: Final model

Source	B	Std. Error	Type III Sum of Squares	df	Mean Square	*F*	Sig.
Corrected Model			86.63	13	6.66	9.09	0.00
Intercept	-0.19	0.07	0.00	1	0.00	0.00	0.97
Sex	0.39	0.11	8.59	1	8.59	11.71	0.00
Age	0.26	0.05	18.70	1	18.70	25.51	0.00
Intelligence	-0.04	0.06	0.36	1	0.36	0.49	0.49
Creativity	0.06	0.06	0.69	1	0.69	0.94	0.33
Openness	-0.07	0.06	1.22	1	1.22	1.67	0.20
Conscientious	-0.13	0.06	3.63	1	3.63	4.95	0.03
Extraversion	0.17	0.06	6.81	1	6.81	9.28	0.00
Agreeable	-0.04	0.07	11.58	1	11.58	15.80	0.00
Neurotic	0.05	0.06	0.45	1	0.45	0.61	0.43
Attractive	0.00	0.08	5.09	1	5.09	6.95	0.01
Error			202.37	276	0.73		
Total			289	290			
Corrected Total			289	289			

R Squared = .30 (Adjusted R Squared = .27)

Study 3

Table 4.1: Means and Variances by Sex (80 males, 57 females), Study 3

Variable	Male Mean	Female Mean	t-test	Significance	Male Variance	Female Variance	Levene's Statistic	Significance
Verbal creativity	3.326	2.793	4.541	0	0.535	0.251	9.281	0.002
Intelligence	8.623	7.631	2.574	0.011	5.268	4.201	2.492	0.117
Age	31.31	29.35	1.1	0.273	108.01	88.375	1.433	0.233

Big Five Personality Inventory, Males, Total Variance Explained, Study 3

Factor	Initial Eigenvalues			Sums of Squared Loadings			Rotation Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.912	29.118	29.118	2.529	25.289	25.289	1.414	14.138	14.138
2	1.711	17.114	46.232	1.383	13.83	39.119	1.328	13.28	27.418
3	1.273	12.731	58.964	0.885	8.854	47.973	1.29	12.9	40.318
4	1.196	11.964	70.928	0.772	7.72	55.693	1.099	10.991	51.309
5	0.856	8.563	79.491	0.46	4.6	60.293	0.898	8.985	60.293
6	0.645	6.449	85.939						
7	0.506	5.063	91.002						
8	0.361	3.614	94.616						
9	0.29	2.9	97.517						
10	0.248	2.483	100						

Extraction Method: Principal Axis Factoring.

Rotated Factor Matrix Big Five, Study 3

	Factor				
	Conscientious	Extraverted	Neurotic	Agreeable	Open
Dependable, self-disciplined.	0.849	---	---	---	---
Disorganized, careless.	-0.73	---	---	--	---
Reserved, quiet.	--	-0.805	---	--	---
Extraverted, enthusiastic.	--	0.763	---	--	---
Anxious, easily upset.	---	---	0.75	--	---
Calm, emotionally stable.	--	--	-0.65	---	---
Sympathetic, warm.	--	--	---	0.838	---
Critical, quarrelsome.	--	--	---	-0.558	---
Conventional, uncreative.	--	--	---	---	-0.738

Loadings less than .30 marked as --.

Table 4.2: Factor Matrix: Males Dating Success

I receive attention from members of the opposite sex.	0.764
Members of the opposite sex are attracted to me.	0.764
Compared to all other women of the same age, the women I date are more physically attractive.	0.761
Compared other men my age, my sexual partners are more attractive.	0.693
I am able to date people that I am interested in dating.	0.619
Compared to other men my age, I go on dates more often.	0.561
I can have as many sexual partners as I want.	0.554
Compared to all other women of the same age, the women I date are more interesting to talk too.	0.476
Compared to all other women of the same age, the women I date are more fun to spend time with.	0.460
Compared to my peer group, I have had more sexual partners.	0.454
I am happy with my current relationship situation.	--
I usually decide when to end a relationship.	--

Extraction Method: Maximum Likelihood.

6 iterations required. Loadings less than .30 marked as --.

Table 4.3: Factor Matrix: Females Dating Success

Members of the opposite sex are attracted to me.	0.901
I receive attention from members of the opposite sex.	0.830
I am able to date people that I am interested in dating.	0.595
I can have as many sexual partners as I want.	0.585
Compared to all other men of the same age, the men I date are more physically attractive.	0.550
Compared other women my age, my sexual partners are more attractive.	0.445
I am happy with my current relationship situation.	0.402
I usually decide when to end a relationship.	0.335
Compared to all other men of the same age, the men I date are more fun to spend time with.	0.303
Compared to other women my age, I go on dates more often.	--
Compared to all other men of the same age, the men I date are more interesting to talk too.	--
Compared to my peer group, I have had more sexual partners.	--

Extraction Method: Maximum Likelihood.

6 iterations required. Loadings less than .30 marked as --.

Table 4.4: Factor Matrix Average Partner

Males		Females	
Kind and understanding	0.833	Good companion	0.885
Interesting to talk to	0.791	Loyal	0.747
Good companion	0.782	Generous	0.702
Considerate	0.741	Kind and understanding	0.700
Loyal	0.662	Responsible	0.698
Intelligent	0.642	Good sense of humor	0.667
Faithful to partners	0.628	Considerate	0.650
Good sense of humor	0.616	Emotionally stable	0.634
Shares my values	0.603	Interesting to talk to	0.600
Responsible	0.541	Faithful to partners	0.598
Emotionally stable	0.529	Shares my interests	0.595
Generous	0.521	Shares my values	0.585
Exciting personality	0.475	Intelligent	0.566
Healthy	0.467	Exciting personality	0.510
Attractive face	0.366	Attractive face	0.386
Shares my interests	0.339	Healthy	0.370
Sociable	--	Sociable	0.302
Attractive body	--	Attractive body	--
Enthusiastic about sex	--	Enthusiastic about sex	--

Extraction Method: Maximum Likelihood.

6 iterations required. Loadings less than .30 marked as --. 6 iterations required.

Table 4.5: Factor Matrix: Best Partner

Males		Females	
Kind and understanding	0.877	Shares my interests	0.845
Considerate	0.808	Good companion	0.844
Good companion	0.798	Loyal	0.825
Loyal	0.794	Shares my values	0.805
Generous	0.792	Kind and understanding	0.794
Faithful to partners	0.745	Faithful to partners	0.769
Shares my values	0.739	Considerate	0.748
Responsible	0.706	Interesting to talk to	0.729
Interesting to talk to	0.659	Good sense of humor	0.667
Shares my interests	0.658	Intelligent	0.652
Good sense of humor	0.609	Responsible	0.642
Emotionally stable	0.593	Generous	0.618
Intelligent	0.562	Emotionally stable	0.554
Healthy	0.336	Exciting personality	0.441
Exciting personality	--	Healthy	--
Enthusiastic about sex	--	Attractive body	--
Attractive face	--	Enthusiastic about sex	--
Sociable	--	Sociable	--
Attractive body	--	Attractive face	--

Extraction Method: Maximum Likelihood.

5 iterations required. Loadings less than .30 marked as --. 6 iterations required.

Table 4.6: Factor Matrix Self-Rating

Males		Female	
Sociable	0.607	Good companion	0.900
Interesting to talk to	0.553	Generous	0.760
Healthy	0.546	Considerate	0.613
Kind and understanding	0.540	Exciting personality	0.599
Good companion	0.511	Kind and understanding	0.598
Exciting personality	0.463	Emotionally stable	0.485
Responsible	0.453	Interesting to talk to	0.469
Emotionally stable	0.438	Loyal	0.438
Considerate	0.436	Attractive face	0.416
Good sense of humor	0.411	Sociable	0.416
Intelligent	0.400	Attractive body	0.378
Generous	0.399	Enthusiastic about sex	0.305
Attractive body	0.390	Faithful to partners	--
Attractive face	0.333	Healthy	--
Loyal	--	Responsible	--
Enthusiastic about sex	--	Good sense of humor	--
Faithful to partners	--	Intelligent	--

Extraction Method: Maximum Likelihood.

6 iterations required. Loadings less than .30 marked as --. 5 iterations required.

Means and Variances by Sex (85 males, 52 females)

Variable	Male Mean	Female Mean	Significance	Male Variance	Female Variance	Significance
Verbal creativity	3.326	2.794	0.117	0.615	0.251	0.009
Intelligence[2]	8.624	7.632	0.002	5.642	4.201	0

2. 12 Item RPM

Big Five Personality Inventory, Males, Total Variance Explained

Factor	Initial Eigenvalues			Sums of Squared Loadings			Rotation Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.912	29.118	29.118	2.529	25.289	25.289	1.414	14.138	14.138
2	1.711	17.114	46.232	1.383	13.83	39.119	1.328	13.28	27.418
3	1.273	12.731	58.964	0.885	8.854	47.973	1.29	12.9	40.318
4	1.196	11.964	70.928	0.772	7.72	55.693	1.099	10.991	51.309
5	0.856	8.563	79.491	0.46	4.6	60.293	0.898	8.985	60.293
6	0.645	6.449	85.939						
7	0.506	5.063	91.002						
8	0.361	3.614	94.616						
9	0.29	2.9	97.517						
10	0.248	2.483	100						

Extraction Method: Principal Axis Factoring.

Table 4.7: Rotated Factor Matrix Big Five

	Factor				
	Conscientious	Extraverted	Neurotic	Agreeable	Open
Dependable, self-disciplined.	0.849	---	---	---	---
Disorganized, careless.	-0.73	---	---	--	---
Reserved, quiet.	--	-0.805	---	--	---
Extraverted, enthusiastic.	--	0.763	---	--	---
Anxious, easily upset.	---	---	0.75	--	---
Calm, emotionally stable.	--	--	-0.65	---	---
Sympathetic, warm.	--	--	---	0.838	---
Critical, quarrelsome.	--	--	---	-0.558	---
Conventional, uncreative.	--	--	---	---	-0.738

Loadings less than .30 marked as --.

Appendix A

Study 1

STATEMENT OF INFORMED CONSENT

Relational Frame Theory, Analogy and Mate Value

INTRODUCTION

You have been invited to participate in research conducted by Michael J. Dougher, Ph.D. and Ethan White, Graduate Student from the Department of Psychology at the University of New Mexico. You were selected as a possible participant in this study because of your expressed interest in this work.

PURPOSE OF THE STUDY

The purpose of this study is to learn more about how people form classes of items and how that connects with their linguistic ability in abstract and real-world settings. At times during this study, you will be performing a computer task that involves making selections among symbols flashed on a computer screen. In the second phase of the experiment you will be trained on a computer task that requires the generations of sets of stimuli based on a number of arbitrary and non-arbitrary features. You will then be asked to complete some tests of cognitive ability that require you to answer multiple choice analogy questions similar to ones you might have seen on the SAT, and to pick symbols that complete a set of stimuli. Finally, you will be asked to fill out a survey about how you interact with members of the opposite sex in social and personal settings. This survey has been modified from a survey created to measure males' self-perceived value as a mate and partner for females. As the scale has been designed specifically for males, *we must use only male participants in this study*. Hopefully, subsequent studies will address the same theoretical and empirical questions with females.

PROCEDURES

This experiment will take approximately 3 to 3.5 hours including breaks. Participants will receive credit for 4 hours of participation if they complete the study (even if it takes less that the full time allotted). If you decide to discontinue participation at any part during the study you will still receive credit for every hour you participated. If you choose not to complete the mate-value questionnaire you will still receive credit for the time it would have take you to fill out the form (20 minutes and 10 minutes for a break, a total of 30 minutes).

If the study takes more than 4 hours (which is unlikely) you will still receive 4 hours of credit or you may discontinue participation with no penalty.

The first phase of the experiment will involve you making selections among stimuli presented on a computer screen. This section of the experiment should take approximately 50 minutes. After this section you will be given 10 minutes to take a break.

The second phase of the experiment will consists of the administration of Raven's Progressive Matrices and the WASI. You will not be given feedback about your performance on these tasks. This section of the experiment should take approximately 1 hour and 15 minutes. After this section you will be given 10 minutes to take a break.

The third phase is the administration of an analogy test based on previous versions of the Miller Analogies Test. Again, you will not be given feedback about your performance on this test. This section of the experiment will take 30 minutes. After this section you will be given 10 minutes to take a break.

The final phase of the study is the administration of a 85 item survey (in the form: 1: Strongly Agree, 2: Agree, 3: Moderately Agree, 4: Neither Agree nor Disagree, 5: Moderately Disagree, 6: Disagree, 7: Strongly Disagree) designed to asses your opinions about yourself as a mate. *This section of the study asks for some personal information that may make some participants uncomfor*Table. *The survey asks questions about your self-perceived value as a short and long-term mate and asks about your sexual and dating behavior.* Examples are: "I receive many compliments from members of the opposite sex." and "If you got married, how likely do you think it is that your marriage might end in divorce, compared to other marriages?" This section of the experiment should take approximately 25 minutes. *You are free to skip any question or discontinue filling out the survey (without penalty) at any time.*

POTENTIAL RISKS AND DISCOMFORTS

There are no foreseeable negative physical or psychological effects from this study. You will be observed through a two-way mirror during the study. You are free to discontinue participation in this study at any time or to skip any questions that make you uncomforTable and you will still receive credit for participation.

POTENTIAL BENEFITS TO PARTICIPANT/SOCIETY AT LARGE

While there are not direct benefits to individuals participating in this study, information gathered will help us understand the development of human language and cognition and possible relationships between verbal ability and self-perceived attractiveness to potential mates, as well as a variety of mental health problems such as anxiety-type disorders related to language. We may gain insight into how people learn, use language, interact with members of the opposite sex, and come to exhibit phobias and other anxiety

disorders. Furthermore, this research may aide in the design of effective treatments for certain debilitating clinical disorders.

CONFIDENTIALITY

All of the information that you provide for this study will be kept strictly confidential. You will be assigned a code number that will be attached to your data and that will be kept separate from any identifying information (your name and ID # for providing you with research credit). This identifying information will be destroyed as soon as credit is provided. All test results and surveys will be kept confidential and locked in a filing cabinet in our laboratory.

PARTICIPATION AND WITHDRAWAL

You can chose whether to participate in this study or not and refusal to participate will involve no penalty or loss of benefits to which you might otherwise be entitled. If you volunteer to participate, you may discontinue participation at any time without penalty or a loss of benefits to which you might otherwise be entitled. You will receive one credit for every hour of participation.

By signing this consent form you are not waiving any legal claims, rights or remedies because of your participation in this research study.

IDENTIFICATION OF INVESTIGATORS AND REVIEW BOARD

If you have any questions or concerns about this research, please feel to contact Professor Michael J. Dougher at dougher@unm.edu or at the Department of Psychology, Logan Hall, The University of New Mexico, Albuquerque, NM 87131, (505) 277-6480.

If you have concerns or complaints about your rights as a participant, please contact the Institutional Review Board at the University of New Mexico, Professor Jose Rivera, Scholes Hall, Room 255, Albuquerque, NM 87131, (505) 277-2257.

SIGNATURE OF RESEARCH PARTICIPANT

I understand the procedures above. My questions have been answered to my satisfaction and I agree to participate in this study. I have been provided a copy of this form.

_____

Name of Participant (please print)

_____ _____

Signature of Participant Date

SIGNATURE OF INVESTIGATOR

In my judgment the participant is voluntarily and knowingly providing informed consent and possesses the legal capacity to provide informed consent to participate in this research study.

_____ _____

Signature of Investigator or Designee Date

Study 3

STATEMENT OF INFORMED CONSENT

Creativity and Mating Strategies

INTRODUCTION

You were selected as a possible participant in this study because of your expressed interest in this work.

PURPOSE OF THE STUDY

The purpose of this study is to learn more about how people behave sexually, their beliefs about dating and sexual behavior, intelligence, and verbal creativity.

PROCEDURES

This experiment will take approximately .5 to 1 hour.

The study is a survey (usually in the form: 1: Strongly Agree, 2: Agree, 3: Moderately Agree, 4: Neither Agree nor Disagree, 5: Moderately Disagree, 6: Disagree, 7: Strongly Disagree) designed to assess your opinions about yourself and your sexual beliefs and attitudes. Examples of questions are: "I receive many compliments from members of the opposite sex." and “I can imagine myself enjoying casual sex with different partners.” All of this information will be kept completely anonymous and will never be associated with your name.

Additionally you will be asked to complete an 18 item pattern matching test that has been modified from an intelligence test. Finally, we will ask you to write creative and interesting answers to a number of hypothetical questions.

Please be aware, your writing tasks will be shown to a panel of graduate students who will rate the creativity of the responses. Please don't include any identifying information such as your name.

POTENTIAL RISKS AND DISCOMFORTS

There are no foreseeable negative physical or psychological effects from this study. You are free to discontinue participation in this study at any time or to skip any questions that make you uncomforTable.

Some participants may be uncomforTable answering some of the sex questions or completing the intelligence assessment. Please remember that you are free to skip any questions you would like and all information will be completely confidential. We will not be able to give you any feedback about your performance on any aspect of the study.

POTENTIAL BENEFITS TO PARTICIPANT/SOCIETY AT LARGE

While there are not direct benefits to individuals participating in this study, information gathered will help us understand the development of human language and cognition and possible relationships between verbal ability and self-perceived attractiveness to potential mates, as well as a variety of abilities related to language. We may gain insight into how people learn, use language, and interact with members of the opposite sex.

CONFIDENTIALITY

All of the information that you provide for this study will be kept strictly confidential. The computer program which collects the data keeps everything completely private. We will not have any identifying information about who you are. All test results and surveys will be kept confidential and locked in a filing cabinet in our laboratory.

PARTICIPATION AND WITHDRAWAL

If you volunteer to participate, you may discontinue participation at any time without penalty.

By signing this consent form you are not waiving any legal claims, rights or remedies because of your participation in this research study.

If you have any questions or concerns about this research, please feel to contact Professor Michael J. Dougher at dougher@unm.edu or at the Department of Psychology, Logan Hall, The University of New Mexico, Albuquerque, NM 87131, (505) 277-6480.

If you have concerns or complaints about your rights as a participant, please contact:

Institutional Review Board

The University of New Mexico MSC05 3180

1717 Roma NE,

1 University of New Mexico

Albuquerque, NM 87131-0001 (505) 277-2257.

1. SIGNATURE OF RESEARCH PARTICIPANT

I understand the procedures above. My questions have been answered to my satisfaction and I agree to participate in this study.

Yes □

No □

Appendix B

Slide 1

Raven's Progressive Matricies

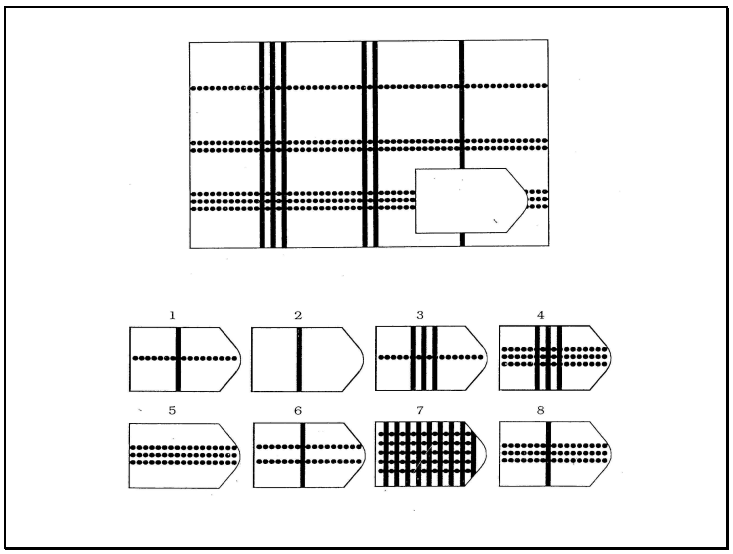
1-35 Odd

Slide 2

Instructions

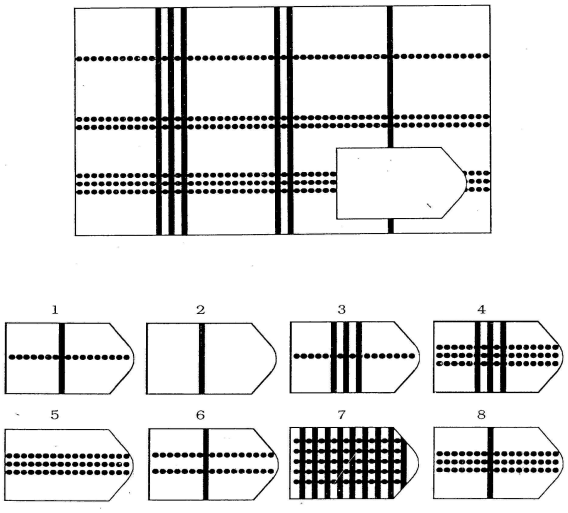
- In the next phase, we will ask you to solve some abstract problems that require observation and the application of rules you must figure out. The problems will get more and more challenging as you go along.
- The next slide is an example of a problem. There is a pattern with a bit cut out of it, and your job is to find the missing bit out of the eight pieces below. Look at the pattern, and think what the piece must be like that could complete the pattern correctly. Then find the right piece out of the eight shown below.

Slide 3



Slide 4

Piece 8 continues the single solid vertical line downwards, and also continues the three dotted lines running along horizontally. It fits the pattern in both directions. So, you would write " 8" on your answer sheet.



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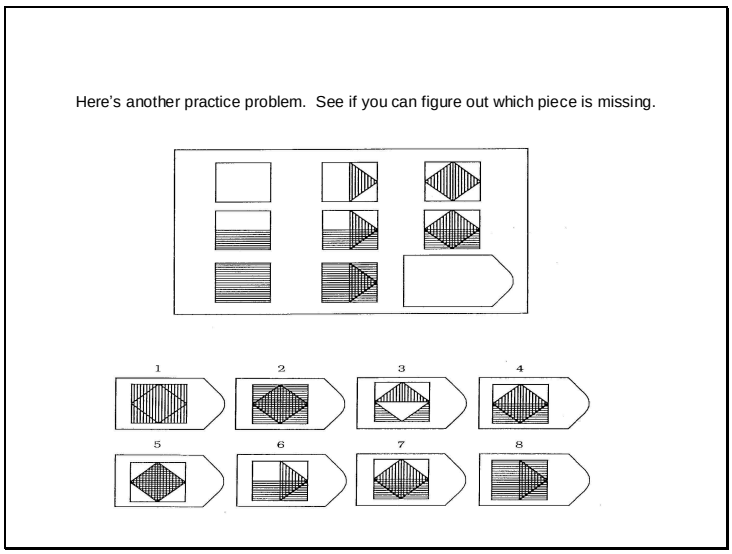

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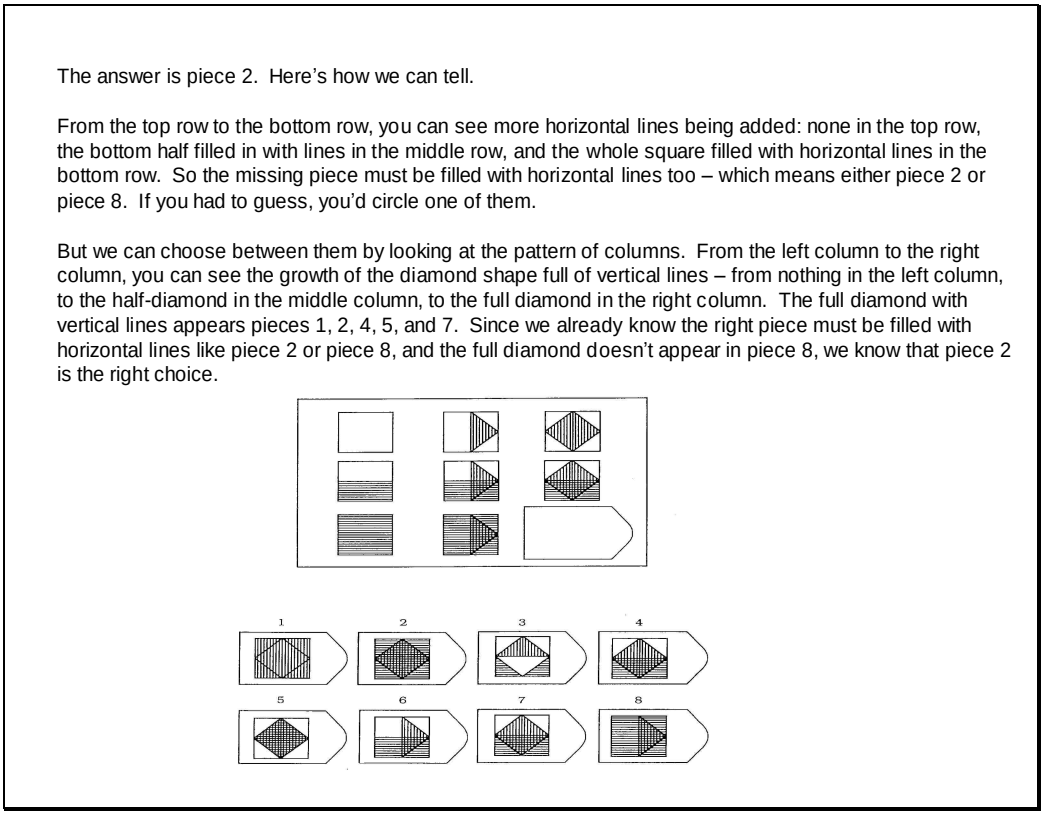

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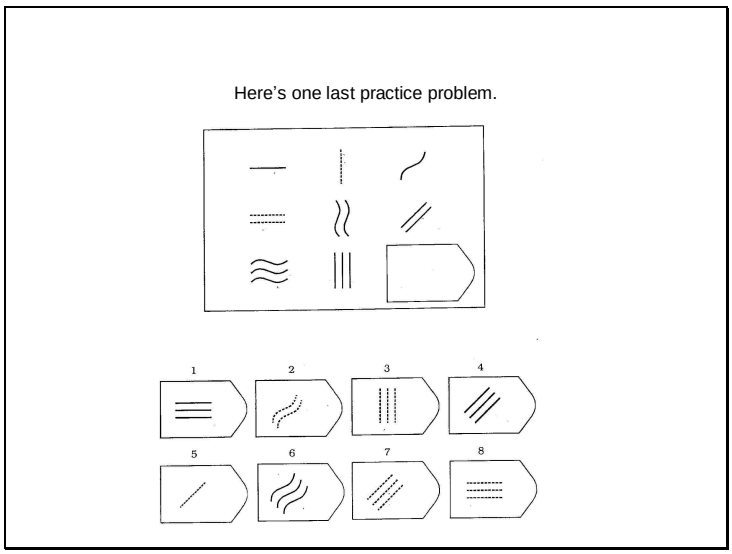


Slide 8

From the top row to the bottom, you can see the progression from one element to two to three in each pattern. Pieces 1, 3, 4, 6, 7, and 8 all have three elements in their patterns.

You can also see that each row has patterns made of three different types of lines: straight solid lines, straight dotted lines, and curvey solid lines. The bottom row already has patterns made of curvey solid lines (on the left) and straight solid lines (in the middle), so it must be missing a pattern made of straight dotted lines. Out of the pieces that have three elements, that leaves only pieces 3, 7, or 8 as good possibilities. If you had to guess at this point, you'd circle one of them.

The final clue is the arrangement of columns. In the left column, all the lines are roughly horizontal. In the middle column, all the lines are roughly vertical. In the right column, all the lines are tilted diagonally. Out of the pieces that have three elements made of straight dotted lines, only piece 7 has those lines tilted diagonally. So it must be piece 7 that's missing.

Slide 9

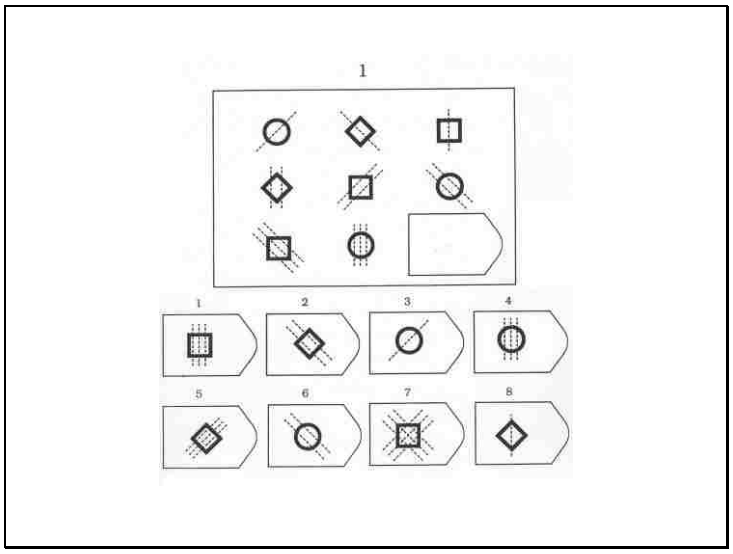
You are now ready to begin.

- In every problem you use the same method of working. You look along each row and decide what the missing figure might be like. You look down each column and decide again. Then look for the answer that is right in both ways, among the eight choices available, and write that number on the answer sheet provided. All problems are odd numbered.

Slide 10

When you are ready to begin press the “down arrow” key. The slides will cycle by themselves.
Do not move backward.
You may advance to the next slide when you are finished.
Answer the questions as best you can. If you have any questions ask the experimenter before you begin.

Slide 11



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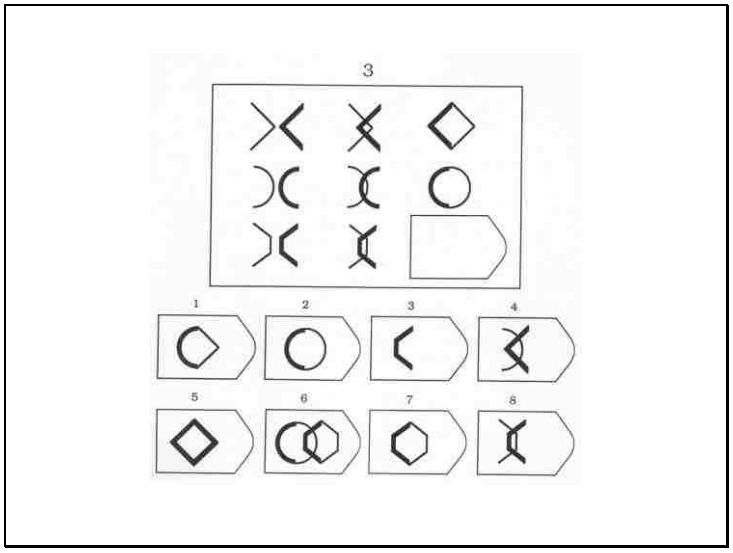

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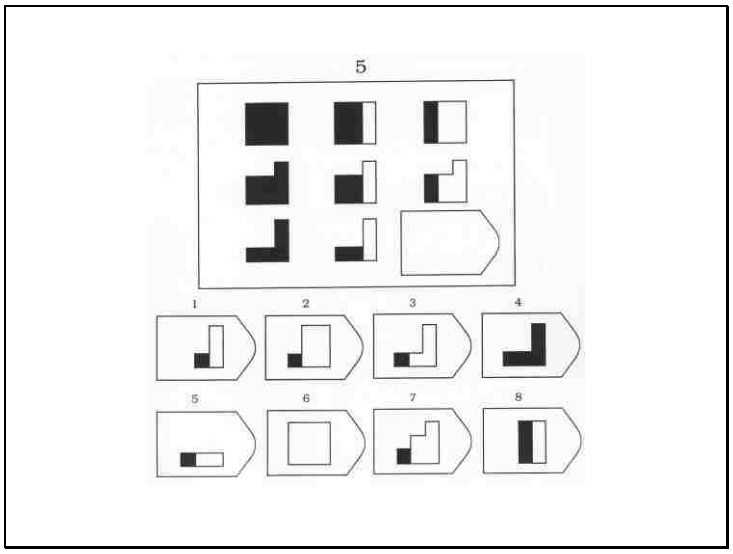

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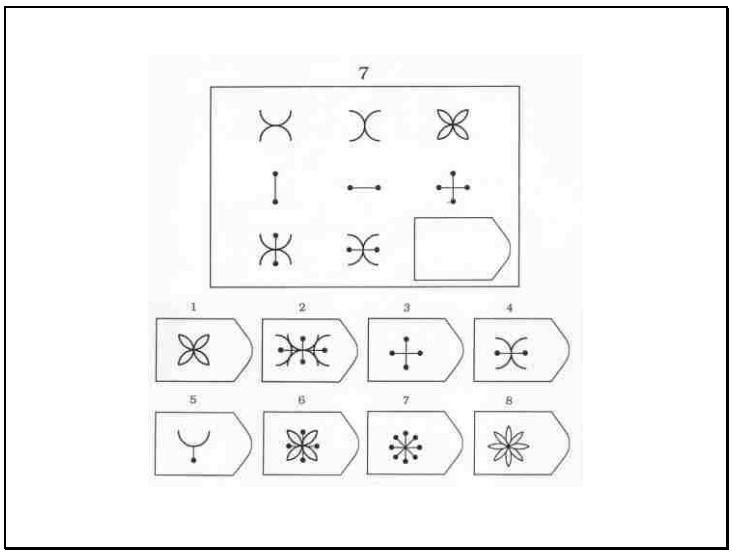

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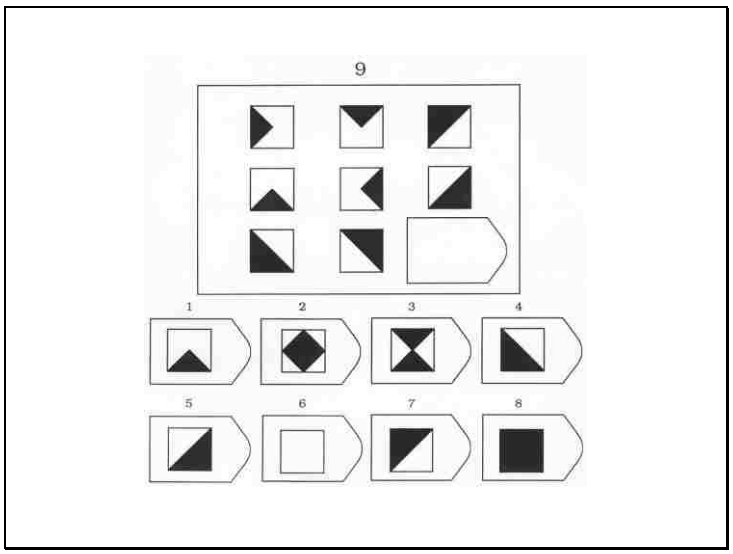

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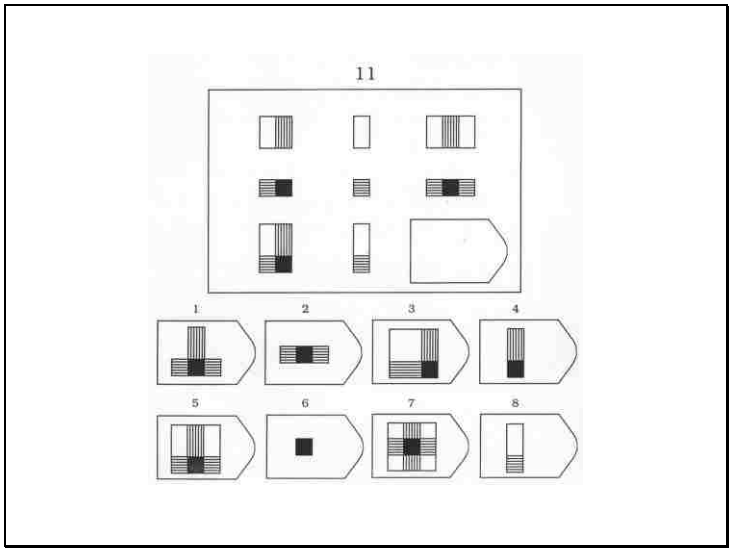

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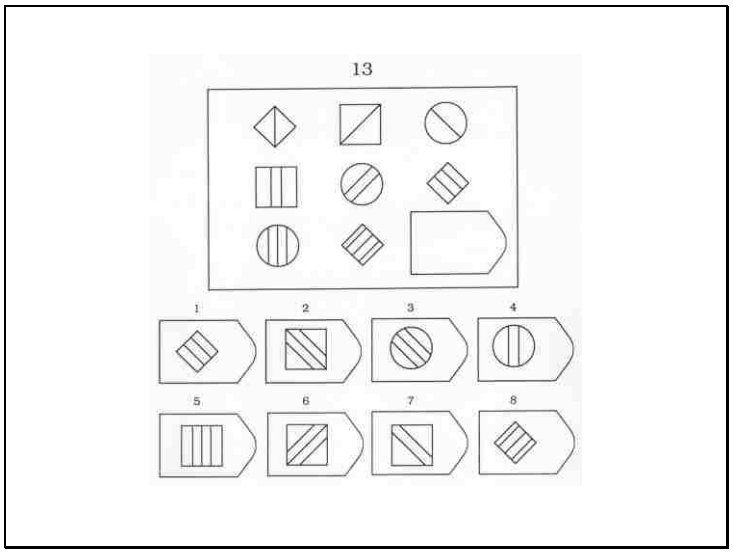

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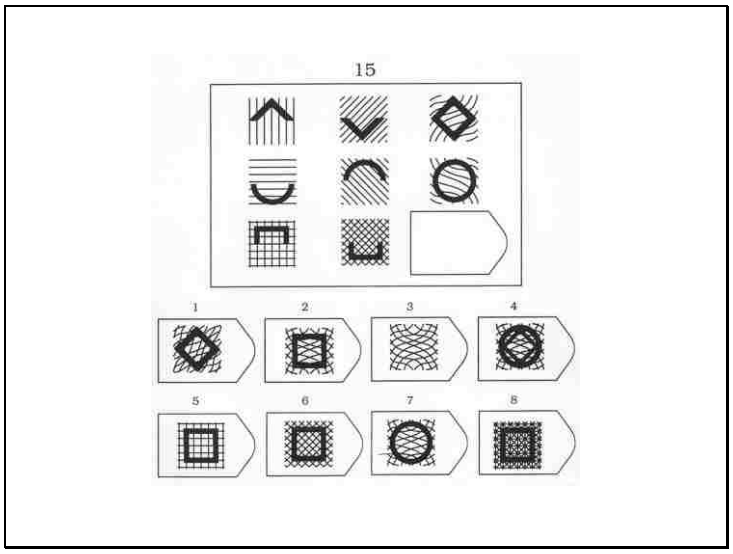
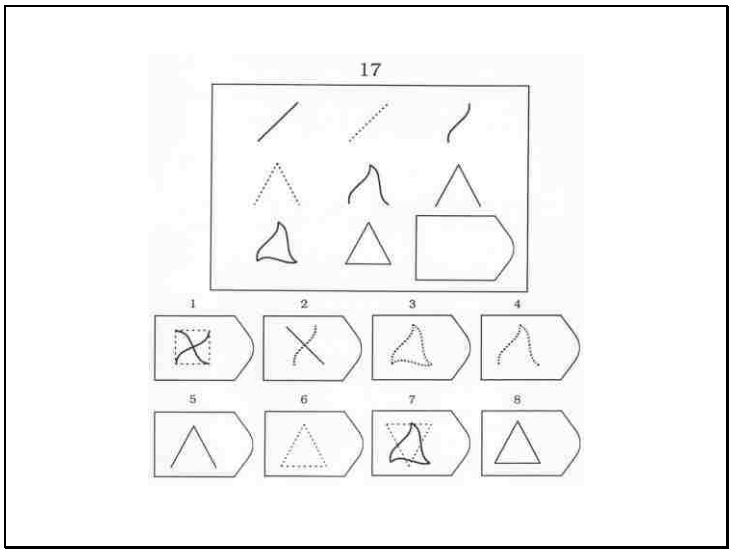


Slide 19



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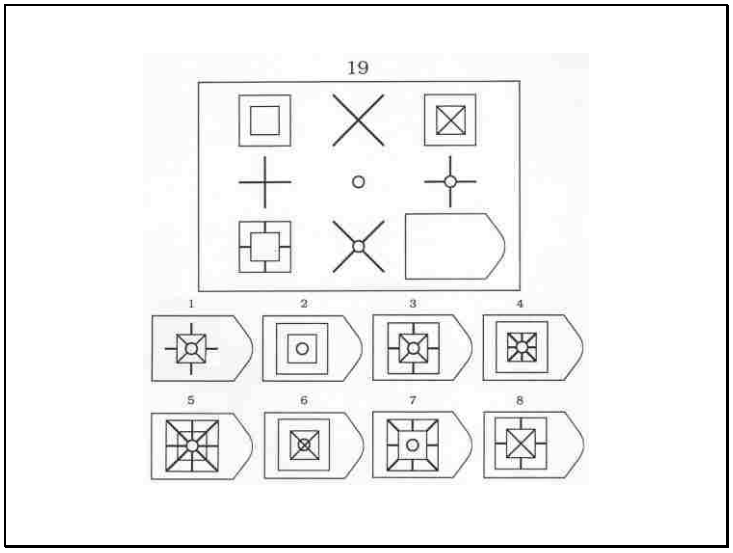

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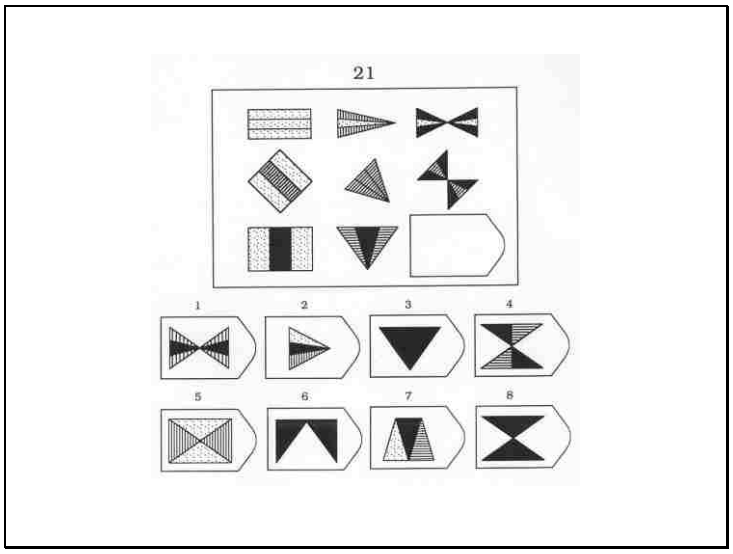

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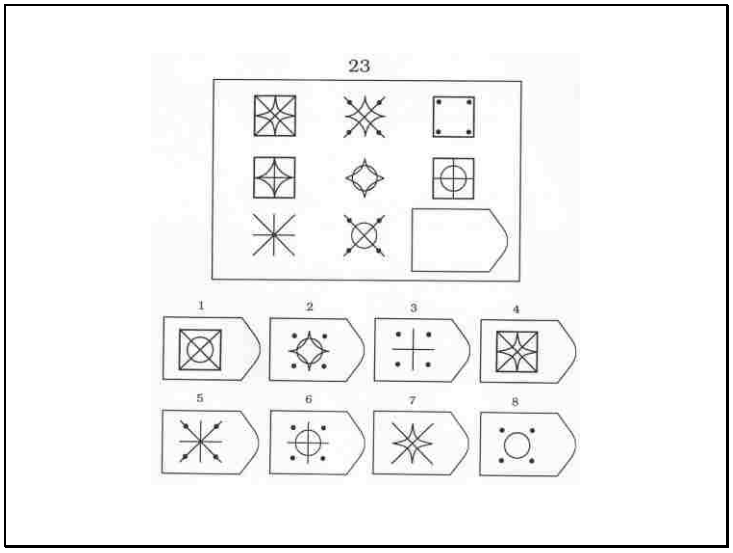

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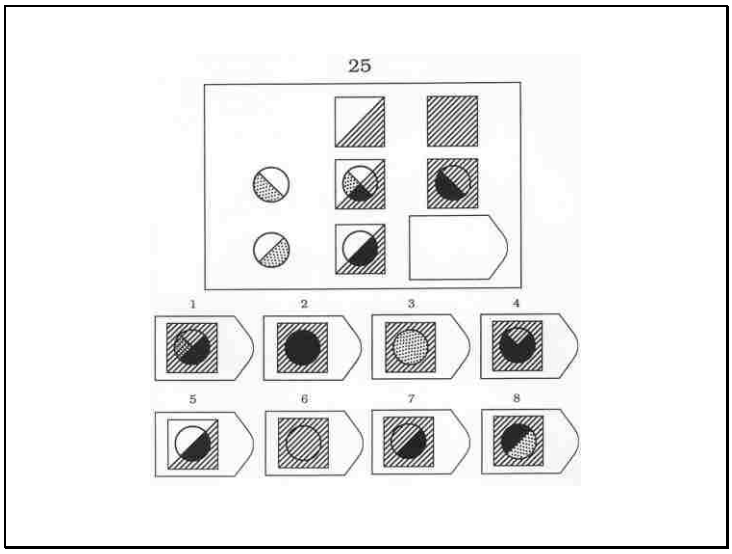

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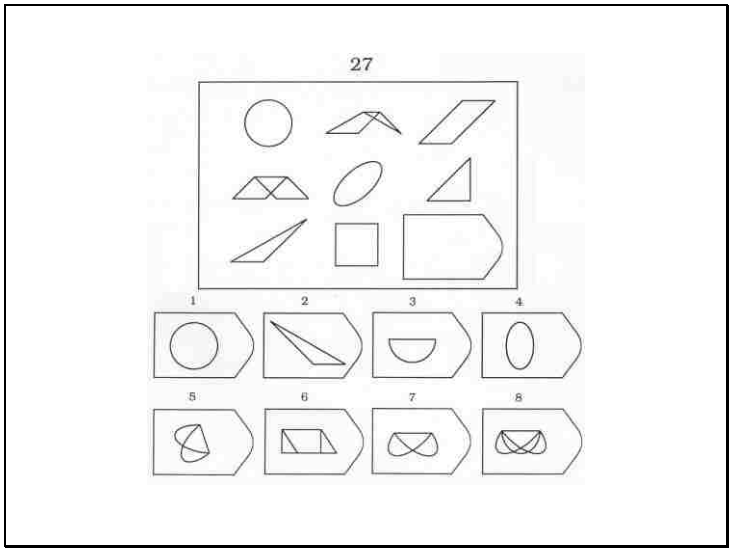

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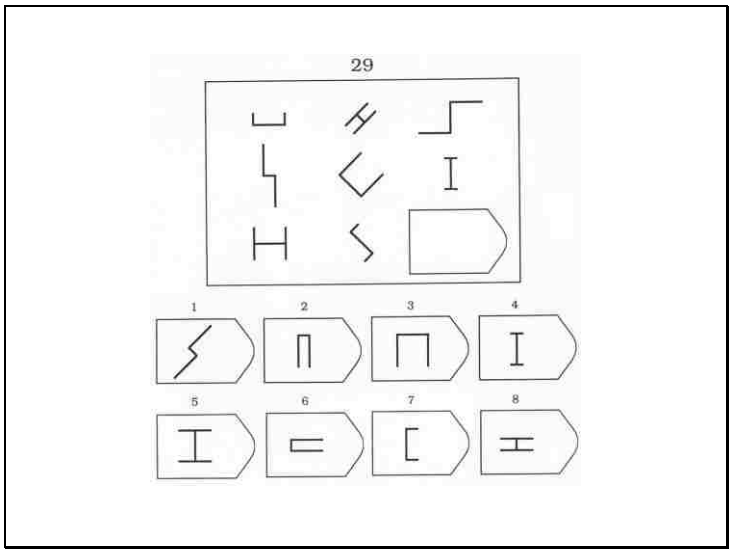

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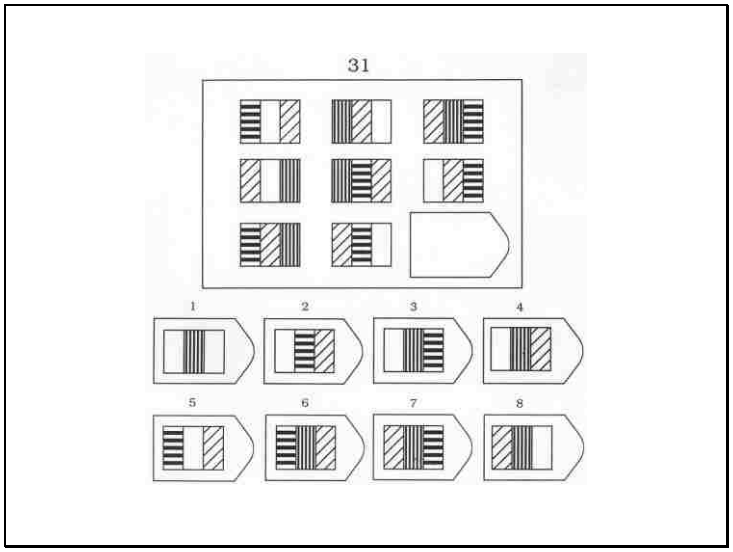

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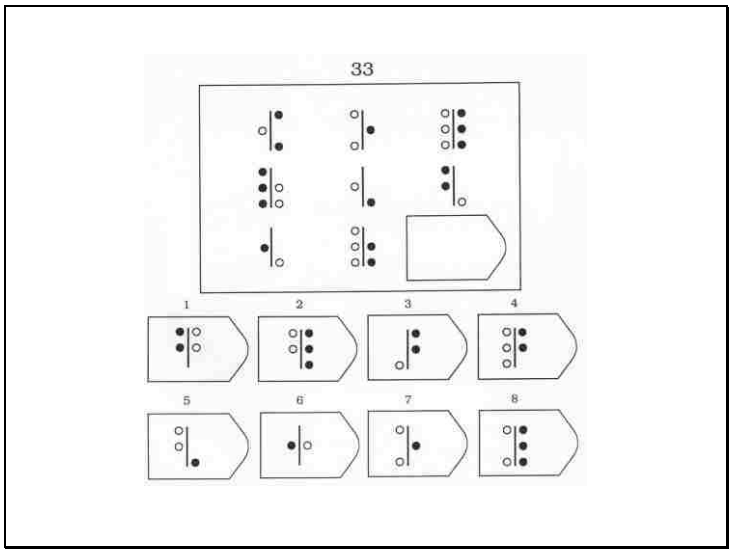
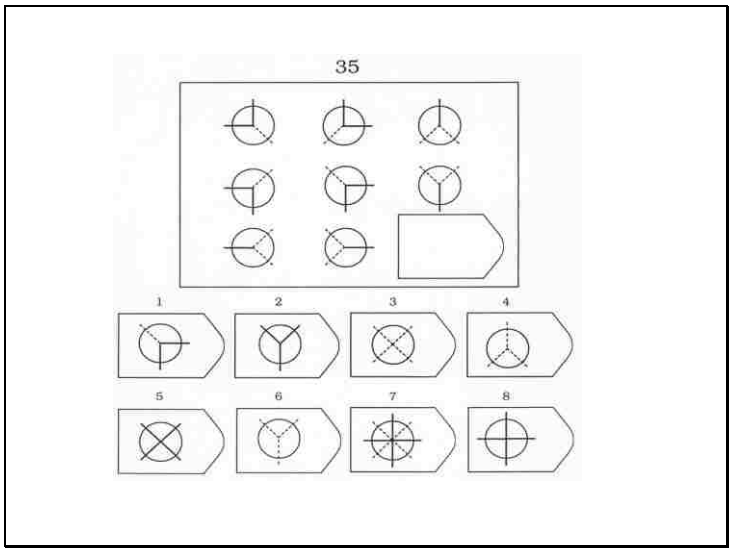


Slide 28



Slide 29

This is the end of this section.

Please see the experimenter.

Appendix C

Participant ID # _____ Date _____

Each question below consists of a related pair of words or phrases, followed by five lettered pairs of words or phrases. Select the lettered pair that *best* expresses the relationship similar to that expressed in the original pair.

Example:

YAWN : BOREDOM ::

(A) dream : sleep (B) anger : madness **(C) smile : amusement**

(D) face : expression (E) impatience : rebellion

1. SINGER : CHORUS ::

   (A) architect : blueprint

   (B) teacher : student

   (C) author : publisher

   (D) driver : highway

   (E) actor : cast

3. READ : LEGIBLE ::

   (A) required : admissible

   (B) purchase : expensive

   (C) hear : audible

   (D) enter : enjoyable

   (E) cater : import

5. BALLAD : SONG ::

   (A) spire : church

   (B) ode : poem

   (C) novel : chapter

   (D) enter : enjoyable

   (E) cater : import

7. INCISION : SCALPEL ::

   (A) hospital : patient

   (B) playground : swing

   (C) kitchen : knife

   (D) electricity : wire

   (E) leopard : jaguar

2. GROTESQUE : DISTORTED ::

(A) fabricated : efficient

(B) monotonous : constant

(C) trustworthy : optimistic

(D) imagined : permanent

(E) mature : young

4. OBSCURITY :: INTELLIGIBILITY ::

(A) ambiguity : clarity

(B) redundancy : repetition

(C) novelty : experimentation

(D) cynicism : philosophy

(E) insight : communication

6. SVELTE : EMACIATED ::

(A) enriched : impoverished

(B) large : gargantuan

(C) still : profound

(D) routine : inspiring

(E) permanent : transitory

8. CORNUCPOIA : ABUNDANCE ::

(A) chameleon : lizard

(B) insignia : banner

(C) gargoyle : edifice

(D) phoenix : rebirth

(E) idolatry : religion

9. TRANQUILITY : PEACE ::

(A) chaos : disorder

(B) retraction : indictment

(C) combustion : waste

(D) miracle : belief

(E) tense : relaxation

11. DRUGGIST : PHARMACY ::

(A) librarian : catalogue

(B) physician : patient

(C) chef : restaurant

(D) carpenter : wood

(E) musician : night club

13. WEED : GARDEN ::

(A) vegeTable : market

(B) termite : house

(C) hair : barber

(D) heretic : asylum

(E) horse : team

15. HAND : WRIST ::

(A) muscle : bone

(B) tendon : finger

(C) foot : ankle

(D) skull : brain

(E) ear : hair

17. SUNDIAL : TIME ::

(A) balance : weight

(B) pyramid : worship

(C) umpire : score

(D) thermometer : illness

(E) metronome : music

19. CHECKPOINT : HIGHWAY ::

(A) postponement : delay

(B) map : route

(C) detour : destination

(D) advertisement : product

(E) valve : pipe

10. REMISSION : DISEASE ::

(A) reduction : procedure

(B) transportation : goods

(C) assignment : position

(D) stay : execution

(E) impression : security

12. ANONOMYOUS : IDENTITY ::

(A) amorphous : form

(B) masked : party

(C) wealthy : income

(D) motivated : goal

(E) infamous : report

14. REDUNDANT : REPETITIOUS ::

(A) written : oral

(B) incomplete : developed

(C) censured : obscene

(D) wise : understandable

(E) verbose : wordy

16. LAPIDARY : GEMS ::

(A) carpenter : stones

(B) biologist : laboratory

(C) numismatist : coins

(D) aviator : students

(E) cardiologist : hearts

18. INTERLOPER : CONSENT ::

(A) investor : return

(B) referee : game

(C) translator : language

(D) missionary : commitment

(E) intruder : invitation

20. GLAICER : ICE ::

(A) trestle : train

(B) dune : sand

(C) forest : path

(D) bird : feather

(E) ship : ocean

21. PICKPOCKET : WALLET ::

(A) burglar : night

(B) embezzler : funds

(C) detective : fugitive

(D) merchant : expenses

(E) innkeeper : guest

23. DISLIKE : LOATHE ::

(A) terrorize : fear

(B) admire : despise

(C) obscure : confuse

(D) annoy : infuriate

(E) order : obey

25. EXTINGUISHED : RELIT ::

(A) complete : discouraged

(B) announced : publicized

(C) collapsed : rebuilt

(D) evicted : purchased

(E) imagined : denied

27. VACUUM : AIR ::

(A) invitation : host

(B) vacancy : occupant

(C) love : passion

(D) literacy : writing

(E) bait : trap

29. BLAME : SCAPEGOAT ::

(A) explain : answer

(B) convict : punishment

(C) lionize : hero

(D) appreciate : art

(E) relate : secret

31. LIBEL : DEFAMATORY ::

(A) praise : laudatory

(B) option : selective

(C) value : sparse

(D) insult : apologetic

(E) struggle : victorious

22. HEAR : INAUDIBLE ::

(A) touch : intangible

(B) mumble : praiseworthy

(C) spend : wealthy

(D) prepare : ready

(E) enjoy : illegal

24. BOOK : TOME ::

(A) page : binding

(B) plot : character

(C) omission : diligence

(D) library : borrower

(E) story : saga

26. GREGARIOUSNESS : SOCIABILITY ::

(A) courage : fearfulness

(B) reliability : esteem

(C) forgetfulness : memorability

(D) affability : friendliness

(E) gullibility : believability

28. ATTORNEY : CLIENT ::

(A) accountant : taxes

(B) physician : patient

(C) conductor : passenger

(D) detective : case

(E) trainer : animal

30. FOREST : TREES ::

(A) fleet : ships

(B) lumber : wood

(C) rose : thorns

(D) shelf : books

(E) camera : film

32. RAMPART : FORTRESS ::

(A) bicycle : wheel

(B) river : lake

(C) cage : animal

(D) ladder : roof

(E) fence : house

33. ANNEX : BUILDING ::

(A) bedroom : apartment

(B) fountain : park

(C) epilogue : novel

(D) dining car : train

(E) memory : computer

35. MOISTEN : DRENCH ::

(A) pump : replenish

(B) chill : freeze

(C) deny : pretend

(D) dance : rejoice

(E) announce : suppress

37. MAVERICK : STRAY ::

(A) hermit :recluse

(B) expert : ignorance

(C) trickster : payment

(D) miser : money

(E) rumor : truth

39. PLATITUDE : TRITE ::

(A) axiom : geometrical

(B) prescription : medical

(C) cuisine : international

(D) boredom : friendly

(E) innovation : novel

41. MOTLEY : COLOR ::

(A) bovine : herd

(B) cacophonous : sound

(C) legal : codification

(D) miraculous : apathy

(E) remedial : expertise

43. BELIE : TRUTH ::

(A) convey : idea

(B) mask : face

(C) invite : attention

(D) succumb : illness

(E) dawdle : tardiness

34. SCYTHE : REAPING ::

(A) screws : turning

(B) crops : planting

(C) lights : reading

(D) shears : cutting

(E) saws : gluing

36. LINEAR : CURVILINEAR ::

(A) throw : reach

(B) sunrise : sunset

(C) absolute : relative

(D) arrow : bow

(E) bow :arrow

38. LETTUCE : LEAF ::

(A) potato : eye:

(B) rose : thorn

(C) onion : bulb

(D) grass : stem

(E) grape : vine

40. INTERRUPT : HECKLE ::

(A) disrupt : intrude

(B) tease : hector

(C) maintain : uphold

(D) condemn : implore

(E) speech : performance

42. DAM : WATER ::

(A) over : under

(B) embargo : trade

(C) curse : H_2O

(D) beaver : fish

(E) river : stream

44. ALLAY : PAIN ::

(A) damp : noise

(B) create : noise

(C) regain : consciousness

(D) fray : edge

(E) soothe : nerves

45. HARBINGER : BEGINNING ::

(A) ordain : decree

(B) herald : advent

(C) amend : correction

(D) emancipate : freedom

(E) commiserate : news

46. LATENT : LATE ::

(A) crude : callous

(B) potential : tardy

(C) natty : nettled

(D) obvious : concealed

(E) decorous : deceased

47. CALIBER : RIFLE ::

(A) reputation : blast

(B) compass : bore

(C) army : navy

(D) gauge : rails

(E) cavalry : infantry

48. PECADILLO : CRIME ::

(A) district attorney : criminal

(B) hesitate : procrastination

(C) armadillo : bone

(D) bushel : peck

(E) sheriff :jail

49. CHOP : MINCE ::

(A) fry :bake

(B) meat : cake

(C) axe : mallet

(D) Washington : Lincoln

(E) stir : beat

50. WOOD : PAPER ::

(A) iron : steel

(B) chair : wall

(C) cut : clip

(D) fireplace : lighter

(E) forest : fire

Appendix D

Participant ID # _____ Date _____

In the next section you are going to see two words and I want you to tell me how they are alike. For example if I asked how "cookies" and "candy" are alike you could say they are both snacks and they are both sweet.

How are **GRAPES and STRAWBERRIES** similar?

_____

_____

_____

_____

How are a **COW and a BEAR** similar?

_____

_____

_____

_____

How are a **PLANE and a BUS** similar?

_____

_____

_____

_____

How are a **SHIRT and a JACKET** similar?

How are a **PEN and a PENCIL** similar?

How are a **BOWL and a PLATE** similar?

How are **LOVE and HATE** similar?

How are **TV and NEWSPAPER** similar?

How are **SMOOTH and ROUGH** similar?

How are **SHOULDER and ANKLE** similar?

How are **SIT and RUN** similar?

How are **CHILD and ADULT** similar?

How are **STEAM and CLOUD** similar?

How are a **BIRD and a FLOWER** similar?

How are **MORE and LESS** similar?

How are **PHOTOGRAPH and SONG** similar?

How are **PEACE and WAR** similar?

How are **CAPITALISM and SOCIALISM** similar?

How are **TRADITION and HABIT** similar?

_____

_____

_____

_____

How are **FREEDOM and LAW** similar?

_____

_____

_____

_____

Appendix E

Participant ID # _____ Date _____

Now you will be presented with words to define. You do not have to write in complete sentences and spelling and grammar mistakes will not be held against you. Please just try to explain the word as accurately as possible.

Also, make sure your writing is clear so I can read it.

What is a:

Bird	Calendar
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Number	Bell
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Lunch

Police

Vacation

Pet

Balloon

Transform

Alligator

_____
_____
_____
_____
_____
_____

Cart

_____
_____
_____
_____
_____
_____

Blame

_____
_____
_____
_____
_____
_____

Dance

_____
_____
_____
_____
_____
_____

Purpose

_____
_____
_____
_____
_____
_____

Entertain

_____
_____
_____
_____
_____
_____

Famous

_____
_____
_____
_____
_____
_____

Reveal

_____
_____
_____
_____
_____
_____

Decade

_____
_____
_____
_____
_____
_____

Tradition

_____
_____
_____
_____
_____
_____

Rejoice

_____
_____
_____
_____
_____
_____

Enthusiastic

_____
_____
_____
_____
_____
_____

Improvise

_____

_____

_____

_____

_____

_____

Impulse

_____

_____

_____

_____

_____

_____

Haste

_____

_____

_____

_____

_____

_____

Trend

_____

_____

_____

_____

_____

_____

Intermittent

_____

_____

_____

_____

_____

_____

Devout

_____

_____

_____

_____

_____

_____

Impertinent

Niche

Presumptuous

Formidable

Ruminate

Panacea

Appendix F

MALES

Participant ID # _____ Date _____

Basic Information Inventory, page 1 of 2

Reminder: Your answers are completely confidential, and you may refuse to answer any question that you are uncomforTable answering, without penalty. There is no need to feel embarrassed about your unique traits and experiences. Everyone's different, and these differences are what interest us as psychologists.

What is your age? _____ years

How would you describe your sexual orientation? Please circle one:

heterosexual (straight)gay bisexual

Do you have any biological children of your own? _____

If so, what ages are they? _____

Do you have any step-children or adopted children? _____

If so, what ages are they? _____

Are you currently in a steady sexual relationship? _____

If so, how long has the relationship been going on?

_____ weeks

_____ months

_____ years

Are you married to your partner? _____

Are you currently living with your partner? _____

Are you raising any children with your partner? _____

What is your height? _____ feet, _____ inches

What is your weight? _____ pounds

Handedness: Please circle which hand do you use most often for:

writing with a pen	right	left
throwing a ball	right	left
holding a toothbrush	right	left
dialing a telephone	right	left
using a computer mouse	right	left
holding a tennis racket	right	left

How many semesters have you completed so far, at UNM or elsewhere?

_____ semesters

How many psychology classes have you completed so far, at UNM or elsewhere? _____

What is your major? (Or what do you think it is most likely to be?) _____

How many brothers and sisters (full siblings) do you have altogether? _____

How many of them are older brothers? _____

How many of them are older sisters? _____

How many of them are younger brothers? _____

How many of them are younger sisters? _____

How many step-siblings and half-siblings do you have altogether? _____

How many of them are older step-brothers or half-brothers? _____

How many of them are older step-sisters or half-sisters? _____

How many of them are younger step-brothers or half-brothers? _____

How many of them are younger step-sisters or half-sisters? _____

How would you describe your race or ethnicity? Check any and all that apply.

_____ White / Caucasian

_____ Hispanic, Latino, Chicano, Mexican American, or Puerto Rican

_____ Black / African American

_____ American Indian / Alaskan Native

_____ Native Hawaiian / Pacific Islander

_____ Asian American / Asian

_____ Middle Eastern

_____ Other (please specify: _____)

What were the races or ethnicities of your grand-parents? Check any and all that apply.

_____ White / Caucasian

_____ Hispanic, Latino, Chicano, Mexican American, or Puerto Rican

_____ Black / African American

_____ American Indian / Alaskan Native

_____ Native Hawaiian / Pacific Islander

_____ Asian American / Asian

_____ Middle Eastern

_____ Other (please specify: _____)

Religion Questionnaire

How would you describe your religion (if any)? Check any and all that apply.

_____ Christian

_____ Catholic

_____ Protestant

_____ Baptist

_____ Methodist / Wesleyan

_____ Lutheran

_____ Presbyterian

_____ Pentecostal / Charismatic

_____ Episcopal / Anglican

_____ Mormon / LDS

_____ Churches of Christ

_____ Congregationalist

_____ Jehovah's Witnesses

_____ Assemblies of God

_____ Seventh-Day Adventist

_____ Unitarian

_____ Jewish

_____ Muslim

_____ Hindu

_____ Sikh

_____ Buddhist

_____ Taoist / Confucian

_____ Native American religion

_____ New Age

_____ Scientology

_____ Pagan / Wicca / Druid

_____ Agnostic

_____ Atheist

_____ Humanist

Being as honest as possible, please indicate how much you agree or disagree with the following statements, by circling the appropriate number on the scale.

	I strongly disagree			I feel neutral			I strongly agree
Religion is important in my life	-3	-2	-1	0	1	2	3
I attend church regularly	-3	-2	-1	0	1	2	3
I pray regularly	-3	-2	-1	0	1	2	3
I believe in God	-3	-2	-1	0	1	2	3
I believe in life after death	-3	-2	-1	0	1	2	3
Sometimes I feel spiritually connected to others	-3	-2	-1	0	1	2	3
Sometimes I feel spiritually connected to nature	-3	-2	-1	0	1	2	3
Religion should be the foundation of morality	-3	-2	-1	0	1	2	3

Being as honest as possible, please indicate how much you agree or disagree with the following statements, by circling the appropriate number on the scale.

	I strongly disagree			I feel neutral			I strongly agree
When I see an attractive girl with her boyfriend, I might try to get her attention	-3	-2	-1	0	1	2	3
I would rather date several girls at once than just one girl	-3	-2	-1	0	1	2	3
I think girls find me naturally attractive	-3	-2	-1	0	1	2	3
I like girls more for their good looks than for their companionship	-3	-2	-1	0	1	2	3
I would get back at someone who looked at my girlfriend in the wrong way	-3	-2	-1	0	1	2	3
I would start a relationship with another girl before ending one with my current girlfriend	-3	-2	-1	0	1	2	3
My friends respect me because they know I'm a little wild and crazy	-3	-2	-1	0	1	2	3
If other guys think I am attractive to girls,							

they will stay away from my girlfriend	-3	-2	-1	0	1	2	3
Other guys respect me because they know I have a lot of friends who would support me	-3	-2	-1	0	1	2	3
If other guys think I am self-confident, they will stay away from my girlfriend	-3	-2	-1	0	1	2	3

Facial Masculinity Self-Rating

Please look at the faces below, and compare them to your own face. They are arranged along a spectrum from the very 'masculine' face on the left to the more 'feminine' face on the right. Circle the number that would represent your own face along this spectrum.

1 2 3 4 5 6 7

(larger nose, smaller lips, smaller eyes, wider jaw, and larger ridge over the eyes)

(average nose size, average lip size, average eye size, average jaw size, and average brow ridge size)

(smaller nose, larger lips, larger eyes, thinner jaw, and smaller ridge over the eyes)

Being as honest as possible, please write your answers in the spaces provided.

Have you ever had consensual sexual intercourse with a person of the opposite sex?

(This means penile-vaginal sex that was desired by both people) _____

If no, please skip to the next page.

If yes, please continue:

At what age did you first have intercourse? _____

How many times have you had intercourse in the past month? _____

With how many partners have you had intercourse in your lifetime? _____

With how many partners have you had intercourse in the past year? _____

With how many partners are you likely to have intercourse in the next five years? (please give a specific, realistic estimate.) _____

With how many partners have you had intercourse on one and only one occasion? _____

How many times have you had intercourse with two or more different partners within the same 24-hour period? _____

How many times have you had intercourse with two or more different partners within the same 7-day period? _____

How many times have you had sexual intercourse with a new partner within the first week of meeting them? _____

How many times have you had sexual intercourse with an ex-partner more than

a month after having split up with them? _____

How often do you feel at least a slight sexual attraction to a specific person you know (apart from your current sexual partner, if you have one)? (Check one answer.)

_____ Never

_____ Every few weeks or months

_____ Once a week

_____ A few times a week

_____ About once a day

_____ Several times a day

How often do you wonder what it might be like to have some form of romantic or sexual intimacy with a specific person you know (apart from your current sexual partner, if you have one)?

_____ Never

_____ Every few weeks or months

_____ Once a week

_____ A few times a week

_____ About once a day

_____ Several times a day

How often do you have a detailed sexual fantasy about a specific person you know (apart from your current sexual partner, if you have one)?

_____ Never

_____ Every few weeks or months

_____ Once a week

_____ A few times a week

_____ About once a day

_____ Several times a day

How often do you wonder what it might be like to have a baby with a specific person you know (apart from your current sexual partner, if you have one)?

_____ Never

_____ Every few weeks or months

_____ Once a week

_____ A few times a week

_____ About once a day

_____ Several times a day

Being as honest as possible, please indicate how much you agree or disagree with the following statements, by circling the appropriate number on the scale.

	I strongly disagree			I feel neutral			I strongly agree
Sex without love is OK, morally	-3	-2	-1	0	1	2	3
I can imagine myself enjoying casual sex with different partners	-3	-2	-1	0	1	2	3
Religion has an important role in my attitudes towards love and sex	-3	-2	-1	0	1	2	3

The most exciting sex is with someone new	-3	-2	-1	0	1	2	3
I would have to be emotionally close to someone before I could fully enjoy having sex with them	-3	-2	-1	0	1	2	3
I seem to value emotional intimacy more than sexual pleasure	-3	-2	-1	0	1	2	3
It's immoral for single people to have sex with married people	-3	-2	-1	0	1	2	3
It's OK for a woman to raise a child as a single parent	-3	-2	-1	0	1	2	3
Premarital sex is wrong	-3	-2	-1	0	1	2	3
If a woman has children, they should all be from the same father	-3	-2	-1	0	1	2	3
Sex is a quick, fun way to get to know someone better	-3	-2	-1	0	1	2	3
Sometimes I feel sexual attraction to someone new within a few moments of seeing them	-3	-2	-1	0	1	2	3

Being as honest as possible, please rate yourself on these characteristics, compared to other UNM students of your age, by circling a number from the scale below.

	very low				don't know/ average			very high
Jealous		-3	-2	-1	0	1	2	3
Responsible		-3	-2	-1	0	1	2	3
Aggressive		-3	-2	-1	0	1	2	3
Desires children		-3	-2	-1	0	1	2	3
Plays well with children		-3	-2	-1	0	1	2	3
Controlling		-3	-2	-1	0	1	2	3
Emotionally sTable		-3	-2	-1	0	1	2	3
Faithful to partners		-3	-2	-1	0	1	2	3
Manipulative		-3	-2	-1	0	1	2	3
Financially secure		-3	-2	-1	0	1	2	3
Loyal		-3	-2	-1	0	1	2	3
Generous		-3	-2	-1	0	1	2	3
Possessive		-3	-2	-1	0	1	2	3
Healthy		-3	-2	-1	0	1	2	3
Independent		-3	-2	-1	0	1	2	3
Enthusiastic about sex	-3	-2	-1	0	1	2	3	
Sociable		-3	-2	-1	0	1	2	3
Kind and understanding		-3	-2	-1	0	1	2	3

Ambitious		-3	-2	-1	0	1	2	3
IrriTable		-3	-2	-1	0	1	2	3
Imaginative		-3	-2	-1	0	1	2	3
Exciting		-3	-2	-1	0	1	2	3
Conservative		-3	-2	-1	0	1	2	3
Talkative		-3	-2	-1	0	1	2	3
Likely to be successful		-3	-2	-1	0	1	2	3
Moody	-3	-2	-1	0	1	2	3	
Happy		-3	-2	-1	0	1	2	3
Dependent and clingy	-3	-2	-1	0	1	2	3	
Likely to be wealthy		-3	-2	-1	0	1	2	3
Free-spirited		-3	-2	-1	0	1	2	3

Being as honest as possible, please rate yourself on these characteristics, compared to other UNM students of your age, by circling a number from the scale below.

	very low			don't know/ average			very high
Attractive hair	-3	-2	-1	0	1	2	3
Attractive eyes	-3	-2	-1	0	1	2	3
Attractive nose	-3	-2	-1	0	1	2	3
Attractive mouth	-3	-2	-1	0	1	2	3
Attractive skin/complexion	-3	-2	-1	0	1	2	3
Attractive face overall	-3	-2	-1	0	1	2	3
Attractive hands & arms	-3	-2	-1	0	1	2	3
Attractive chest	-3	-2	-1	0	1	2	3
Attractive stomach	-3	-2	-1	0	1	2	3
Attractive bottom	-3	-2	-1	0	1	2	3
Attractive legs	-3	-2	-1	0	1	2	3
Attractive body overall	-3	-2	-1	0	1	2	3
Tall	-3	-2	-1	0	1	2	3
Overweight	-3	-2	-1	0	1	2	3
Muscular	-3	-2	-1	0	1	2	3
Athletic	-3	-2	-1	0	1	2	3
Attractive speaking voice	-3	-2	-1	0	1	2	3
Attractive singing voice	-3	-2	-1	0	1	2	3

Attractive body odor		-3	-2	-1	0	1	2	3
Romantic		-3	-2	-1	0	1	2	3
Sexy		-3	-2	-1	0	1	2	3
Creative		-3	-2	-1	0	1	2	3
Good sense of humor	-3	-2	-1	0	1	2	3	
Witty		-3	-2	-1	0	1	2	3
Inventive		-3	-2	-1	0	1	2	3
Imaginative		-3	-2	-1	0	1	2	3
Entertaining		-3	-2	-1	0	1	2	3
AdapTable		-3	-2	-1	0	1	2	3
Open-minded	-3	-2	-1	0	1	2	3	
Interesting		-3	-2	-1	0	1	2	3

Being as honest as possible, please rate yourself on the different forms of intelligence or cognitive abilities listed below, compared to other UNM students, by circling a number from the scale below:

	very low on this trait			average			very high on this trait
Speaking articulately	-3	-2	-1	0	1	2	3
Writing well	-3	-2	-1	0	1	2	3
Having creative ideas	-3	-2	-1	0	1	2	3
Amusing people with my sense of humor	-3	-2	-1	0	1	2	3
Understanding scientific ideas	-3	-2	-1	0	1	2	3
Solving mathematical problems	-3	-2	-1	0	1	2	3
Playing strategic games (chess, cards)	-3	-2	-1	0	1	2	3
Learning historical names and dates	-3	-2	-1	0	1	2	3
Finding my way to new places with maps	-3	-2	-1	0	1	2	3
Understanding other people's feelings	-3	-2	-1	0	1	2	3
Understanding my own feelings	-3	-2	-1	0	1	2	3
Managing my time effectively	-3	-2	-1	0	1	2	3
Resolving arguments cooperatively	-3	-2	-1	0	1	2	3

Leading groups effectively	-3	-2	-1	0	1	2	3
Learning new sports or dances	-3	-2	-1	0	1	2	3
Singing or playing music	-3	-2	-1	0	1	2	3
Learning facts about animals and plants	-3	-2	-1	0	1	2	3
General intelligence (IQ)	-3	-2	-1	0	1	2	3

High school class rank: My grades were in the top _____% of my high school class

High school grades: Please indicate the average, typical grades that you got in each type of high school class that you took, in grades 9 through 12:

(identify as A, B, C, D, or F, or leave blank if not taken):

English: _____

Foreign language: _____

Music: _____

Art: _____

Math: _____

Physical science (e.g. chemistry, physics): _____

Biological science (e.g. biology, psychology): _____

Social science (e.g. history, geography): _____

College grades so far: Please indicate the average, typical grades that you got in each type of college or university class that you have taken so far at UNM or elsewhere:

(identify as A, B, C, D, or F, or leave blank if not taken):

English: _____

Foreign language: _____

Humanities: _____

Music: _____

Art/Architecture: _____

Math/statistics: _____

Engineering: _____

Physical science (e.g. chemistry, physics): _____

Biological science (e.g. biology, psychology): _____

Social science (e.g. economics, history): _____

Mother's education: What educational degrees were earned by your biological mother?

Check any and all that apply. Leave blank if you don't know.

High school diploma: _____

2-year college degree: _____

4-year college degree: _____

Master's degree (e.g. M.B.A.): _____

Doctoral degree (e.g. Ph.D., M.D.): _____

Father's education: What educational degrees were earned by your biological father?

Check any and all that apply. Leave blank if you don't know.

High school diploma: _____

2-year college degree: _____

4-year college degree: _____

Master's degree (e.g. M.B.A.): _____

Doctoral degree (e.g. Ph.D., M.D.): _____

Being as honest as possible, please indicate how much you agree or disagree with the following statements about yourself, by circling the appropriate number on the scale.

	I strongly disagree			I feel neutral			I strongly agree
I am not a worrier.	-3	-2	-1	0	1	2	3
I like to have a lot of people around me.	-3	-2	-1	0	1	2	3
I enjoy concentrating on a daydream and exploring all its possibilities, to let it grow and develop	-3	-2	-1	0	1	2	3

I try to be courteous to everyone I meet. -3 -2 -1 0 1 2 3

I keep my belongings neat and clean. -3 -2 -1 0 1 2 3

At times I have felt bitter and resentful. -3 -2 -1 0 1 2 3

I laugh easily. -3 -2 -1 0 1 2 3

I think it's interesting to develop new hobbies. -3 -2 -1 0 1 2 3

Sometimes I bully or flatter people into doing what
I want them to. -3 -2 -1 0 1 2 3

I'm pretty good about pacing myself so as to get
things done on time. -3 -2 -1 0 1 2 3

When I'm under a great deal of stress, sometimes
I feel like I'm going to pieces. -3 -2 -1 0 1 2 3

I prefer jobs that let me work alone without being
bothered by other people. -3 -2 -1 0 1 2 3

I am intrigued by the patterns in art and nature. -3 -2 -1 0 1 2 3

Some people think I'm selfish and egotistical. -3 -2 -1 0 1 2 3

I often come into situations not fully prepared. -3 -2 -1 0 1 2 3

I rarely feel lonely or blue. -3 -2 -1 0 1 2 3

	I strongly disagree			I feel neutral			I strongly agree
I really enjoy talking to people.	-3	-2	-1	0	1	2	3
I believe that letting students hear controversial speakers can only confuse and mislead them.	-3	-2	-1	0	1	2	3
If someone starts a fight, I'm ready to fight back.	-3	-2	-1	0	1	2	3
I try to perform all the tasks assigned to me conscientiously.	-3	-2	-1	0	1	2	3
I often feel tense and jittery.	-3	-2	-1	0	1	2	3
I like to be where the action is.	-3	-2	-1	0	1	2	3
Poetry has little or no effect on me.	-3	-2	-1	0	1	2	3
I'm better than most people, and I know it.	-3	-2	-1	0	1	2	3
I have a clear set of goals and work toward them in an orderly fashion.	-3	-2	-1	0	1	2	3
Sometimes I feel completely worthless.	-3	-2	-1	0	1	2	3
I shy away from crowds of people.	-3	-2	-1	0	1	2	3
I would have difficulty just letting my mind wander							

without control or guidance.	-3	-2	-1	0	1	2	3
When insulted, I just try to forgive and forget.	-3	-2	-1	0	1	2	3
I waste a lot of time before settling down to work.	-3	-2	-1	0	1	2	3
I rarely feel fearful or anxious.	-3	-2	-1	0	1	2	3
I often feel as if I'm bursting with energy.	-3	-2	-1	0	1	2	3
I seldom notice the moods or feelings that different environments produce.	-3	-2	-1	0	1	2	3
I tend to assume the best about people.	-3	-2	-1	0	1	2	3

	I strongly disagree			I feel neutral			I strongly agree
I work hard to accomplish my goals.	-3	-2	-1	0	1	2	3
I often get angry at the way people treat me.	-3	-2	-1	0	1	2	3
I am a cheerful, high-spirited person.	-3	-2	-1	0	1	2	3
I experience a wide range of emotions or feelings.	-3	-2	-1	0	1	2	3
Many people think I am a bit cold and distant.	-3	-2	-1	0	1	2	3
When I make a commitment, I can always be counted on to follow through.	-3	-2	-1	0	1	2	3
Too often, when things go wrong, I get discouraged and feel like giving up.	-3	-2	-1	0	1	2	3
I don't get much pleasure from chatting with people.	-3	-2	-1	0	1	2	3
Sometimes when I am reading poetry or looking at a work of art, I feel a chill or wave of excitement.	-3	-2	-1	0	1	2	3
I'm hard-headed and stubborn.	-3	-2	-1	0	1	2	3
Sometimes I'm not as dependable or reliable as							

I should be. -3 -2 -1 0 1 2 3

I am seldom sad or depressed. -3 -2 -1 0 1 2 3

My life is fast-paced. -3 -2 -1 0 1 2 3

I have little interest in speculating on the nature of the universe or the human condition. -3 -2 -1 0 1 2 3

I generally try to be thoughtful and considerate. -3 -2 -1 0 1 2 3

I am a productive person who always gets the job done. -3 -2 -1 0 1 2 3

I often feel helpless and want someone else to solve my problems. -3 -2 -1 0 1 2 3

I am a very active person. -3 -2 -1 0 1 2 3

I have a lot of intellectual curiosity. -3 -2 -1 0 1 2 3

If I don't like people, I let them know it. -3 -2 -1 0 1 2 3

I never seem to be able to get organized. -3 -2 -1 0 1 2 3

At times I am so ashamed that I just want to hide. -3 -2 -1 0 1 2 3

I would rather go my own way than lead others. -3 -2 -1 0 1 2 3

I enjoy playing with theories and abstract ideas. -3 -2 -1 0 1 2 3

If necessary, I am willing to manipulate people to get what I want. -3 -2 -1 0 1 2 3

I strive for excellence in everything I do. -3 -2 -1 0 1 2 3

I can often tell how things will turn out. -3 -2 -1 0 1 2 3

I try to understand how I got into a situation to figure out how to handle it. -3 -2 -1 0 1 2 3

I often find the bright side to a bad situation. -3 -2 -1 0 1 2 3

I don't give up until I solve my problems. -3 -2 -1 0 1 2 3

I often make plans in advance. -3 -2 -1 0 1 2 3

I avoid taking risks. -3 -2 -1 0 1 2 3

While growing up, I had a close and warm relationship with my biological mother. -3 -2 -1 0 1 2 3

While growing up, I had a close and warm relationship with my biological father. -3 -2 -1 0 1 2 3

I have a close and warm relationship with my own children. -3 -2 -1 0 1 2 3

I have a close and warm relationship with my sexual partner. -3 -2 -1 0 1 2 3

I would rather have one than several sexual relationships at a time. -3 -2 -1 0 1 2 3

I have to be closely attached to someone before I am comforTable having sex with them. -3 -2 -1 0 1 2 3

I am often in social contact with my blood relatives. -3 -2 -1 0 1 2 3

I often get emotional support and practical help from my blood relatives. -3 -2 -1 0 1 2 3

Being as honest as possible, please indicate how much you agree or disagree with the following statements about yourself, by circling the appropriate number on the scale. For any item that does not apply to you, please circle "0".

	I strongly disagree			neutral			I strongly agree
I often give emotional support and practical help to my blood relatives.	-3	-2	-1	0	1	2	3
I am often in social contact with my friends.	-3	-2	-1	0	1	2	3
I often get emotional support and practical help from my friends.	-3	-2	-1	0	1	2	3
I often give emotional support and practical help to my friends.	-3	-2	-1	0	1	2	3
I am closely connected to and involved in my community.	-3	-2	-1	0	1	2	3
I am closely connected to and involved in my religion.	-3	-2	-1	0	1	2	3

Life History Inventory.

Being as honest as possible, please answer the following questions about yourself and your life. If you don't know or don't remember, please make your best guess.

How old were you when you reached puberty (sexual maturity: first beard growth)? ___ years old

How old were you when you stopped growing taller (e.g. in adolescence)? ___ years old

How old were you when your feet stopped growing (shoe size stayed the same)? ___ years old

How old were you when you first fell in love with someone? ___ years old

If you have children already, how old were you when the first one was born? ___ years old

If do not have any children now, but think you might have some in the future, how old do you think you are most likely to be when you have the first one? ___ years old

What is the youngest age at which you might die of natural causes, realistically? ___ years old

What is the oldest age to which you might live, realistically? ___ years old

When you're 50 years old, how old do you think you'll look, compared to other 50-year-olds? (Circle one.)

-3 -2 -1 0 +1 +2 +3

I will look average / I will look

much younger don't know much older

When you're 50 years old, how healthy do you think you'll be, compared to other 50-year-olds?

-3 -2 -1 0 +1 +2 +3

I will be much average/ I will be much

less healthy don't know healthier

When you're 70 years old, how healthy do you think you'll be, compared to other 70-year-olds?

-3 -2 -1 0 +1 +2 +3

I will be much average/ I will be much

less healthy don't know healthier

Writing Task Instructions

In the next four pages, we will ask you to do some writing tasks.

You will be allowed two minutes for each of the six tasks. Altogether, they should take 12 minutes to complete.

For each task, imagine that you are single, and are trying to attract people who will be reading your responses on an internet dating site. Therefore, please try to be as creative, imaginative, and interesting as possible. Show off what makes you distinctive and intriguing as a person.

The quality of your verbal ideas is more important than the quantity of your writing. Don't worry about grammar, spelling, or punctuation. Just try to communicate your main verbal ideas clearly and creatively. There's no need to rush, or to fill up all the space provided.

Please try to write legibly! If your writing can't be read, your data will be useless for this experiment.

Don't take the tasks too seriously. Relax, have fun, be yourself, be funny if you want.

As with your responses to all other parts of this questionnaire, you are free to skip any writing task that you feel uncomforTable doing for any reason, and your writing will be kept absolutely anonymous. There is no need to feel embarrassed about your writing abilities or verbal ideas. Everyone's different, and these differences are what interest us as psychologists.

To preserve your anonymity, please try not to reveal any personal, private, or individual information when completing these tasks. For example, do not include your name, phone number, self-portrait, or details of your physical appearance.

Writing task 1: Cloud-strings

Imagine that all clouds had really long strings hanging from them – strings hundreds of feet long. What would be the implications of that fact for nature and society?

In the lines below, please list as many different implications as you can for strings hanging from clouds. Use a new line for each new idea, and take about two minutes for this task.

Writing task 2: Sex changes

Imagine that every person could change their sex – male or female – whenever they wanted to, just by dreaming about it for one night. A person could wake up with an opposite-sex version of their own face and body, but would keep all their personality traits, skills, memories, and sense of personal identity. What would be the implications of that fact for society?

In the lines below, please list as many different implications as you can for spontaneous sex changes. Use a new line for each new idea, and take about two minutes for this task.

Writing task 3: Self-description words

Imagine that your internet dating agency lists people by brief self-descriptions – you can use just ten words to catch the attention of possible dates. In the lines below, please list the ten individual words that would describe you most creatively, and that would provoke the most interest from people you might want to meet. You don't have to be honest, just imaginative and intriguing. Take about two minutes for this task.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

Writing task 4: Email responses

Imagine that your internet dating agency asks everyone to write brief answers to the following questions. Please write brief, creative responses that would provoke the most interest from people you might want to meet. Take about two minutes per question, and about six minutes for this whole page.

1. Question: “If you could experience what it’s like to be a different kind of animal for a day, what kind would of animal would you want to be, and why?”

Your response:

_____

_____

_____

_____

_____

_____

_____

_____

2. Question: “How would you keep a marriage exciting after the first couple of years?”

Your response:

_____

_____

_____

_____

_____

_____

_____

_____

3. Question: “What do you hope the world will be like in a hundred years?”

Your response:

_____

_____

_____

_____

_____

_____

_____

_____

_____

Appendix G

The female version was the same as the male version but with the sexes reversed and an ovulatory questionnaire instead of the facial masculinity scale.

FEMALES

Are you currently pregnant or breast-feeding? _____

At what age did you begin having menstrual cycles? _____ years old

Are you currently having regular menstrual cycles? _____

What is the average length of your menstrual cycle? _____ days

My cycle length is (check one):

____ almost always the same length month to month

____ usually within a day or two of the same length each month

____ usually within three to five days of the same length each month

____ quite unpredicTable, often varying by more than five days each month

This question is about when your last menstrual period began. That is, when was the first day of menstrual flow during your last period? If you are currently menstruating, list the date your current period began. <u>This is one of the most important questions in this study, so please try to be as accurate as you can.</u>

My last menstrual period began about _____ days ago

My last menstrual period began: month: _____ date: _____

What is today's date? month _____ date: _____

Are you currently late for the beginning of your menstrual cycle? _____

Do you currently use any form of <u>hormonal contraception</u>?

(These may include oral contraceptive pills, Depo-Provera injections, subdermal implants such as Norplant, transdermal patches such as Ortho Evra, or vaginal rings such as NuvaRing.)

_____ yes _____ no

If you don't use hormonal contraception now, have you ever used it before? _____

If yes, when did you last use it? _____ weeks ago

(please write a number in each blank) _____ months ago

_____ years ago

Have you taken any Emergency Contraceptive Pill (ECP) such as Preven within the last 6 weeks? _____

Appendix H

1. Survey Introduction

Hello,

This is the MALE version of my study. The female version can be found here:
http://www.surveymonkey.com/s.aspx?sm=QpUXF0e0DqmcdzVkPol0RA_3d_3d

Thank you for being interested in participating in my survey. It should take about an hour to complete.

Ethan White

2. IRB

STATEMENT OF INFORMED CONSENT

Creativity and Mating Strategies

INTRODUCTION

You were selected as a possible participant in this study because of your expressed interest in this work.

PURPOSE OF THE STUDY

The purpose of this study is to learn more about how people behave sexually, their beliefs about dating and sexual behavior, intelligence, and verbal creativity.

PROCEDURES

This experiment will take approximately .5 to 1 hour.

The study is a survey (usually in the form: 1: Strongly Agree, 2: Agree, 3: Moderately Agree, 4: Neither Agree nor Disagree, 5: Moderately Disagree, 6: Disagree, 7: Strongly Disagree) designed to assess your opinions about yourself and your sexual beliefs and attitudes. Examples of questions are: "I receive many compliments from members of the opposite sex." and "I can imagine myself enjoying casual sex with different partners." All of this information will be kept completely anonymous and will never be associated with your name.

Additionally you will be asked to complete an 18 item pattern matching test that has been modified from an intelligence test. Finally, we will ask you to write creative and interesting answers to a number of hypothetical questions.

Please be aware, your writing tasks will be shown to a panel of graduate students who will rate the creativity of the responses. Please don't include any identifying information such as your name.

POTENTIAL RISKS AND DISCOMFORTS

There are no foreseeable negative physical or psychological effects from this study. You are free to discontinue participation in this study at any time or to skip any questions that make you uncomfortable.

Some participants may be uncomfortable answering some of the sex questions or completing the intelligence assessment. Please remember that you are free to skip any questions you would like and all information will be completely confidential. We will not be able to give you any feedback about your performance on any aspect of the study.

POTENTIAL BENEFITS TO PARTICIPANT/SOCIETY AT LARGE

While there are not direct benefits to individuals participating in this study, information gathered will help us understand the development of human language and cognition and possible relationships between verbal ability and self-perceived attractiveness to potential mates, as well as a variety of abilities related to language. We may gain insight into how people learn, use language, and interact with members of the opposite sex.

CONFIDENTIALITY

All of the information that you provide for this study will be kept strictly confidential. The computer program which collects the data keeps everything completely confidential. We will not have any identifying information about who you are. All test results and surveys will be kept confidential and locked in a filing cabinet in our laboratory.

PARTICIPATION AND WITHDRAWAL

If you volunteer to participate, you may discontinue participation at any time without penalty.

By signing this consent form you are not waiving any legal claims, rights or remedies because of your participation in this research study.

If you have any questions or concerns about this research, please feel to contact Professor Michael J. Dougher at dougher@unm.edu or at the Department of Psychology, Logan Hall, The University of New Mexico, Albuquerque, NM 87131, (505) 277-6480.

If you have concerns or complaints about your rights as a participant, please contact:

Institutional Review Board
The University of New Mexico MSC05 3180
1717 Roma NE,
1 University of New Mexico
Albuquerque, NM 87131-0001 (505) 277-2257.

*** 1. SIGNATURE OF RESEARCH PARTICIPANT**

I understand the procedures above. My questions have been answered to my satisfaction and I agree to participate in this study.

◯ Yes
◯ No

*** 2. AGE**

Are you 18 years of age or older?

◯ Yes
◯ No

3. Age/Sex

*** 1. Age**

*** 2. Sex**

- ◯ Male
- ◯ Female

3. Sexual orientation/identity:

- ◯ Homosexual
- ◯ Heterosexual
- ◯ Bisexual
- ◯ Uncertain

4. NEOFFI

Being as honest as possible, please rate YOURSELF on these characteristics, compared to other people your age, by selecting a number from the scale below.

1. Attractive face

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

2. Attractive body

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

3. Enthusiastic about sex

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

4. Faithful to partners

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

5. Generous

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

6. Good sense of humor

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

7. Healthy

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

8. Intelligent

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

9. Kind and understanding

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

10. Loyal

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

11. Responsible

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

12. Sociable

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

13. Emotionally stable

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

14. Exciting personality

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

15. Good companion

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

16. Considerate

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

17. Interesting to talk to

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

5. NEOFFI

Being as honest as possible, please rate you AVERAGE or TYPICAL sexual partner on these characteristics, compared to other people their age, by selecting a number from the scale below.

1. Attractive face

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

2. Attractive body

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

3. Enthusiastic about sex

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

4. Faithful to partners

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

5. Generous

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

6. Good sense of humor

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

7. Healthy

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

8. Intelligent

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

9. Kind and understanding

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

10. Loyal

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

11. Responsible

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

12. Sociable

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

13. Emotionally stable

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

14. Exciting personality

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

15. Good companion

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

16. Considerate

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

17. Interesting to talk to

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

18. Shares my values

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

19. Shares my interests

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

6. NEOFFI

Being as honest as possible, please rate you HIGHEST QUALITY or MOST ATTRACTIVE sexual partner on these characteristics, compared to other people their age, by selecting a number from the scale below.

1. Attractive face

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

2. Attractive body

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

3. Enthusiastic about sex

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

4. Faithful to partners

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

5. Generous

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

6. Good sense of humor

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

7. Healthy

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

8. Intelligent

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

9. Kind and understanding

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

10. Loyal

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

11. Responsible

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

12. Sociable

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

13. Emotionally stable

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

14. Exciting personality

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

15. Good companion

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

16. Considerate

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

17. Interesting to talk to

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

18. Shares my values

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

19. Shares my interests

- ◯ -3 (Very Low)
- ◯ -2
- ◯ -1
- ◯ 0 (Average)
- ◯ +1
- ◯ +2
- ◯ +3 (Very High)

7. Sex

*** 1. Have you ever had consensual sexual intercourse with a person of the opposite sex?**

- ◯ Yes
- ◯ No

8. Sexual Behavior

Please enter numbers (1, 34, 22) instead of spelling them out (one, thirty-four, twenty-two).

1. At what age did you first have intercourse?

2. How many times have you had intercourse in the past month?

3. With how many partners have you had intercourse in your lifetime?

4. With how many partners have you had intercourse in the past year?

5. With how many partners are you likely to have intercourse in the next five years? (please give a specific, realistic estimate.)

6. With how many partners have you had intercourse on one and only one occasion?

7. How many times have you had intercourse with two or more different partners within the same 24-hour period?

8. How many times have you had intercourse with two or more different partners within the same 7-day period?

9. How many times have you had sexual intercourse with a new partner within the first week of meeting them?

10. How many times have you had sexual intercourse with an ex-partner more than a month after having split up with them?

9. SOI

1. Sex without love is OK, morally.

- ◯ -3 (I Strongly Disagree)
- ◯ -2
- ◯ -1
- ◯ 0 (I feel neutral)
- ◯ +1
- ◯ +2
- ◯ +3 (I Strongly Agree)

2. I can easily see myself engaging in a long-term romantic relationship with someone special.

- ◯ -3 (I Strongly Disagree)
- ◯ -2
- ◯ -1
- ◯ 0 (I feel neutral)
- ◯ +1
- ◯ +2
- ◯ +3 (I Strongly Agree)

3. I can imagine myself enjoying casual sex with different partners.

- ◯ -3 (I Strongly Disagree)
- ◯ -2
- ◯ -1
- ◯ 0 (I feel neutral)
- ◯ +1
- ◯ +2
- ◯ +3 (I Strongly Agree)

4. Finding a long-term romantic partner is not important to me.

- ◯ -3 (I Strongly Disagree)
- ◯ -2
- ◯ -1
- ◯ 0 (I feel neutral)
- ◯ +1
- ◯ +2
- ◯ +3 (I Strongly Agree)

5. Religion has an important role in my attitudes towards love and sex.

- ◯ -3 (I Strongly Disagree)
- ◯ -2
- ◯ -1
- ◯ 0 (I feel neutral)
- ◯ +1
- ◯ +2
- ◯ +3 (I Strongly Agree)

6. The most exciting sex is with someone new.

- ◯ -3 (I Strongly Disagree)
- ◯ -2
- ◯ -1
- ◯ 0 (I feel neutral)
- ◯ +1
- ◯ +2
- ◯ +3 (I Strongly Agree)

7. I would have to be emotionally close to someone before I could fully enjoy having sex with them.

- ◯ -3 (I Strongly Disagree)
- ◯ -2
- ◯ -1
- ◯ 0 (I feel neutral)
- ◯ +1
- ◯ +2
- ◯ +3 (I Strongly Agree)

8. I would like to have a romantic relationship that lasts forever.

- ◯ -3 (I Strongly Disagree)
- ◯ -2
- ◯ -1
- ◯ 0 (I feel neutral)
- ◯ +1
- ◯ +2
- ◯ +3 (I Strongly Agree)

9. I seem to value emotional intimacy more than sexual pleasure.

- ◯ -3 (I Strongly Disagree)
- ◯ -2
- ◯ -1
- ◯ 0 (I feel neutral)
- ◯ +1
- ◯ +2
- ◯ +3 (I Strongly Agree)

10. I am interested in maintaining a long-term romantic relationship with someone special.

- ◯ -3 (I Strongly Disagree)
- ◯ -2
- ◯ -1
- ◯ 0 (I feel neutral)
- ◯ +1
- ◯ +2
- ◯ +3 (I Strongly Agree)

11. Long-term romantic relationships are not for me.

- ◯ -3 (I Strongly Disagree)
- ◯ -2
- ◯ -1
- ◯ 0 (I feel neutral)
- ◯ +1
- ◯ +2
- ◯ +3 (I Strongly Agree)

12. Premarital sex is wrong.

- ◯ -3 (I Strongly Disagree)
- ◯ -2
- ◯ -1
- ◯ 0 (I feel neutral)
- ◯ +1
- ◯ +2
- ◯ +3 (I Strongly Agree)

13. I hope to have a romantic relationship that lasts the rest of my life.

- ◯ -3 (I Strongly Disagree)
- ◯ -2
- ◯ -1
- ◯ 0 (I feel neutral)
- ◯ +1
- ◯ +2
- ◯ +3 (I Strongly Agree)

14. Sex is a quick, fun way to get to know someone better.

- ◯ -3 (I Strongly Disagree)
- ◯ -2
- ◯ -1
- ◯ 0 (I feel neutral)
- ◯ +1
- ◯ +2
- ◯ +3 (I Strongly Agree)

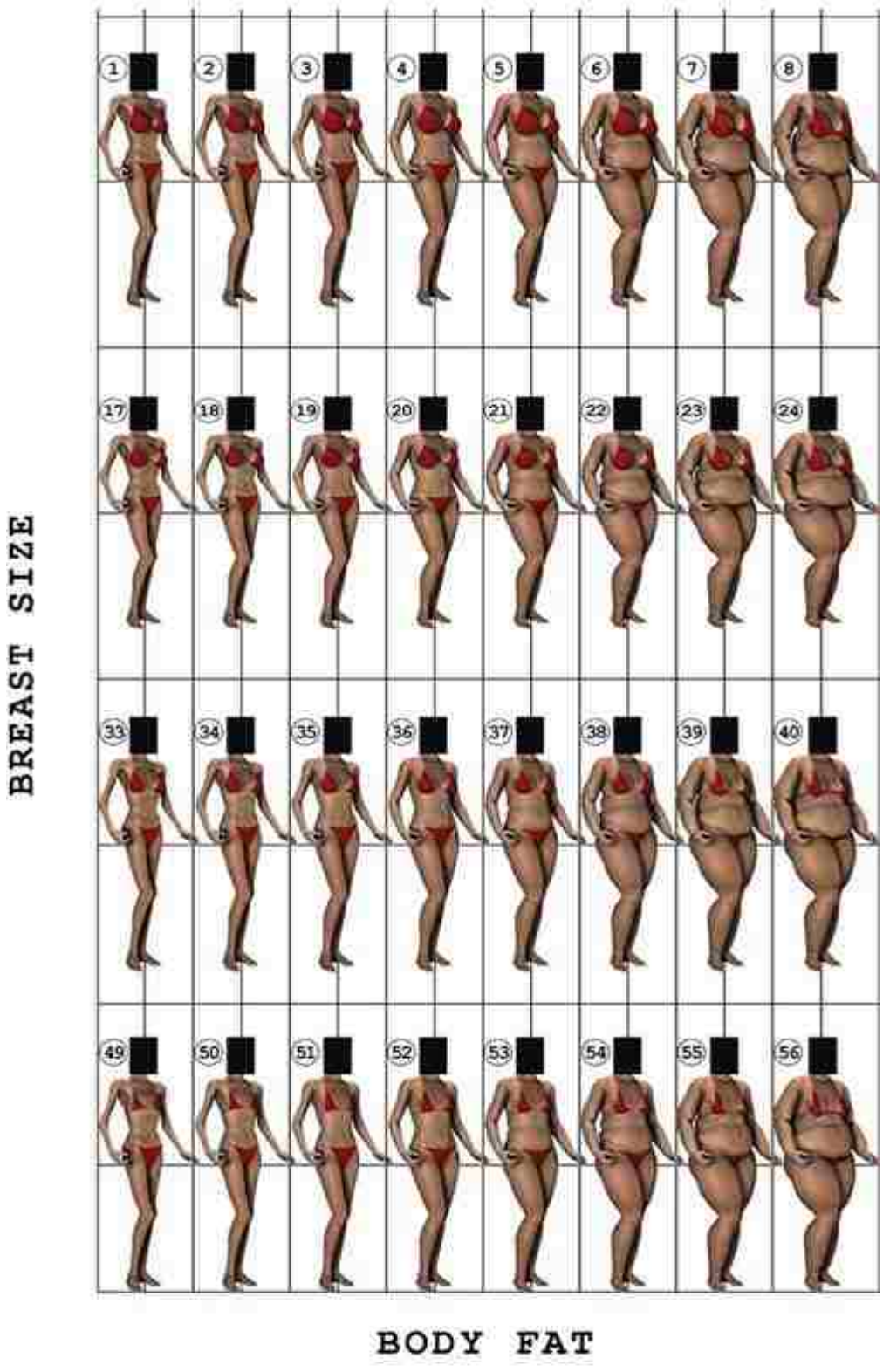
15. Sometimes I feel sexual attraction to someone new within a few moments of seeing them.

- ◯ -3 (I Strongly Disagree)
- ◯ -2
- ◯ -1
- ◯ 0 (I feel neutral)
- ◯ +1
- ◯ +2
- ◯ +3 (I Strongly Agree)

16. I am interested in having children in the future.

- ◯ -3 (I Strongly Disagree)
- ◯ -2
- ◯ -1
- ◯ 0 (I feel neutral)
- ◯ +1
- ◯ +2
- ◯ +3 (I Strongly Agree)

10. Body Type



1. Which figure (1-56) is closest to your IDEAL sexual partner?

2. Which figure (1-56) is closest to your MOST ATTRACTIVE sexual partner?

3. Which figure (1-56) is closest to your AVERAGE or TYPICAL sexual partner?

11. MV

1. Compared to other men my age, I go on dates _____.

- ◯ -3 (Less often)
- ◯ -2
- ◯ -1
- ◯ 0 (About as often)
- ◯ +1
- ◯ +2
- ◯ +3 (More often)

2. Compared other men my age, my sexual partners are _____ attractive.

- ◯ -3 (Less)
- ◯ -2
- ◯ -1
- ◯ 0 (Equally)
- ◯ +1
- ◯ +2
- ◯ +3 (More)

3. Compared to my peer group, I have had _____ sexual partners.

- ◯ -3 (Fewer)
- ◯ -2
- ◯ -1
- ◯ 0 (The same)
- ◯ +1
- ◯ +2
- ◯ +3 (More)

4. I am able to date people that I am interested in dating.

- ◯ -3 (Not true)
- ◯ -2
- ◯ -1
- ◯ 0 (Neutral)
- ◯ +1
- ◯ +2
- ◯ +3 (True)

5. Compared to all other women of the same age, the women I date are _____ interesting to talk too.

- ◯ -3 (Much less)
- ◯ -2
- ◯ -1
- ◯ 0 (Equally)
- ◯ +1
- ◯ +2
- ◯ +3 (Much more)

6. Compared to all other women of the same age, the women I date are _____ to spend time with.

- ◯ -3 (Much less fun)
- ◯ -2
- ◯ -1
- ◯ 0 (Equally fun)
- ◯ +1
- ◯ +2
- ◯ +3 (Much more fun)

7. Compared to all other women of the same age, the women I date are _____ physically attractive.

- ◯ -3 (Much less)
- ◯ -2
- ◯ -1
- ◯ 0 (Equally)
- ◯ +1
- ◯ +2
- ◯ +3 (Much more)

8. Members of the opposite sex are attracted to me.

- ◯ -3 (Never)
- ◯ -2
- ◯ -1
- ◯ 0 (Occasionally)
- ◯ +1
- ◯ +2
- ◯ +3 (Often)

9. I receive attention from members of the opposite sex.

- ◯ -3 (Never)
- ◯ -2
- ◯ -1
- ◯ 0 (Occasionally)
- ◯ +1
- ◯ +2
- ◯ +3 (Often)

10. I can have as many sexual partners as I want.

- ◯ -3 (Disagree)
- ◯ -2
- ◯ -1
- ◯ 0 (Neutral)
- ◯ +1
- ◯ +2
- ◯ +3 (Agree)

11. I am happy with my current relationship situation.

- ◯ -3 (Not at all)
- ◯ -2
- ◯ -1
- ◯ 0 (Neutral)
- ◯ +1
- ◯ +2
- ◯ +3 (Very much)

12. I usually decide when to end a relationship.

- ◯ -3 (Never)
- ◯ -2
- ◯ -1
- ◯ 0 (Sometimes)
- ◯ +1
- ◯ +2
- ◯ +3 (Always)

12. Ten-Item Personality Inventory-(TIPI)

Here are a number of personality traits that may or may not apply to you. Please select the extent to which you agree or disagree with that statement. You should rate the extent to which the pair of traits applies to you, even if one
characteristic applies more strongly than the other.

1. I see myself as: Extraverted, enthusiastic.

- ◯ -3 Disagree Strongly
- ◯ -2
- ◯ -1
- ◯ 0 Neither Agree nor Disagree
- ◯ +1
- ◯ +2
- ◯ +3 Agree Strongly

2. I see myself as: Critical, quarrelsome.

- ◯ -3 Disagree Strongly
- ◯ -2
- ◯ -1
- ◯ 0 Neither Agree nor Disagree
- ◯ +1
- ◯ +2
- ◯ +3 Agree Strongly

3. I see myself as: Dependable, self-disciplined.

- ◯ -3 Disagree Strongly
- ◯ -2
- ◯ -1
- ◯ 0 Neither Agree nor Disagree
- ◯ +1
- ◯ +2
- ◯ +3 Agree Strongly

4. I see myself as: Anxious, easily upset.

- -3 Disagree Strongly
- -2
- -1
- 0 Neither Agree nor Disagree
- +1
- +2
- +3 Agree Strongly

5. I see myself as: Open to new experiences, complex.

- -3 Disagree Strongly
- -2
- -1
- 0 Neither Agree nor Disagree
- +1
- +2
- +3 Agree Strongly

6. I see myself as: Reserved, quiet.

- -3 Disagree Strongly
- -2
- -1
- 0 Neither Agree nor Disagree
- +1
- +2
- +3 Agree Strongly

7. I see myself as: Sympathetic, warm.

- ◯ -3 Disagree Strongly
- ◯ -2
- ◯ -1
- ◯ 0 Neither Agree nor Disagree
- ◯ +1
- ◯ +2
- ◯ +3 Agree Strongly

8. I see myself as: Disorganized, careless.

- ◯ -3 Disagree Strongly
- ◯ -2
- ◯ -1
- ◯ 0 Neither Agree nor Disagree
- ◯ +1
- ◯ +2
- ◯ +3 Agree Strongly

9. I see myself as: Calm, emotionally stable.

- ◯ -3 Disagree Strongly
- ◯ -2
- ◯ -1
- ◯ 0 Neither Agree nor Disagree
- ◯ +1
- ◯ +2
- ◯ +3 Agree Strongly

10. I see myself as: Conventional, uncreative.

- ◯ -3 Disagree Strongly
- ◯ -2
- ◯ -1
- ◯ 0 Neither Agree nor Disagree
- ◯ +1
- ◯ +2
- ◯ +3 Agree Strongly

13. Creativity Writing Tasks

For each task, imagine that you are single, and are trying to attract people who will be reading your responses on an internet dating site. Therefore, please try to be as creative, imaginative, and interesting as possible. Show off what makes you distinctive and intriguing as a person.

The quality of your ideas is more important than the quantity of your writing. Don't worry about grammar, spelling, or punctuation. Just try to communicate your main verbal ideas clearly and creatively. There's no need to rush.

Don't take the tasks too seriously. Relax, have fun, be yourself, be funny if you want.

1. Writing task: Cloud-strings

Imagine that all clouds had really long strings hanging from them – strings hundreds of feet long. What would be the implications of that fact for nature and society?

Please list as many different implications as you can for strings hanging from clouds.

2 Minutes

2. Writing task: Sex changes

Imagine that every person could change their sex – male or female – whenever they wanted to, just by dreaming about it for one night. A person could wake up with an opposite-sex version of their own face and body, but would keep all their personality traits, skills, memories, and sense of personal identity. What would be the implications of that fact for society?

2 Minutes

3. Writing task: Self-description words

Imagine that your internet dating agency lists people by brief self-descriptions – you can use just ten words to catch the attention of possible dates. In the lines below, please list the ten individual words that would describe you
most creatively, and that would provoke the most interest from people you might want to meet.

You don't have to be honest, just imaginative and intriguing.

1
2
3
4
5
6
7
8
9
10

4. Writing task: Email responses

Imagine that your internet dating agency asks everyone to write brief answers to the following questions.
Please write brief, creative responses that would provoke the most interest from people you might want to meet.

If you could be a different kind of animal for a day, what would you be and why?

How would you keep a marriage exciting after the first couple of years?

What do you hope the world will be like in a hundred years?

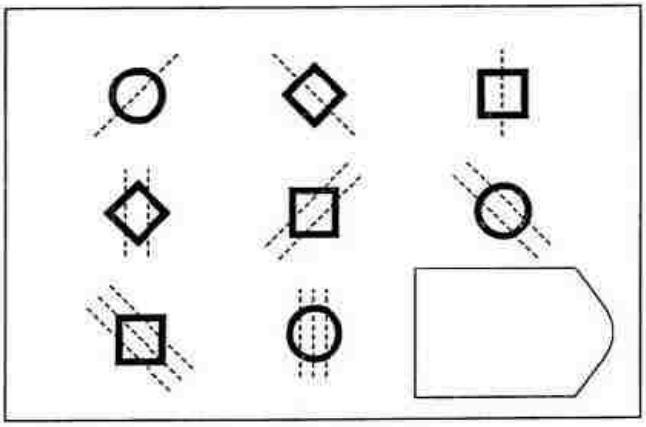
14. Raven's PM

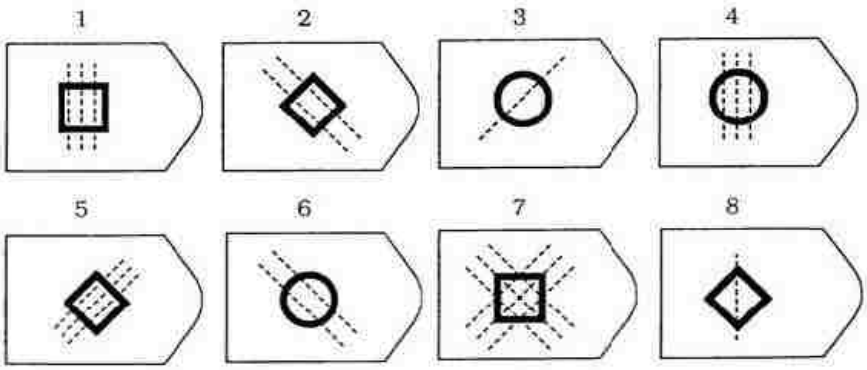
In the next section we will ask you to solve some abstract problems that require you to figure out rules and patterns.

There are 12 problems and they will get more and more challenging as you go along.

Select the piece that completes the pattern. Patterns change vertically and horizontally so take your time and pick the BEST answer.

Feel free to guess if you aren't sure.





1 **Which piece (1-8) completes the pattern in the picture to the left?**

Subsequent RPM are presented identically and can be found in the preceding appendix entry.

16. Female Version

This is the MALE VERSION of the study. There is also a female version that can be found here:

http://www.surveymonkey.com/s.aspx?sm=QpUXF0e0DqmcdzVkPol0RA_3d_3d

Feel free to pass it on to anyone you think may be interested.

17. Debriefing Form

Thank you for participating in my research.

The purpose of my study was to examine the relationship between people's beliefs and attitudes about sex and relationships, their intelligence, and their verbal creativity. My idea is that people who are more intelligent and more creative will report being selected as short-term sexual partners more often.

In my field of psychology, Evolutionary, we are interested in how particular psychological traits evolved. We believe that things such as intelligence and creativity have been beneficial in the past because they have allowed us to solve problems and survive. Additionally, and perhaps more importantly, people tend to find creativity and intelligence in others to be attractive. We believe that these traits allow other people to assess our genetic quality.

When someone is trying to select a sexual partner the may be attracted to traits which could be passed down to their children. That is why people who are healthy, physically fit, and intelligent tend to be rated as more attractive.

If you have any more questions please feel free to contact me directly. Additionally, if you have any questions or concerns about this research, please feel to contact Professor Michael J. Dougher at dougher@unm.edu or at the Department of Psychology, Logan Hall, The University of New Mexico, Albuquerque, NM 87131, (505) 277-6480.

If you have concerns or complaints about your rights as a participant, please contact the Institutional Review Board at:

The University of New Mexico MSC05 3180
1717 Roma NE,
1 University of New Mexico
Albuquerque, NM 87131-0001 (505) 277-2257.

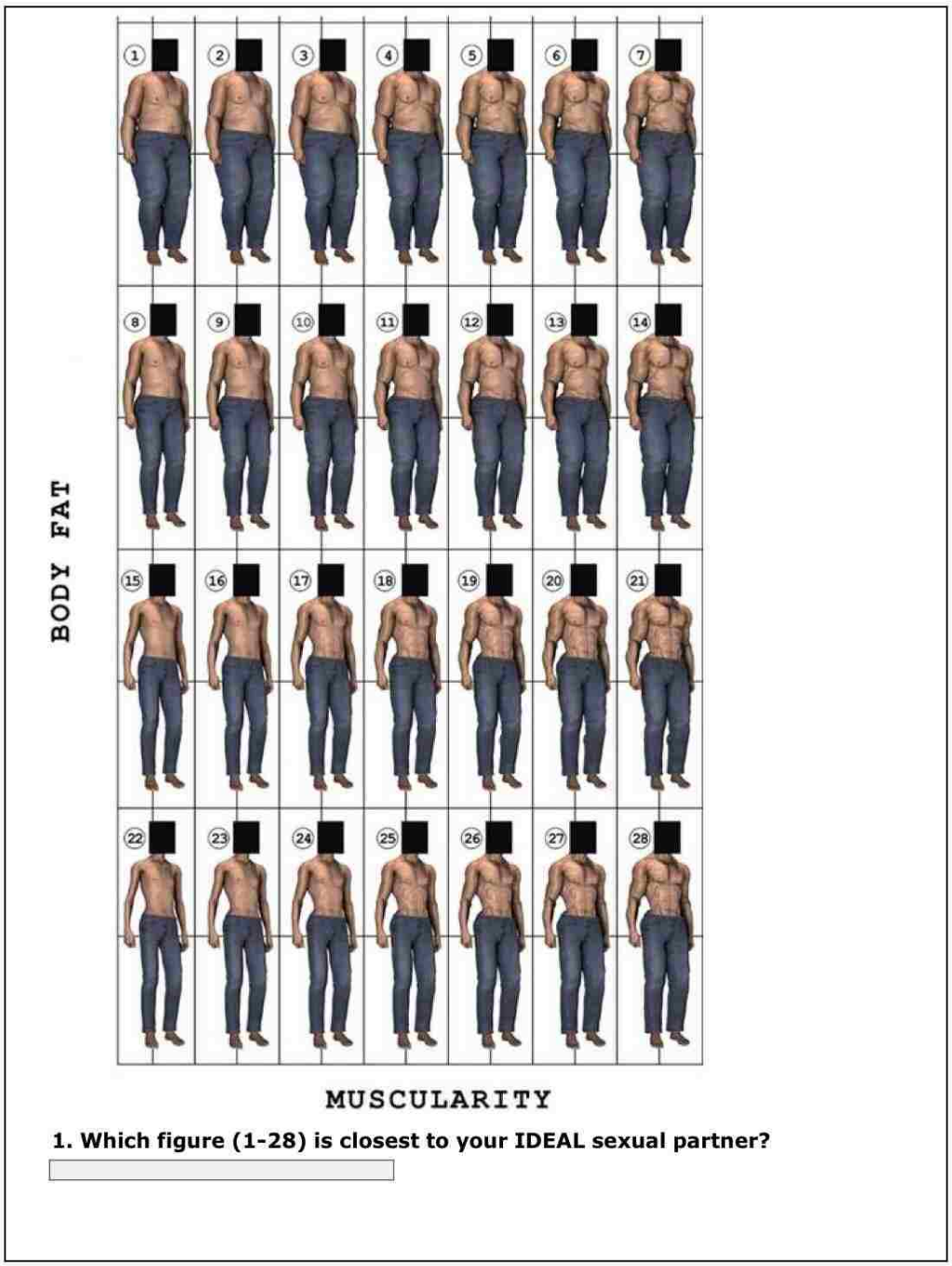
Thank you,

Ethan

ethanw@unm.edu

Ethan White
Department of Psychology
University of New Mexico

The female version of this form is identical except the sexes have been switched (male substituted for female, etc.) and the body shape matrix was replaced with the "male body types" version on the following page.



Appendix J

1. Survey Introduction

Hello,

This is the FEMALE version of my study. The male version can be found here:
http://www.surveymonkey.com/s.aspx?sm=QpUXF0e0DqmcdzVkPol0RA_3d_3d

Thank you for being interested in participating in my survey. It should take about 20 minutes to complete.

Ethan White

2. IRB

STATEMENT OF INFORMED CONSENT

Creativity and Mating Strategies

INTRODUCTION

You were selected as a possible participant in this study because of your expressed interest in this work.

PURPOSE OF THE STUDY

The purpose of this study is to learn more about how people behave sexually, their beliefs about dating and sexual behavior, intelligence, and creativity.

PROCEDURES

This experiment will take approximately .2 to .5 hours.

The study is a survey (usually in the form: 1: Strongly Agree, 2: Agree, 3: Moderately Agree, 4: Neither Agree nor Disagree, 5: Moderately Disagree, 6: Disagree, 7: Strongly Disagree) designed to assess your opinions about yourself and your sexual beliefs and attitudes. Examples of questions are: "I receive many compliments from members of the opposite sex." and "I can imagine myself enjoying casual sex with different partners." All of this information will be kept completely anonymous and will never be associated with your name.

Additionally you will be asked to complete an 18 item pattern matching test that has been modified from an intelligence test. Finally, we will ask you to write creative and interesting answers to a number of hypothetical questions.

Please be aware, your writing tasks will be shown to a panel of graduate students who will rate the creativity of the responses. Please don't include any identifying information such as your name.

POTENTIAL RISKS AND DISCOMFORTS

There are no foreseeable negative physical or psychological effects from this study. You are free to discontinue participation in this study at any time or to skip any questions that make you uncomfortable.

Some participants may be uncomfortable answering some of the sex questions or completing the intelligence assessment. Please remember that you are free to skip any questions you would like and all information will be completely confidential. We will not be able to give you any feedback about your performance on any aspect of the study.

POTENTIAL BENEFITS TO PARTICIPANT/SOCIETY AT LARGE

While there are not direct benefits to individuals participating in this study, information gathered will help us understand the development of human language and cognition and possible relationships between verbal ability and self-perceived attractiveness to potential mates, as well as a variety of abilities related to language. We may gain insight into how people learn, use language, and interact with members of the opposite sex.

CONFIDENTIALITY

All of the information that you provide for this study will be kept strictly confidential. The computer program which collects the data keeps everything completely confidential. We will not have any identifying information about who you are. All test results and surveys will be kept confidential and locked in a filing cabinet in our laboratory.

PARTICIPATION AND WITHDRAWAL

If you volunteer to participate, you may discontinue participation at any time without penalty.

By signing this consent form you are not waiving any legal claims, rights or remedies because of your participation in this research study.

If you have any questions or concerns about this research, please feel to contact Professor Michael J. Dougher at dougher@unm.edu or at the Department of Psychology, Logan Hall, The University of New Mexico, Albuquerque, NM 87131, (505) 277-6480.

If you have concerns or complaints about your rights as a participant, please contact:

Institutional Review Board
The University of New Mexico MSC05 3180
1717 Roma NE,
1 University of New Mexico
Albuquerque, NM 87131-0001 (505) 277-2257.

*** 1. SIGNATURE OF RESEARCH PARTICIPANT**

I understand the procedures above. My questions have been answered to my satisfaction and I agree to participate in this study.

- ◯ Yes
- ◯ No

*** 2. AGE**

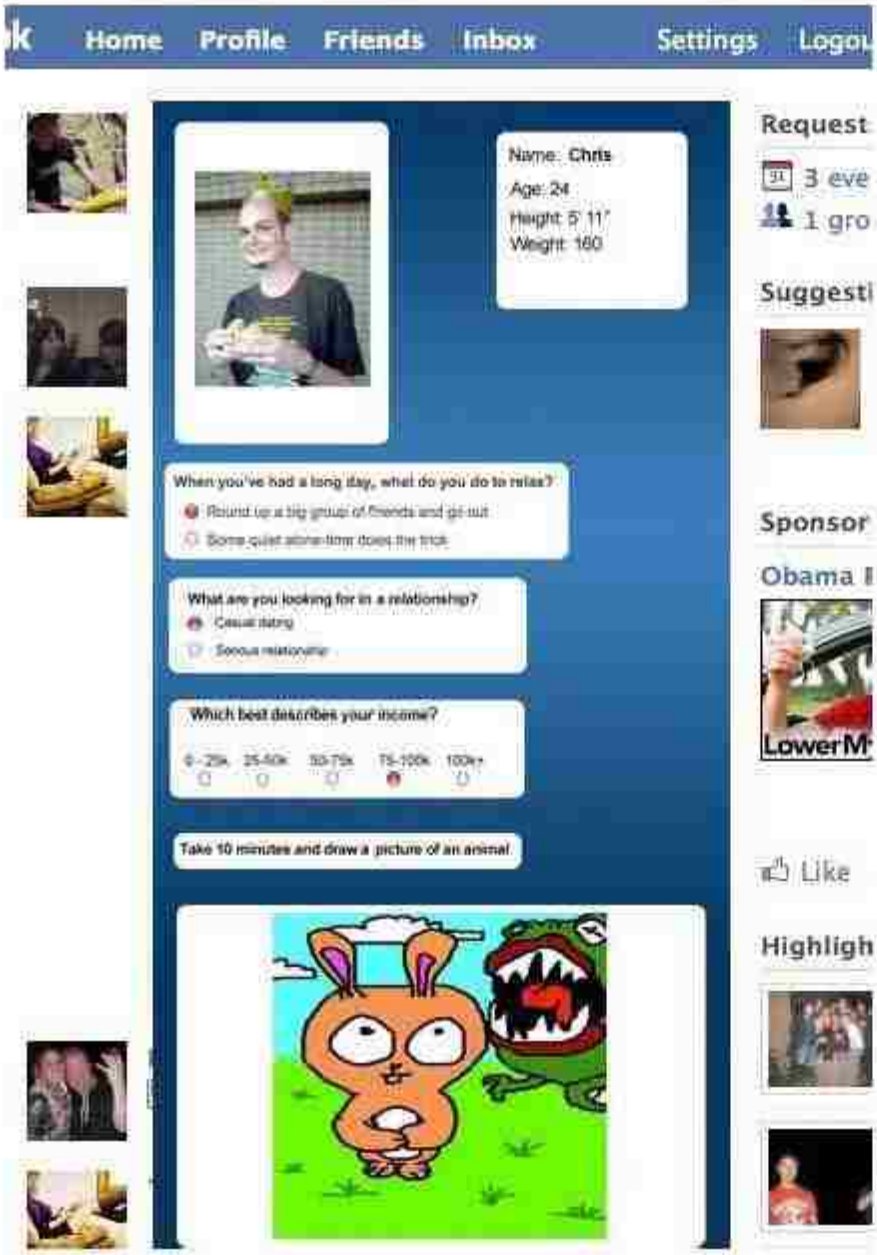
Are you 18 years of age or older?

- ◯ Yes
- ◯ No

3. What is your age-group?

	18-20	21-25	26-30	31-35	36-40	41-50	51+
:	◯	◯	◯	◯	◯	◯	◯

3. Profile 1


Home
Profile
Friends
Inbox
Settings
Name: Chris
Age: 24
Height: 5' 11"
Weight: 160
When you've had a long day, what do you do to relax?
What are you looking for in a relationship?
Casual dating
Which best describes your income?
0 - 25k
25-50k
50-75k
75-100k
100k+
Take 10 minutes and draw a picture of an animal
Request
Suggesti
Sponsor
Obama I
Like
Highligh

1. After looking carefully at this profile, please answer the following questions.

Take your time and feel free to scroll up and look at the profile whenever you want.

How interested would you be in:

	Not at all interested	Probably not interested	Neutral	Probably interested	Very interested
Going on a date with this person:	◯	◯	◯	◯	◯
Dating this person for a short time:	◯	◯	◯	◯	◯
Dating this person for a long time:	◯	◯	◯	◯	◯
Having a serious relationship with this person:	◯	◯	◯	◯	◯
Having sex with this person:	◯	◯	◯	◯	◯

2. How important were the following when deciding if you would: Go on a date with this person.

	Not at all important	A little important	Neutral	Somewhat important	Very important
Picture:	◯	◯	◯	◯	◯
Name/age/height/weight:	◯	◯	◯	◯	◯
What he does to relax:	◯	◯	◯	◯	◯
What type of relationship he is looking for:	◯	◯	◯	◯	◯
Income:	◯	◯	◯	◯	◯
Drawing:	◯	◯	◯	◯	◯
Writing sample:	◯	◯	◯	◯	◯

3. How important were the following when deciding if you would: Date this person for a short time.

	Not at all important	A little important	Neutral	Somewhat important	Very important
Picture:	◯	◯	◯	◯	◯
Name/age/height/weight:	◯	◯	◯	◯	◯
What he does to relax:	◯	◯	◯	◯	◯
What type of relationship he is looking for:	◯	◯	◯	◯	◯
Income:	◯	◯	◯	◯	◯
Drawing:	◯	◯	◯	◯	◯
Writing sample:	◯	◯	◯	◯	◯

4. How important were the following when deciding if you would: Date this person for a long time.

	Not at all important	A little important	Neutral	Somewhat important	Very important
Picture:	○	○	○	○	○
Name/age/height/weight:	○	○	○	○	○
What he does to relax:	○	○	○	○	○
What type of relationship he is looking for:	○	○	○	○	○
Income:	○	○	○	○	○
Drawing:	○	○	○	○	○
Writing sample:	○	○	○	○	○

5. How important were the following when deciding if you would: Have a serious relationship with this person.

	Not at all important	A little important	Neutral	Somewhat important	Very important
Picture:	○	○	○	○	○
Name/age/height/weight:	○	○	○	○	○
What he does to relax:	○	○	○	○	○
What type of relationship he is looking for:	○	○	○	○	○
Income:	○	○	○	○	○
Drawing:	○	○	○	○	○
Writing sample:	○	○	○	○	○

6. How important were the following when deciding if you would: Have sex with this person.

	Not at all important	A little important	Neutral	Somewhat important	Very important
Picture:	○	○	○	○	○
Name/age/height/weight:	○	○	○	○	○
What he does to relax:	○	○	○	○	○
What type of relationship he is looking for:	○	○	○	○	○
Income:	○	○	○	○	○
Drawing:	○	○	○	○	○
Writing sample:	○	○	○	○	○

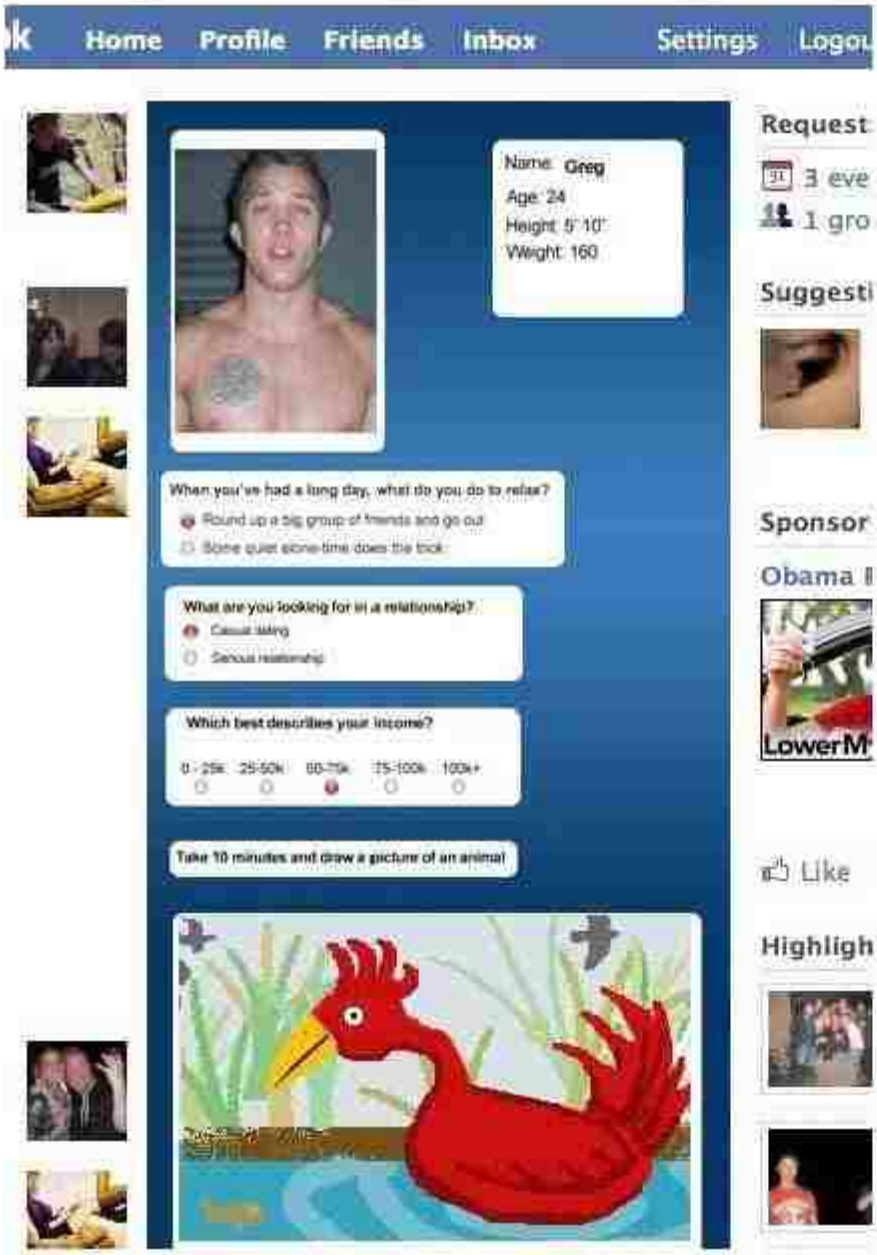
7. Please rank each criteria from least (-3) to most (+3) important:

	-3 (least important)	-2	-1	0	+1	+2	+3 (most important)
Picture:	◯	◯	◯	◯	◯	◯	◯
Name/age/height/weight:	◯	◯	◯	◯	◯	◯	◯
What he does to relax:	◯	◯	◯	◯	◯	◯	◯
What type of relationship he is looking for:	◯	◯	◯	◯	◯	◯	◯
Income:	◯	◯	◯	◯	◯	◯	◯
Drawing:	◯	◯	◯	◯	◯	◯	◯
Writing sample:	◯	◯	◯	◯	◯	◯	◯

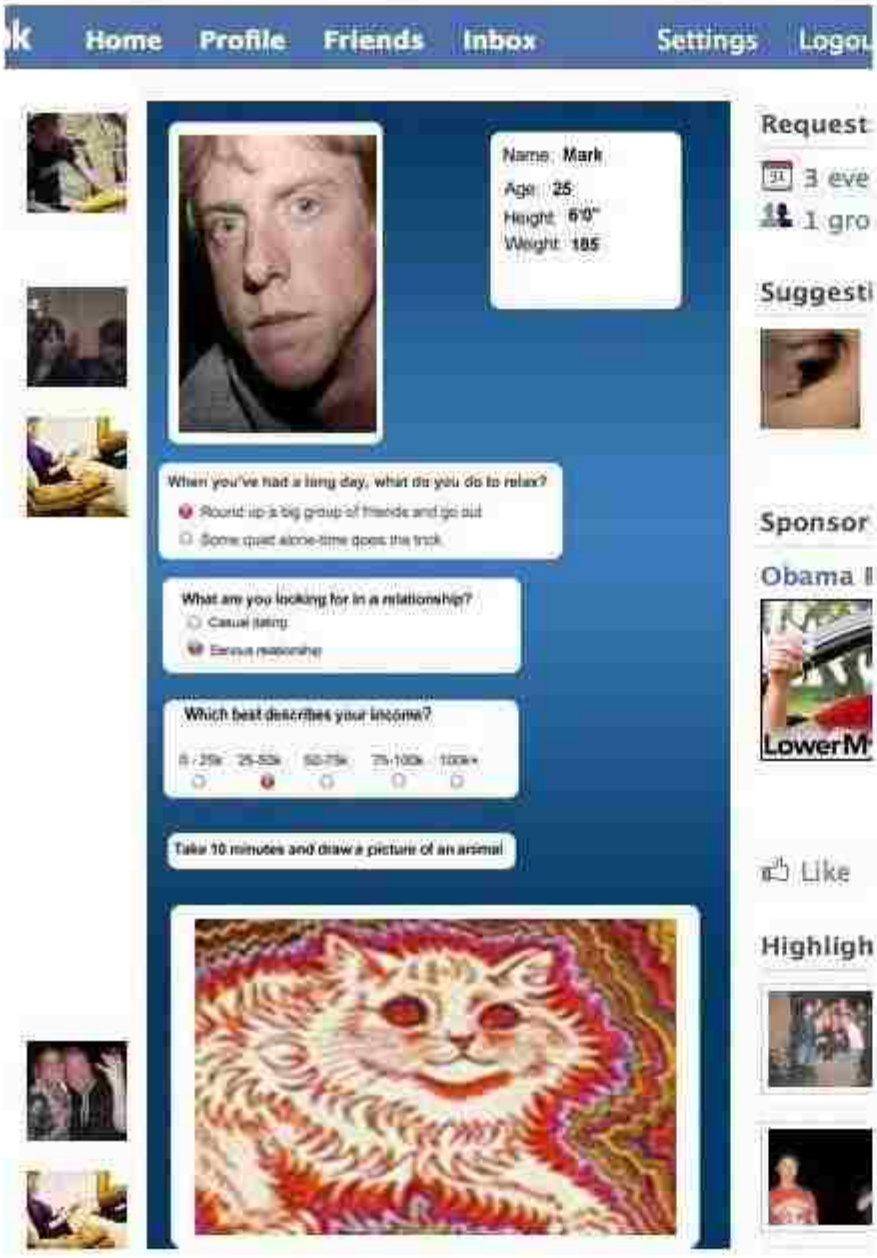
4. Profile 2


Home
Profile
Friends
Inbox
Settings
Name: David
Age: 24
Height: 5' 10"
Weight: 160
When you've had a long day, what do you do to relax?
Round up a big group of friends and go out
Some quiet alone-time does the trick
What are you looking for in a relationship?
Which best describes your income?
0 - 25k
25-50k
50-75k
75-100k
100k+
Take 10 minutes and draw a picture of an animal
Request
Suggesti
Sponsor
Obama I
LowerM
Like
Highligh

5. Profile 3


Home
Profile
Friends
Inbox
Settings
Name: Greg
Age: 24
Height: 5' 10"
Weight: 160
When you've had a long day, what do you do to relax?
Round up a big group of friends and go out
What are you looking for in a relationship?
Which best describes your income?
0 - 25k
25-50k
50-75k
75-100k
100k+
Take 10 minutes and draw a picture of an animal
Request
Suggesti
Sponsor
Obama I
Like
Highligh

6. Profile 4



7. Thanks!

That's all! There are a few more questions if you'd like to answer them to help me make this survey better.

1. How long did this survey take you to complete?

2. Were any parts confusing?

3. Anything you would change to make it clearer?

8. Debriefing Form

Thank you for participating in my research.

The purpose of my study was to examine the relationship between people's beliefs and attitudes about sex and relationships, their intelligence, and their verbal creativity. My idea is that people who are more intelligent and more creative will report being selected as short-term sexual partners more often.

In my field of psychology, Evolutionary, we are interested in how particular psychological traits evolved. We believe that things such as intelligence and creativity have been beneficial in the past because they have allowed us to solve problems and survive. Additionally, and perhaps more importantly, people tend to find creativity and intelligence in others to be attractive. We believe that these traits allow other people to assess our genetic quality.

When someone is trying to select a sexual partner the may be attracted to traits which could be passed down to their children. That is why people who are healthy, physically fit, and intelligent tend to be rated as more attractive.

If you have any more questions please feel free to contact me directly. Additionally, if you have any questions or concerns about this research, please feel to contact Professor Michael J. Dougher at dougher@unm.edu or at the Department of Psychology, Logan Hall, The University of New Mexico, Albuquerque, NM 87131, (505) 277-6480.

If you have concerns or complaints about your rights as a participant, please contact the Institutional Review Board at:

The University of New Mexico MSC05 3180
1717 Roma NE,
1 University of New Mexico
Albuquerque, NM 87131-0001 (505) 277-2257.

Thank you,

Ethan

ethanw@unm.edu

Ethan White
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University of New Mexico